REPORT

Mobilising Capital for Sustainable Energy Infrastructure in Viet Nam: From Planning Ambition to Bankable Delivery

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Prepared by:

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The research period for this report covers information from 2016 to 2024, with a strong focus on the most recent period, 2021–2024.

Executive Summary

Viet Nam's transition toward sustainable energy infrastructure has entered a structurally new phase. This strategic direction has been established at the highest political level, most notably through Resolution No. 55-NQ/TW of the Politburo on the National Energy Development Strategy to 2030 with a vision to 2045, which calls for a secure, efficient, market-oriented and environmentally sustainable energy system. Resolution 55 explicitly emphasizes the mobilisation of social and private capital, the reform of pricing mechanisms, the development of modern power markets and the strengthening of fiscal and institutional governance to support long-term investment.

These strategic objectives were operationalised through Government Resolution No. 140/NQ-CP, which assigns specific responsibilities to line ministries. Under Resolution 140, the Ministry of Planning and Investment (now the Ministry of Finance) is mandated to play a central role in developing fiscal and financial policies that prioritise investment in sustainable energy infrastructure, strengthen regional connectivity, mobilise domestic and international capital and ensure that energy-sector support mechanisms are consistent with fiscal discipline and macroeconomic stability. This mandate places fiscal policy, investment governance and risk management at the core of Viet Nam's energy transition.

Against this policy backdrop, Viet Nam has moved decisively beyond the feed-in tariff regime that characterised the first phase of renewable energy deployment. The transition now underway is qualitatively different. It is dominated by capital-intensive and system-critical assets such as offshore wind, large-scale energy storage, flexible capacity and major transmission corridors. These assets are essential for energy security and decarbonisation, but they require long-tenor financing, predictable revenue frameworks and credible delivery conditions that differ fundamentally from earlier generations of renewable projects.

To support the implementation of Resolutions 55 and 140, the Ministry of Finance, in collaboration with ETP-UNOPS, implemented the project **"Dedicated Policy Framework for Investment in and Development of Sustainable Energy Infrastructure"** over 15 months**.** The project was designed not as a sector-specific intervention, but as a cross-cutting analytical and policy effort to address the fiscal, financial and institutional dimensions of energy investment.

The final report consolidates the full body of work produced under this mandate, including consultation insights from bilateral meetings and public workshops gathering over 300 participants. It draws on international benchmarking, analysis of Viet Nam's current investment landscape, assessment of post-FIT pricing and procurement mechanisms and extensive stakeholder consultations. It is underpinned by quantitative evidence from cost–benefit analysis (CBA) and vector autoregression (VAR) modelling, which assess the macroeconomic, welfare and fiscal implications of alternative transition pathways. The report therefore functions as both an analytical diagnosis and a policy design document, translating national energy objectives into an implementable investment architecture.

Viet Nam's Current State of Affairs

Viet Nam now operates one of the largest power systems in Southeast Asia, with installed capacity exceeding 82 GW and renewables accounting for roughly one quarter of capacity. System operation data from 2024–2025 shows that the power system is increasingly peak-constrained, transfer-limited and stressed under high utilisation. Thermal and hydropower assets continue to underpin reliability, while renewable generation remains exposed to curtailment, congestion and dispatch uncertainty.

Ownership and operational control remain highly centralised, with EVN retaining a dominant role in dispatch, transmission and settlement, even as private and foreign investors hold a growing share of generation assets.

Investment behaviour over the past five years reveals a clear slowdown relative to PDP VIII requirements. This is not driven by weak demand or limited technical potential, but by heightened sensitivity to bankability conditions following the withdrawal of FITs. As pricing shifted from fixed tariffs to negotiated and capped arrangements, investment decisions moved from "build-to-tariff" to "build-to-contract." In this environment, projects either reach financial close quickly under clear and enforceable rules or stall across the pipeline under uncertainty.

The report identifies revenue predictability as the binding financing constraint. Renewable projects rely heavily on domestic bank lending with relatively short tenors, creating maturity mismatches for assets with 20–30 year lifetimes. Capital-market instruments and long-duration institutional finance remain underdeveloped. Prolonged negotiation of transitional PPAs and unclear treatment of curtailment, dispatch and settlement have directly weakened lender confidence. In contrast, transmission investments financed through regulated, tariff-backed revenue streams demonstrate that long-tenor capital is available when cash flows are predictable and institutionally anchored.

At the same time, rapid renewable deployment during the FIT period was not matched by commensurate investment in grids and flexibility. Curtailment, congestion and inter-regional transfer constraints have become material financial risks. Storage and system flexibility remain largely non-investable due to the absence of defined revenue frameworks. These system constraints now directly shape investor returns and debt sizing, particularly for capital-intensive technologies.

Why the Transition Is Economically and Fiscally Justified

The quantitative analysis confirms that development pathways aligned with PDP VIII consistently outperform Business-as-Usual scenarios. The CBA shows that welfare gains are driven primarily by structural changes in the generation mix over asset lifetimes, notably the displacement of fossil generation by renewables, rather than by short-term electricity price suppression. BAU trajectories impose persistent welfare losses through higher emissions, fuel import exposure and system inefficiencies.

The VAR results reinforce this conclusion at the macroeconomic level. Renewable-intensive pathways can support economic growth while stabilising power-sector emissions during the 2030s, provided electricity prices are allowed to adjust endogenously under State management rather than being held rigidly through administrative controls. Rigid pricing increases volatility and raises the probability of downstream fiscal intervention through arrears, renegotiation or balance-sheet stress.

Crucially, the analysis also identifies a binding vulnerability during the 2025–2030 transition window. Many projects that are welfare-positive over their lifetimes are not financeable under current revenue, dispatch and settlement conditions. This creates a paradox: the transition is economically sound, yet investment can stall unless short-term bankability is addressed explicitly. The report therefore treats bankability not as a concession to investors, but as a form of fiscal risk management. Explicit, capped and well-governed support mechanisms are shown to be fiscally safer than implicit and reactive intervention.

Viet Nam's Binding Constraints: From Capacity Targets to Investment Credibility

The report's diagnosis of Viet Nam's current state highlights several structural constraints:

- Revenue predictability has weakened following the withdrawal of FITs, while market institutions are not yet mature enough to price volatility efficiently.
- Financing remains dominated by short-tenor domestic bank lending, creating maturity mismatch for long-lived assets such as offshore wind, storage and transmission.
- Grid congestion, curtailment risk and delayed interconnection have become material financial variables rather than technical side issues.
- Storage and flexibility lack defined revenue frameworks and therefore remain non-investable at scale.
- Legal reforms have progressed, but execution risk persists due to fragmented permitting, inconsistent contracting and weak settlement credibility.

These constraints form a reinforcing loop that raises the cost of capital and slows delivery. Breaking this loop requires an integrated policy architecture rather than incremental adjustments.

A Portfolio-Based Policy Architecture: Five Integrated Policy Packages

To address these constraints, the report proposes **five integrated policy packages (Packages A–E)** that together form a coherent investment architecture. These packages are designed to operate as a system, with each targeting a specific class of risk and each governed within explicit fiscal boundaries.

Package A – Revenue Stabilisation with Market Discipline
This package restores cash-flow predictability during the transition period through auction-based sliding feed-in premiums for mature technologies and selective two-sided CfD-type contracts for capital-intensive assets such as offshore wind. These instruments are paired with standardised, bankable PPAs and codified settlement discipline. The design objective is to stabilise revenues ex ante while capping fiscal exposure through explicit volume corridors, budget envelopes and stress-tested commitments.

Package B – Deliverability-Based Procurement and Grid Readiness
This package makes grid deliverability a formal condition of procurement. Generation volumes are linked to connection-ready zones or published network reinforcement plans, offshore wind sites are pre-developed by the State, and curtailment rules are standardised and transparent. By treating deliverability as part of the investment product, this package reduces curtailment risk, lowers financing costs and prevents procurement from outrunning the grid.

Package C – System Flexibility as an Investable Asset Class
This package monetises flexibility through contracted availability revenues for storage and flexible capacity, complemented by ancillary-services markets with clear stacking rules. It also incorporates demand-side management and time-of-use tariffs as flexibility procurement tools. The objective is to make storage and flexibility financeable, reducing integration costs and stabilising renewable revenues as penetration rises.

Package D – Financing Maturity and Fiscal Guardrails
This package extends financing tenors and diversifies capital sources beyond domestic bank balance sheets through policy-bank lending, credit enhancement, green bonds and refinancing frameworks. At its core is a Ministry of Finance-led contingent-liability governance framework, including explicit budget envelopes, a central registry of commitments, scenario stress testing and disclosure in the medium-term fiscal framework. This ensures that support mechanisms remain credible without creating hidden liabilities.

Package E – Institutional Delivery and Execution Capability

This package reduces non-financial risks that drive up the cost of capital. It includes one-stop digital permitting with statutory timelines, benefit-sharing frameworks to manage social acceptance, targeted workforce development in grid, storage and offshore wind and applied R&D to strengthen domestic capability. By lowering the execution premium, this package underpins the effectiveness of all other packages.

Implementation: From Architecture to Delivery

Design alone is insufficient. The report therefore sets out an implementation operating system anchored in fiscal control, sequencing and accountability. Support instruments are treated as fiscal commitments, not sector policy; predictability is prioritised over generosity; instruments are sequenced by technology financeability and market readiness; and market foundations are strengthened to prevent support from degenerating into de facto fixed tariffs.

Implementation requires governance that prevents fragmentation and prevents implicit liabilities. The central delivery axis is the MOF–MOIT relationship: MOF anchors fiscal envelopes, contingent liability governance and tariff pass-through analysis, while MOIT anchors market design, technical regulation and alignment with PDP VIII planning.

A standing coordination mechanism should jointly approve bidding calendars, eligibility gates, fiscal envelopes and settlement rules. The key design choice is to make adjustment rule-based, not discretionary: triggers for recalibration should be tied to observable outcomes such as auction clearance rates, delivery rates, curtailment levels, settlement performance and exposure against caps.

EVN and NSMO remain the operational settlement hub, but payment credibility depends on ring-fenced accounts, transparent funding rules and strict arrears protocols subject to audit. Clear rules on payment priority, remedial actions if shortfalls occur and publication of settlement flows are essential for bankability and fiscal oversight. Domestic finance mobilisation also depends on SBV guidance: lending norms on DSCR assumptions, tenor expectations, currency risk treatment and exposure limits materially affect WACC and therefore support needs. Coordination between MOF and SBV ensures that fiscal guardrails and financial-sector incentives operate as one system.

Local authorities remain decisive for land, licensing and readiness. Bidding scheduling and project award should be linked to enforceable readiness criteria monitored at provincial level to avoid awarding capacity that cannot be delivered.

Conclusion

One of the key energy transition challenges for Viet Nam is how to govern it as a long-term investment and fiscal-risk management programme. The transition is welfare-enhancing, compatible with growth and necessary for energy security, but it will not deliver at scale unless planning targets are matched by bankable contracts, grid-deliverable procurement, investable flexibility and explicit fiscal governance.

By implementing the five integrated policy packages proposed in this report, Viet Nam can restore investor momentum, reduce system costs, mobilise long-duration capital and avoid the accumulation of hidden liabilities. The result is a market-oriented, fiscally anchored and system-aware energy transition that supports not only climate objectives, but also long-term economic resilience, financial stability and national development.

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1. Introduction and Project Background

Vietnam's energy sector is entering a decisive phase. Rapid economic expansion, industrial upgrading and rising living standards are driving sustained growth in electricity demand, while climate commitments and global market pressures are accelerating the shift toward cleaner energy systems. In this context, the ability to mobilize and channel investment into sustainable energy infrastructure has become a defining factor for energy security, economic resilience and long-term competitiveness.

1.1. Current Renewable Energy Landscape and Challenges in Capital Mobilization and Implementation

The challenge facing Vietnam is not simply one of expanding generation capacity. It lies in **transforming the structure of the power system while maintaining reliability, affordability and fiscal discipline.** Recent system operations illustrate the scale of this task. According to EVN, electricity production and imports exceeded 241 billion kWh in the first nine months of 2025, with peak system demand reaching more than 54,000 MW. Demand growth of this magnitude places continuous pressure on generation assets, transmission networks and system operators, underscoring the need for timely and well-coordinated investment decisions.

At the same time**, the current generation mix highlights the transitional nature of Vietnam's power system.** Thermal power, particularly coal, continues to account for nearly half of total electricity output, while hydropower remains a critical balancing resource. Renewable energy has grown rapidly in installed capacity, yet its contribution to total generation remains constrained by system flexibility, grid congestion and dispatch limitations. Transmission bottlenecks between regions, particularly from renewable-rich central and southern areas to major load centers, further expose the mismatch between investment in generation and investment in networks. These structural imbalances signal that the energy transition is no longer a question of ambition but of implementation capacity and investment coordination.

National energy policy has responded by setting out a long-term vision for a cleaner and more diversified power system. The adjusted Power Development Plan VIII establishes clear targets for renewable energy expansion, grid development and system diversification through 2030 and beyond. More recently, the National Assembly adopted a resolution on mechanisms and policies for national energy development for the 2026–2030 period, creating a legal framework intended to accelerate project preparation, streamline planning updates and address long-standing institutional bottlenecks. Together, these instruments reflect a strong political commitment to move from planning to delivery.

However, experience over recent years has shown that planning targets and legal reforms alone are insufficient to unlock the scale of capital required. Achieving the objectives of Power Development Plan VIII will demand investment levels far beyond the capacity of public budgets. Private and foreign capital must therefore play a central role. Yet investor participation continues to be shaped by concerns over revenue certainty, risk allocation, contract bankability and regulatory predictability. Gaps in pricing mechanisms, limited availability of risk-mitigation tools and underdeveloped domestic capital markets have constrained the flow of long-term finance into the power sector, particularly for projects that provide system flexibility rather than immediate energy output.

These challenges are becoming more pronounced as the energy transition deepens. Higher shares of variable renewable energy increase the value of grid infrastructure, energy storage and flexible generation, all of which typically require larger upfront capital investment and more complex financing

structures. Without a coherent policy framework to guide public support, allocate risks and crowd in private finance, there is a growing risk that investment will remain fragmented, delayed or misaligned with system needs.

1.2. Objective and Scope of the Report

Recognizing this, Vietnam's leadership has consistently emphasized investment mobilization as a strategic priority for energy development. Resolution No. 55-NQ/TW dated February 11, 2020 of the Politburo sets out the strategic orientations for national energy development to 2030 with a vision to 2045 and identifies sustainable energy infrastructure as a foundation for long-term economic development. This resolution calls for diversified financing sources and more effective use of public resources. Government Resolution No. 140/NQ-CP translates these strategic directions into concrete tasks, including a mandate for the Ministry of Planning and Investment (now the Ministry of Finance) to design policies that prioritize investment in sustainable energy infrastructure, strengthen regional connectivity and support domestic supply chains linked to the energy sector.

It is within this policy and institutional context that the initiative ***"Dedicated Policy Framework for Investment in and Development of Sustainable Energy Infrastructure"*** was undertaken. A collaboration between the Ministry of Finance and ETP UNOPS, this initiative was designed to move beyond sector-specific incentives and address the broader question of how Vietnam can systematically mobilize capital for the energy transition. Over a 15-month period, a series of analytical studies examined international experience, assessed Vietnam's current investment environment and explored policy instruments capable of aligning power market design with public finance objectives.

The specific outputs under the scope of this initiative are:

i. **Report**: International Experiences on Providing and Mobilizing Resources for Investment in Sustainable Energy Infrastructure;
ii. **Report**: Assessment of Current State of Vietnam's Energy Infrastructure Investment Landscape
iii. **Report**: A Study on a Dedicated Policy Framework for Investment in and Development of Sustainable Energy Infrastructure
iv. **Report**: Aligning Power Markets and Public Finance: A Portfolio Approach to Renewable Energy Support in Vietnam (2025 – 2035)
v. **Report**: Impact Assessment of Investment Incentive Mechanisms for Sustainable Energy Infrastructure in Vietnam

In addition, two public consultation workshops, engaging over 300 participants from government agencies, the private sector, academia, research institutions, financial organisations, social and professional organizations, and international development partners, were organized to gather practical insights into investment barriers and implementation risks.

This final report, ***Recommendations and Actionable Roadmap for the Effective Implementation of the Dedicated Policy Framework,*** consolidates the key findings and insights from six in-depth studies and offers updated analysis in light of the rapidly evolving global and domestic investment landscape. It integrates international best practices, a comprehensive assessment of Vietnam's current investment environment, the design of a dedicated policy framework, and flexible pricing mechanisms for the post-FIT era. By drawing on both evidence and stakeholder input, the report sets out a coherent and actionable roadmap to mobilize public and private capital, strengthen regulatory alignment, and advance the development of a resilient, low-carbon power system in line with Vietnam's energy transition objectives.

The outline of the report is as follows:

Chapter 1 – Introduction and Project Background

This chapter places Viet Nam's energy transition within the national development and fiscal-policy context established by Resolution No. 55-NQ/TW and Government Resolution No. 140/NQ-CP. It explains why mobilising private capital for sustainable energy infrastructure has become a central policy challenge following the withdrawal of Feed-in Tariffs and the ambitious capacity targets under the revised Power Development Plan VIII. The chapter introduces the Dedicated Policy Framework initiative, clarifies the objectives and scope of the report, and outlines how the analysis progresses from diagnosis to policy architecture and implementation.

Chapter 2 – Viet Nam's Current State of Affairs in Sustainable Energy Infrastructure

This chapter diagnoses the current investment and system conditions shaping capital mobilisation in Viet Nam's power sector. It reviews installed capacity, ownership structures, market design, financing patterns and investor behaviour, highlighting how the transition from FITs to administered price ceilings has exposed a binding bankability constraint driven by weak revenue predictability. The chapter also examines grid readiness, system flexibility, regulatory processes and institutional bottlenecks, concluding that the investment slowdown is structural rather than cyclical.

Chapter 3 – Global Investment Trends in Sustainable Energy: Bankability, Risk Allocation, and Policy Implications

This chapter draws on international experience to show how capital is mobilised in high-renewables power systems and how risk is allocated between investors, utilities and the State. It examines global trends in renewable generation, storage, grids and corporate offtake, and reviews the core de-risking instruments used internationally, including sliding Feed-in Premiums, Contracts for Difference, storage revenue models and grid-deliverability mechanisms. The chapter highlights grid investment as a system anchor and extracts direct implications for Viet Nam's policy and institutional design.

Chapter 4 – Mobilising Capital for Sustainable Energy Infrastructure: From Planning Targets to Bankable Delivery Systems

This chapter develops the report's central analytical argument: that Viet Nam's investment bottleneck stems from the absence of a coherent policy architecture rather than from resource scarcity or lack of investor appetite. Using evidence from cost–benefit analysis and vector autoregression modelling, it demonstrates that PDP VIII–aligned pathways are welfare-dominant but vulnerable during the 2025–2030 transition period unless bankability and deliverability are addressed. The chapter proposes five integrated policy packages covering revenue stabilisation, deliverability-based procurement, system flexibility, financing maturity with fiscal guardrails, and institutional delivery capacity.

Chapter 5 – Translating Policy Architecture into Delivery: Fiscal Control, Sequencing, and Execution at Scale

This chapter focuses on implementation, showing how the proposed policy architecture can be operationalised without creating uncontrolled fiscal exposure. It sets out strategic implementation principles, defines concrete workstreams, and presents a readiness-gated sequencing roadmap that aligns procurement, grid investment, financing instruments and market reform. The chapter emphasises the central role of the MOF–MOIT axis, coordinated settlement and payment mechanisms, and transparent monitoring systems in turning policy design into credible, investable delivery.

Chapter 6 – Conclusion

The final chapter synthesises the report's findings and reinforces the core conclusion that Viet Nam's energy transition is economically justified and fiscally defensible, but only if implemented through a

disciplined, system-aware and market-oriented policy framework. It underscores that moving beyond the FIT era is an architecture challenge rather than a tariff choice, and that aligning revenue frameworks, grid readiness, financing maturity and institutional governance is essential to mobilise long-term private capital while safeguarding energy security, fiscal stability and long-term growth.

2. Vietnam's Current State of Affairs in Sustainable Energy Infrastructure

Vietnam's sustainable energy transition has entered a qualitatively and structurally different phase. After a period of rapid renewable capacity expansion driven by feed-in tariffs, administratively determined pricing and strong domestic balance-sheet investment, the sector is now shifting toward more market-oriented mechanisms, capital-intensive technologies and system-critical infrastructure. New investment priorities increasingly include offshore wind at utility scale, grid-scale battery storage, pumped storage hydropower, and major 500 kV and HVDC transmission corridors. These developments are fundamentally different in risk profile, financing structure and implementation complexity from earlier generations of renewable projects. As a result, capital requirements are rising sharply while investor tolerance for regulatory and revenue uncertainty is declining.

In this new phase, the binding constraints are no longer resource availability, project-level developer interest or headline policy ambition. They lie in the system's ability to translate planning targets into a bankable, financeable and executable project pipeline under tighter fiscal space, elevated global interest rates, more conservative lender risk appetites and increasingly demanding system-integration requirements. The transition challenge has therefore shifted from capacity deployment to investment coordination, risk management and institutional credibility across the full project lifecycle.

This chapter provides a quantitative and institutional snapshot of Vietnam's energy infrastructure landscape, focusing on installed capacity, ownership and market structure, and dispatch realities, investment behavior and capital mobilization trends, financing structure and bankability, infrastructure readiness and integration constraints and the regulatory and institutional state of play.

2.1. System Snapshot: Installed Capacity, Onwership, and Market Structure that Shapes Risks and Returns

Vietnam's power system has expanded rapidly over the past decade, and by end-2024 total installed capacity reached approximately 82,400 MW, an increase of about 1,500 MW from 2023. Wind and solar capacity totaled 21,447 MW, accounting for roughly 26 percent of installed capacity, while hydropower continued to play a stabilizing role in system operations through seasonal balancing and peak support**. This expansion places Vietnam among the largest power systems in Southeast Asia, implying that marginal changes in system design or policy have very large absolute investment and fiscal implications**. Coal-fired generation remains significant due to legacy investments and its continued role in ensuring dispatch reliability during peak demand periods, dry hydrological years and periods of variable renewable output. Total electricity produced and imported in 2024 reached about 308.73 billion kWh, reflecting the return of strong demand growth alongside macroeconomic recovery and industrial rebound.

Operating data from the first half of 2025 confirms that Vietnam is now planning and investing under high-utilization, peak-constrained and system-stressed conditions. Total system electricity output and imports reached 155.79 billion kWh, with the maximum daily output at 1.04 billion kWh and peak system capacity at 51,672 MW. These indicators are critical for infrastructure and investment planning because they demonstrate that the transition challenge is no longer defined by annual energy volumes alone. Instead, it is increasingly shaped by peak adequacy, system flexibility, reserve margins, ramping capability and inter-regional transfer capacity. These parameters directly affect curtailment risk, dispatch priority, storage revenue streams and the stability of cash flows over long financing horizons, particularly for capital-intensive projects with limited merchant exposure tolerance.

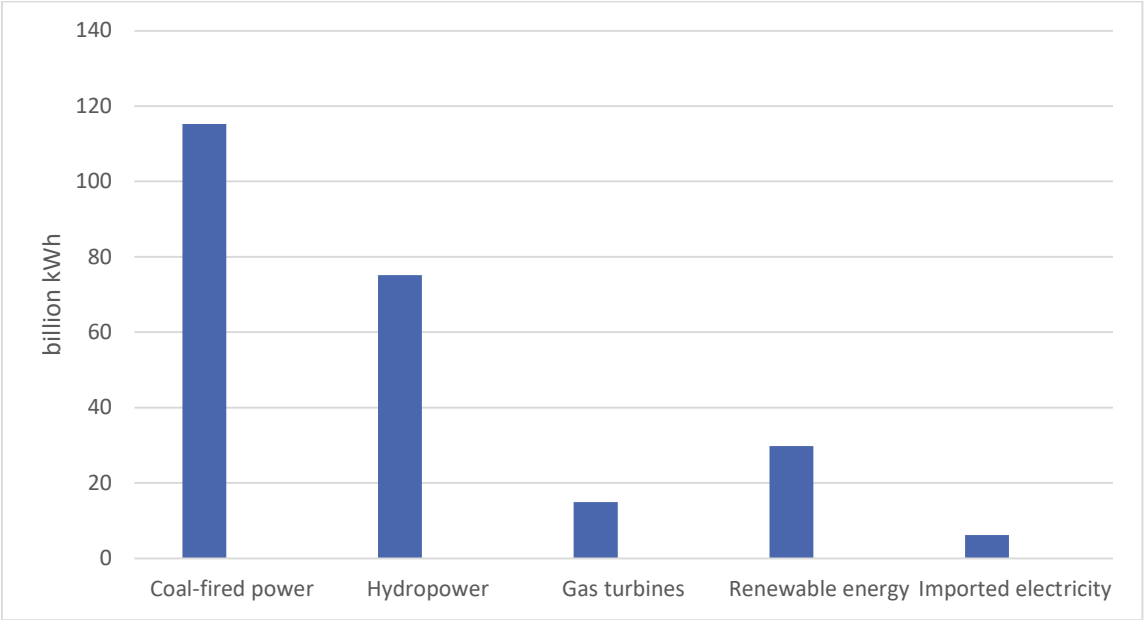

Figure 1. Electricity generation by source (January – September 2025)

Dispatch patterns in early 2025 further illustrate this structural reality. Coal-fired power accounted for 84.6 billion kWh, or 54.3 percent of mobilized electricity output, hydropower contributed 36.5 billion kWh (23.4 percent), gas turbines 10.27 billion kWh (6.6 percent), renewables 20.98 billion kWh (13.5 percent), and electricity imports 3.24 billion kWh (2.1 percent). Within renewables, solar generated 13.63 billion kWh and wind 6.71 billion kWh. In absolute terms, this means that thermal and hydropower sources continue to underpin system reliability, while renewable generation remains highly exposed to dispatch constraints, grid congestion and variability-related risks. These figures highlight that Vietnam's energy transition is not yet a substitution of dispatchable capacity, but rather an overlay of variable resources onto a system still anchored by conventional generation. **Without bankable mechanisms for flexibility, storage and grid reinforcement, incremental renewable capacity does not automatically translate into proportional energy output or stable cash flows.**

Ownership patterns further reinforce the system's centralized operational structure. EVN and its member units account for approximately 38 percent of installed capacity, yet still produce around 40.3 percent of total electricity output, reflecting their dominant role in dispatch, transmission ownership and distribution operations. This concentration gives EVN a system-stabilizing role but also places it at the center of risk transmission across the value chain. Private and foreign investors now hold a substantial share of generation assets, particularly in renewable energy (Figure 2), but they remain structurally dependent on a system in which grid access, dispatch decisions, settlement processes, and payment discipline are largely centralized. **The resulting asymmetry between asset ownership and operational control is a defining feature of risk allocation in Vietnam's power sector and a critical consideration for lenders assessing counterparty and regulatory risk.** Operational resilience considerations also remain material: EVN reports maintaining stable supply for major national events and undertaking urgent response and restoration actions after Typhoon No. 5 (Kajiki) affected parts of the Central region. This reinforces why **reliability, redundancy and rapid restoration capability are still core investment priorities alongside decarbonization.**

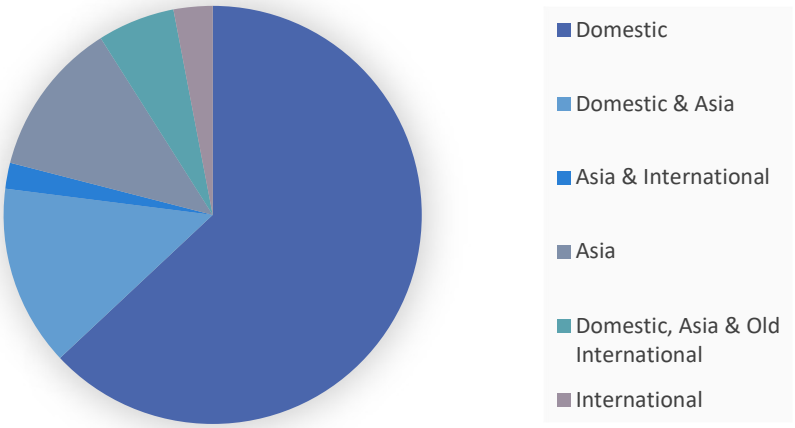

Figure 2. Composition of solar and wind power project developers in 2023

Source: Author's adaptation based on Mekong Infrastructure Tracker. Only projects under operation are included in the analysis.

Despite gradual progress in market reform, Vietnam's electricity system continues to operate effectively under a single-buyer model. While the competitive generation market has expanded significantly, from 31 participating plants (9,212 MW) in 2012 to more than 140 plants by 2025, the wholesale electricity market remains shallow, with limited liquidity and weak price discovery, and the retail electricity market has not yet been implemented. As a result, transparent price formation remains constrained, and long-term revenue signals for investors are still shaped predominantly by administrative decisions, negotiated contracts and regulatory ceilings rather than market-clearing outcomes. This limits investors' ability to price risk, hedge exposure and rely on market-based cash flow stabilization mechanisms.

Recent reforms have begun to introduce limited demand-side participation, most notably through Decree No. 57/2025/NĐ-CP on Direct Power Purchase Agreements (DPPA). This mechanism allows eligible large electricity consumers to purchase power directly from renewable generators, marking an important step toward diversifying offtake structures and reducing exclusive reliance on the single-buyer model. DPPA is particularly relevant for export-oriented industries seeking access to traceable green electricity and for projects seeking partial insulation from administrative pricing risks. However, eligibility is currently restricted to customers with average consumption exceeding 200,000 kWh per month, which significantly constrains near-term market impact. Without broader retail reform, clearer system-balancing cost allocation and scalable settlement mechanisms, DPPA alone cannot yet anchor system-wide investment signals or materially de-risk most utility-scale projects.

Taken together, Vietnam's current system snapshot reveals a power sector that is physically large, operationally stretched and institutionally centralized. Installed capacity growth and renewable shares are no longer the primary constraints. Instead, market design, dispatch rules, pricing mechanisms, grid readiness and the pace and credibility of reform increasingly determine risk allocation, expected returns and bankability. Understanding this structural context is essential for explaining why investment momentum has slowed and why mobilizing capital at scale now depends less on headline policy ambition and more on coherent, system-aligned and financially credible investment frameworks that can support long-term private participation. **In practical terms, "credible" increasingly means that the system can demonstrate repeatable delivery of grid capacity and bankable rules for dispatch and settlement under peak stress conditions.**

2.2. Revealed Investment Behavior: From FIT Acceleration to a Bankability-Driven Slowdown

Investment outcomes over the past five years point to a widening gap between policy ambition and execution capacity. Between 2021 and mid-2024, average annual investment in power generation and transmission remained below USD 9 billion, substantially lower than both FIT-era peaks and the levels implied by PDP VIII targets and subsequent adjustments. This slowdown is not explained by demand weakness or limited resource potential. Vietnam's technical resource base remains large, with estimated renewable potential on the order of hundreds of gigawatts across wind and solar.

Instead, observed investment behavior indicates heightened sensitivity to bankability conditions. The **transition away from FIT shifted the investment decision from "build-to-tariff" to "build-to-contract," where pricing mechanisms, contract enforceability, curtailment treatment, foreign exchange risk and grid-connection certainty become decisive**. Under those conditions, investor and lender appetite becomes discontinuous: projects do not scale gradually. They either reach financial close quickly under clear rules or stall across the pipeline under uncertainty.

FDI patterns illustrate this dynamic. During periods of clear pricing incentives and predictable revenues, Vietnam ranked among the leading developing economies for renewable-energy FDI. Following the expiration of FITs and delays in implementing large-scale competitive bidding, renewable-energy FDI declined sharply. By 2023, the sector attracted only about USD 2.4 billion, around 6–7 percent of total FDI inflows, despite much larger medium-term investment needs. This decline signals not a loss of strategic interest but a repricing of risk, especially when international capital is increasingly selective and demands standardized, financeable terms.

2.3. Financing Structure and Bankability Constraints: The Real Bottleneck is Revenue Predictability

Renewable projects in Vietnam have been financed predominantly through domestic commercial bank lending, with debt typically accounting for 70–80 percent of total project capital. Several domestic banks have supported renewables actively, yet loan tenors often range from 7 to 12 years, far shorter than the economic life of wind, solar, storage and offshore wind. This maturity mismatch raises refinancing risk, increases required debt service coverage and elevates the effective cost of capital. The result is a financing structure that can scale quickly under low-risk conditions but becomes fragile when revenue certainty weakens.

Green credit has expanded but remains limited relative to system needs. By mid-2022, outstanding green credit reached approximately VND 474 trillion, just over 4 percent of total banking-system credit, with about half allocated to renewable and clean energy. Capital-market instruments such as green bonds, project bonds, infrastructure funds and long-duration institutional capital remain underdeveloped and have not yet played a systemic role in financing energy assets with 20–30 year lifetimes.

From a lender perspective, the principal constraint is not headline return but predictable cash flow. The prolonged negotiation of transitional PPAs illustrates the point. As of end-April 2025, only five renewable projects had signed official priced PPAs with EVN despite having submitted dossiers and negotiated for nearly two years. This outcome directly affects lender confidence, slows financial close and increases the premium required for new commitments. In practical terms, it also blocks secondary market activity, refinancing and portfolio recycling, which are essential to scaling investment without overloading bank balance sheets.

The contrast with transmission financing is instructive. Grid investment in Vietnam is predominantly financed through corporate lending to the state-owned transmission utility, EVNNPT, supported by long-term credit agreements with policy-oriented financial institutions. Recent arrangements between EVNNPT and the Vietnam Development Bank (VDB), covering approximately VND 105 trillion for nearly 80 transmission projects, demonstrate that long-tenor capital can be mobilised at scale when revenues are regulated, predictable and institutionally anchored. In this model, lenders assess credit risk at the entity level, relying on EVNNPT's monopoly position, tariff-backed cash flows, state ownership and integration into national power planning, rather than on project-specific merchant revenues.

This comparison highlights that Vietnam's financing constraint is not a lack of domestic liquidity, but an asymmetry in revenue bankability across asset classes. Transmission assets, despite their capital intensity, are financeable because cost recovery is regulated and settlement risk is low. By contrast, renewable generation projects face uncertain dispatch, curtailment exposure, transitional pricing arrangements and protracted contracting timelines, all of which directly impair debt sizing and tenor.

This is the phase where policy design must be lender-oriented. Investors can accept lower returns if risks are clearly allocated and enforceable. Lenders will not accept ambiguity in dispatch treatment, settlement discipline, change-in-law protection, curtailment compensation principles or termination payments. Unless these issues are standardized at scale, even high-quality projects will fail to mobilize the long-duration capital required for offshore wind, storage, major transmission corridors and flexible capacity.

Taken together, current financing patterns reveal that revenue predictability, not technology or capital availability, is the binding constraint. Where revenues are regulated and credible, capital flows. Where revenues are negotiated, transitional or exposed to discretionary adjustment, financing stalls. Closing this gap requires aligning generation contracting frameworks more closely with the institutional features that already underpin successful grid financing.

2.4. Infrastructure Readiness and System Integration Challenges: Grid, Flexibility, and the Generation-Infrastructure Mismatch

The rapid deployment of renewables during the FIT period was not matched by commensurate investment in transmission and flexibility. The result is a persistent generation–infrastructure mismatch, especially in renewable-rich regions where generation concentrated faster than the grid could expand. Curtailment rates of 30–40 percent during peak periods were recorded in certain locations, reflecting congestion, limited transfer capacity and operational constraints.

Recent grid build-out is material, but the structural challenge remains. In the first half of 2025, transmitted electricity reached about 124.7 billion kWh. EVN reported maximum transfer levels across key interfaces, including 3,959 MW for the North–Central interface and 5,625 MW for the Central–South interface, indicating that regional balancing constraints are binding and that the system continues to rely on large-scale inter-regional transfers under stress. EVN also reported substantial construction activity, with 80 grid projects started and 124 energized across 110–500 kV, including major lines and substations. These achievements show execution capacity is improving, yet the scale of future needs under the adjusted PDP targets is larger and more complex, including higher-voltage corridors, offshore transmission arrangements and grid reinforcement for storage integration. EVN's August 2025 update further quantifies transmission scale and delivery momentum: transmitted electricity in August 2025 was estimated at 23.4 billion kWh and cumulative transmission over the first eight months of 2025 reached 171.44 billion kWh. Over the same January – August period, EVN and its subsidiaries reportedly started 103 grid projects and energized 149 projects across 110–500 kV. This

combination of high-throughput operation and accelerated grid commissioning is positive, but it also underscores the financing challenge: the next stage requires higher-complexity assets (major 500 kV corridors, offshore integration and flexibility-enabling systems) that depend on long-tenor capital and standardized risk allocation.

Flexibility remains the underdeveloped pillar. As of 2024, Vietnam had no utility-scale battery energy storage systems in commercial operation, while pumped-storage hydropower faces long timelines, high capital costs and unresolved pricing and revenue frameworks. The 1,200 MW Bac Ai pumped-storage project initiated in 2020 is not expected to operate until around 2029, highlighting a structural lag between planning and delivery. Without accelerated deployment of storage, flexible generation and demand-side response, additional renewable capacity will increasingly raise curtailment and system-cost inefficiencies rather than deliver reliable decarbonization benefits.

Digital infrastructure is also part of system readiness. EVN has been building foundational data platforms, including 26 shared software systems and 12 specialized data warehouses (customer, metering, investment, contractors, equipment pricing and others). These capabilities matter because they enable better load forecasting, asset management, outage response, loss reduction and more transparent investment monitoring. They also support demand-side programs and the operational backbone required for DPPA settlement, market dispatch reforms and scalable investor selection.

2.5. Regulatory and Institutional State of Play

Recent legal and regulatory reforms have improved clarity but remain in an early stage of implementation. The 2024 Electricity Law introduced, for the first time, clear legal definitions of renewable and new-energy electricity, consolidated policies into a dedicated chapter, and established principles for long-term contracting, minimum output commitments, and investor obligations. Decree 58/2025/NĐ-CP further operationalized these provisions, signaling a shift toward a more rules-based framework.

Yet, Vietnam's sustainable energy infrastructure development is governed not only by sectoral energy legislation but by a dense web of cross-cutting regulations that collectively determine project bankability, fiscal exposure, risk allocation, and procurement outcomes (Table 1). Beyond the Electricity Law, renewable energy investment is significantly shaped by the Investment Law, Bidding Law, Land Law, Planning Law, and a range of environmental, construction, and fire-safety regulations. Together, these instruments define the legal and fiscal environment within which renewable energy support mechanisms must operate.

Table 1. Overview of key mechanisms to encourage investment in renewable energy infrastructure

Mechanism	Key Features	Benefits	Challenges	Investment Implications
Operating License	- Renewable energy as incentive industry (Investment Law No. 61/2020/QH14) - Transmission access for all sectors (Law No. 03/2022/QH15)	- Streamlines business registration - Encourages private investment in transmission	- Limited licensing incentives (only rooftop solar <1 MW exempt)	- Reduces administrative barriers but lacks broader licensing support

Bidding Mechanism	- Bidding for investor selection (Circular 27/2024/TT-BCT) - Transparent framework (Decree 115/2024/ND-CP)	- Enhances transparency and competition - Strengthens domestic supply chains	- Unclear criteria for offshore wind - Grid constraints (25% curtailment in Ninh Thuan, 2023)	- Attracts investors but regulatory gaps and grid issues reduce bankability
Import Tax	- Exemptions on fixed assets and raw materials (Law No. 107/2016/QH13) - 5-year exemption for special projects (Clause 13, Article 16)	- Lowers equipment costs - Benefits small-scale projects (e.g., rooftop solar <50 kW)	- Inconsistent tax classification (e.g., wind turbines excluded)	- Reduces upfront costs but inconsistencies deter smaller investors
Corporate Income Tax	- 10% rate for 15 years, 4-year exemption, 50% reduction for 9 years (Decree No. 218/2013/ND-CP)	- Enhances financial viability - Flexibility to choose most beneficial incentive	- High capital thresholds (e.g., VND 30 trillion) exclude smaller investors	- Competitive with regional peers but limited inclusivity for SMEs
Credit Incentives	- State investment credit, exemptions on sea area/land fees (Electricity Law 2024) - No guarantees for state-owned enterprises	- Improves access to capital - Supports offshore wind projects	- Stringent banking regulations - EVN's financial constraints limit capital availability	- Enhances bankability for large projects but access remains constrained
Land Regulations	- 288.51 thousand hectares allocated by 2030 (Resolution 39/NQ-QH, 2021) - Up to 50% reduction in non-agricultural land use tax (Law No. 48/2010/QH12)	- Supports project scalability - Reduces land acquisition costs	- Bureaucratic delays - Regulatory overlaps with Forestry and Housing Laws	- Facilitates large-scale projects but delays hinder timely execution
Human Resource Training	- No specific incentives for renewable energy	- N/A	- High demand for skilled engineers unmet - Limits sector growth	- Lack of training incentives constrains workforce development, impacting project scaling

2.5.1. Investment Policy Approval under the 2020 Investment Law

The 2020 Investment Law constitutes a critical entry point for renewable energy and grid infrastructure projects. It regulates projects eligible for investment incentives and special investment support,

particularly those with capital exceeding VND 30,000 billion and disbursement of at least VND 10,000 billion within three years. These thresholds are particularly relevant for offshore wind, large-scale storage, and transmission projects.

Importantly, the Investment Law introduces **investment-policy approval as a mandatory gate**, regardless of whether a project is publicly or privately financed. In practice, this approval determines whether a project can proceed to land allocation, procurement, and financing stages. Misalignment or ambiguity at this stage has historically generated significant delays and financing uncertainty.

Experience from EVN and its subsidiaries illustrates that overlapping interpretations between the Investment Law, the Law on Management and Use of State Capital in Enterprises (Law No. 69/2014/QH13), and procurement regulations have created a procedural "maze". In some provinces, grid projects were treated as outside the Investment Law, while others required full investor selection or land auctions even for public-interest transmission lines.

Recent MOF guidance has clarified two critical principles:

- Investment-policy approval under the Investment Law and project approval under Law 69/2014/QH13 are distinct procedures, both of which must be implemented when applicable.
- Transmission and distribution projects that are not subject to investor-selection bidding under Decree No. 23/2024/NĐ-CP must still obtain investment-policy approval if they rely on State land allocation or leasing, pursuant to Point d, Clause 4, Article 29 of the Investment Law.

These clarifications directly affect project timelines, financing readiness, and the sequencing of approvals.

2.5.2. Procurement and Investor Selection under the 2023 Bidding Law

Investor and contractor selection for renewable energy projects is governed by the **2023 Bidding Law**, which retains core procurement principles while introducing new provisions on bid cancellation, designated bidding, and special cases. Law No. 90/2025/QH15 further refines these instruments by allowing direct appointment of investors in narrowly defined circumstances, subject to strict justification and oversight.

There have been important improvements linked to the bidding regulations. Particularly, Decree No. 225/2025/NĐ-CP amended Decree No. 115/2024/NĐ-CP to eliminate the previously mandatory 1/2,000 zoning or detailed construction plan requirement for renewable energy projects, a condition that had delayed investor selection for many wind and solar sites.

MOF-supervised procurement instruments are complemented by sector-specific guidance from the Ministry of Industry and Trade. Under Decree No. 56/2025/NĐ-CP, renewable energy projects included in national and provincial power plans that attract interest from two or more investors must be procured through competitive bidding, aligning energy investment more closely with market principles and fiscal oversight. MOIT's Circular No. 27/2024/TT-BCT and its amendment under Circular No. 32/2025/TT-BCT establish bidding-document templates and evaluation standards for power-sector investment projects. These circulars operationalize how **tariff ceilings, financial capacity requirements, and investor track records** are assessed in practice. For projects subject to MOIT-issued price brackets, tariff proposals must not exceed the regulated ceiling, directly linking procurement outcomes to fiscal affordability and electricity pricing policy.

At the operational level, the National E-Bidding System already covers 100 percent of contractor selection and is progressively extending to investor selection. This digitalization enhances

transparency, reduces transaction costs, and strengthens ex-post supervision of renewable energy auctions. EVN and its subsidiaries are being systematically trained on the new bidding regulations and e-procurement procedures.

2.5.3. Land and Planning Laws as Enablers of Investment Execution

The 2024 Land Law addresses a long-standing implementation bottleneck by allowing energy projects to be added to land-use plans on a rolling basis after investment-policy approval. This reform breaks the previous circular dependency in which projects could not obtain approval without being in land-use plans, but could not be included in plans without detailed project information.

Similarly, the 2017 Planning Law links energy planning directly to national, regional, and provincial planning hierarchies. For MOF, this linkage is critical: only projects consistent with approved plans can be integrated into the Medium-Term Public Investment Plan, the Medium-Term Fiscal Framework, and sovereign-guarantee ceilings. This ensures that renewable energy investment pipelines remain aligned with fiscal constraints and long-term development priorities.

2.5.4. Regulatory Constraints That Still Bind in Practice

Despite substantial legal progress since 2024–2025, the current regulatory environment still produces "execution risk" that is large enough to stall projects even when they are technically feasible and included in plans. **The key constraint is not the absence of laws but the absence of *standardized, financeable implementation pathways* that align pricing, procurement, contracting, grid access, and fiscal risk control.**

- First, the **transition from FIT to competitive procurement remains incomplete in operational terms.** While bidding principles, investor-selection rules, and tariff ceilings have been clarified in several instruments, large-scale renewable auctions have not yet been implemented at pace and at volume. This leaves a gap between planning targets and a credible route to financial close, particularly for capital-intensive technologies such as offshore wind, storage, and major grid corridors where investors require clear tender design, transparent evaluation rules, and predictable award-to-COD timelines.

- Second, **revenue bankability remains constrained by the limited availability of standardized PPAs with enforceable risk allocation**. For lenders, the unresolved or inconsistently applied treatment of curtailment risk, dispatch risk, change-in-law protection, termination compensation, foreign exchange convertibility, and dispute resolution directly translates into higher pricing, shorter tenor, and reduced leverage. Even where sector policy signals support renewables, the absence of a bankable contracting baseline forces each project into bespoke negotiation, increasing transaction costs and creating uneven outcomes across provinces and investor profiles.

- Third, **pricing and affordability constraints are increasingly intertwined with fiscal governance**. Tariff ceilings and "cost containment" objectives are necessary to protect consumers and the system, but if ceiling-setting is not transparently linked to technology cost trajectories, grid integration costs, and risk allocation, the result can be a price that is formally compliant yet not financeable once curtailment probability, refinancing risk, and PPA enforcement risk are included. This is where MOF's role becomes structurally important: not to set technical tariffs, but to ensure that procurement and contracting design do not create

hidden fiscal exposure through project distress, refinancing failures, or contingent liabilities that later require administrative intervention.

- Fourth, the **sequencing and coordination of approvals across investment policy, land, planning consistency, environmental and construction permits, and grid connection commitments remain uneven across jurisdictions**. The 2024 Land Law reduces one bottleneck by easing land-use plan integration after investment-policy approval, but large energy and grid projects still face delays linked to site clearance, route approvals, and the coordination of multiple agencies and levels of government. For investors, this creates a timeline risk that is difficult to hedge and often cannot be priced into long-term fixed tariffs without increasing the required return.

- Finally, **market design remains only partially implemented, which weakens demand-side and price formation signals**. The DPPA framework is a meaningful step, but eligibility thresholds limit scale effects and settlement systems are still maturing. As long as the market remains dominated by a single-buyer structure without broad cost-reflective retail pricing and credible wholesale competition, project revenues remain structurally exposed to administrative adjustment and non-market risks, even when nominally supported by policy.

Taken together, these constraints explain why legal reforms, while necessary, have not yet translated into a scalable investment pipeline. The **binding issue is the "implementation layer": standardized auctions, standardized contracts, predictable permitting and grid connection, and a pricing framework that is simultaneously financeable for capital providers and fiscally disciplined for the State**.

2.6. Implications for Investment Mobilization

Vietnam's current sustainable energy infrastructure landscape points to a clear structural conclusion: the binding constraint is no longer renewable potential or strategic intent, but the institutional capacity to translate planning targets into a bankable and executable investment pipeline that can be delivered on schedule and integrated safely into the power system.

The investment scale implied by PDP VIII and its adjustment is fundamentally different from that of the FIT period. The next wave is dominated by technologies and assets with longer construction cycles, larger unit sizes, more complex interfaces with the grid and greater exposure to macro-financial conditions, including offshore wind, energy storage, flexible capacity and major 500 kV network reinforcement. These assets require long-tenor capital and stable contractual cash flows. Yet Vietnam's financing structure remains centered on relatively short-tenor domestic bank lending, while international capital has become increasingly selective and conditions its participation on standardized and enforceable risk allocation.

The capital requirement has therefore moved decisively into system-building territory rather than single-project deployment. Sector assessments associated with the adjusted planning pathway indicate investment needs on the order of roughly USD 118 billion for power generation through 2030 and around USD 18.1 billion for grid infrastructure over the same horizon. Mobilizing this volume depends less on piecemeal or fragmented policy adjustment and more on institutionalized bankability, including standardized auctions implemented at scale, standardized PPAs with bankable treatment of curtailment, termination and force majeure and revenue frameworks for storage, capacity and ancillary services that lenders can underwrite repeatedly.

In this environment, the limitation of piecemeal policy adjustment becomes structural rather than transitional. The market is not constrained by a single missing instrument, but by a chain of interdependent uncertainties related to procurement design, tariff ceilings, PPA enforceability, curtailment treatment, grid-connection certainty, approval sequencing and settlement discipline. Weakness in any one link can prevent financial close. The practical implication is that investment mobilization depends on building an end-to-end investment pathway that investors and lenders can underwrite repeatedly rather than negotiate on a project-by-project basis.

Investment mobilization should therefore be understood as an institutional engineering challenge, not solely an energy-planning exercise. The near-term priority is to standardize the “bankability package” at scale, comprising auction rules that can be applied repeatedly, PPAs with predictable risk allocation and credible remedies and grid-connection and curtailment rules that are transparent and financeable. In parallel, Vietnam needs financing mechanisms that better match asset duration, including instruments that crowd in long-tenor capital and enable capital recycling rather than relying predominantly on domestic bank balance sheets. Achieving this requires coordinated action across MOF, MOIT, EVN, NSMO, MAE and provincial authorities, with fiscal instruments, procurement governance and risk-sharing structures aligned with the capital intensity of the transition.

If these elements are put in place, Vietnam can reduce its cost of capital, accelerate project execution and scale renewable energy without repeating the curtailment and grid-mismatch dynamics of the FIT era. If not, the system risks remaining trapped in a high-ambition, low-execution equilibrium, where planning targets expand faster than financeable projects can reach construction and where delays and renegotiations raise costs for both investors and the State.

3. Global Investment Trends in Sustainable Energy: Bankability, Risk Allocation, and Policy Implications

Global energy investment trends in 2024–2025 reinforce the central diagnosis of Chapter 2. The constraint facing Vietnam is not technical potential or headline policy ambition, but the ability to translate planning targets into a bankable, grid-integrated, and executable investment pipeline under tighter financial conditions. Worldwide, capital continues to flow into clean energy, yet it is increasingly concentrated in jurisdictions that offer predictable revenue frameworks, standardized and enforceable contracts, credible settlement mechanisms, and demonstrable capacity to deliver grid and flexibility infrastructure on schedule.

According to international benchmarks, total global energy investment is projected to reach approximately USD 3.3 trillion in 2025, of which around USD 2.2 trillion will be directed toward clean energy technologies, more than double projected fossil-fuel investment (Figure 2). Solar investment alone is expected to reach roughly USD 450 billion, battery storage USD 66 billion, while annual investment in power grids remains constrained at about USD 400 billion, far below what is required to ensure system reliability in high-renewables systems (Figure 3).

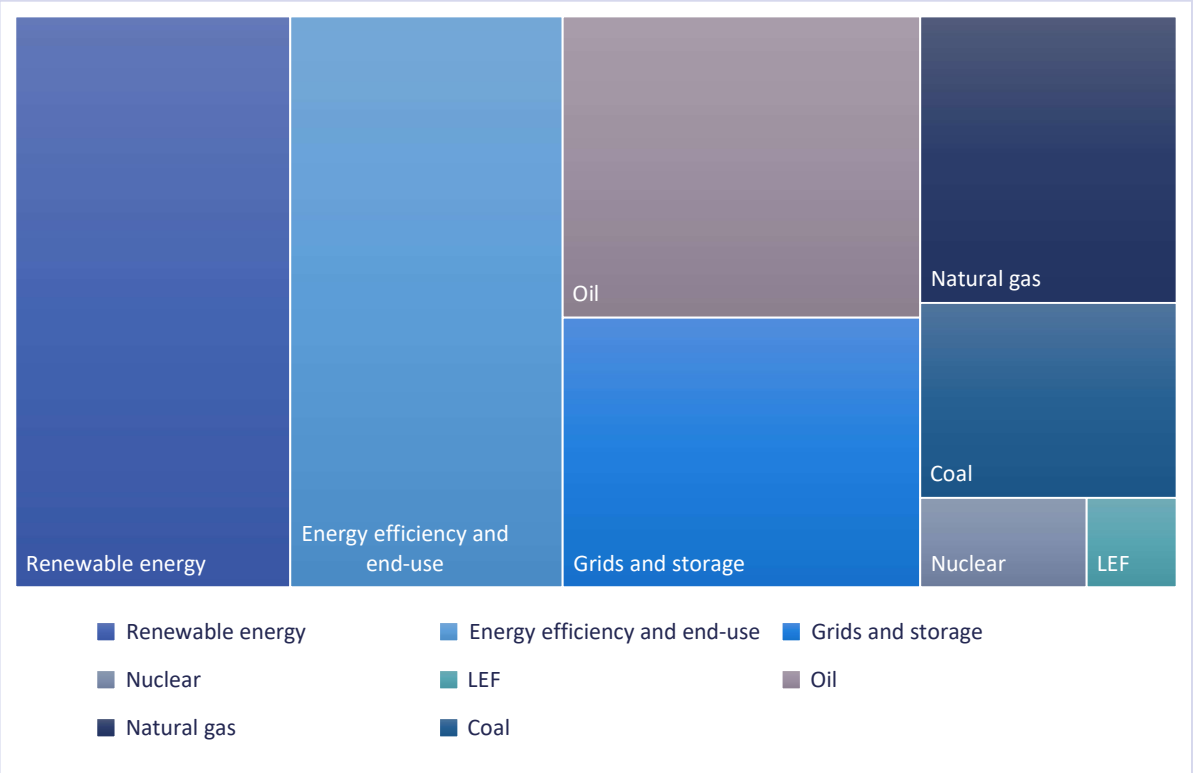

Figure 3. Breakdown of investment by major sub-sectors, 2025

Unit: billon USD (MER, 2024)

Source: Authors' adaptation based on IEA's World Energy Investment 2025

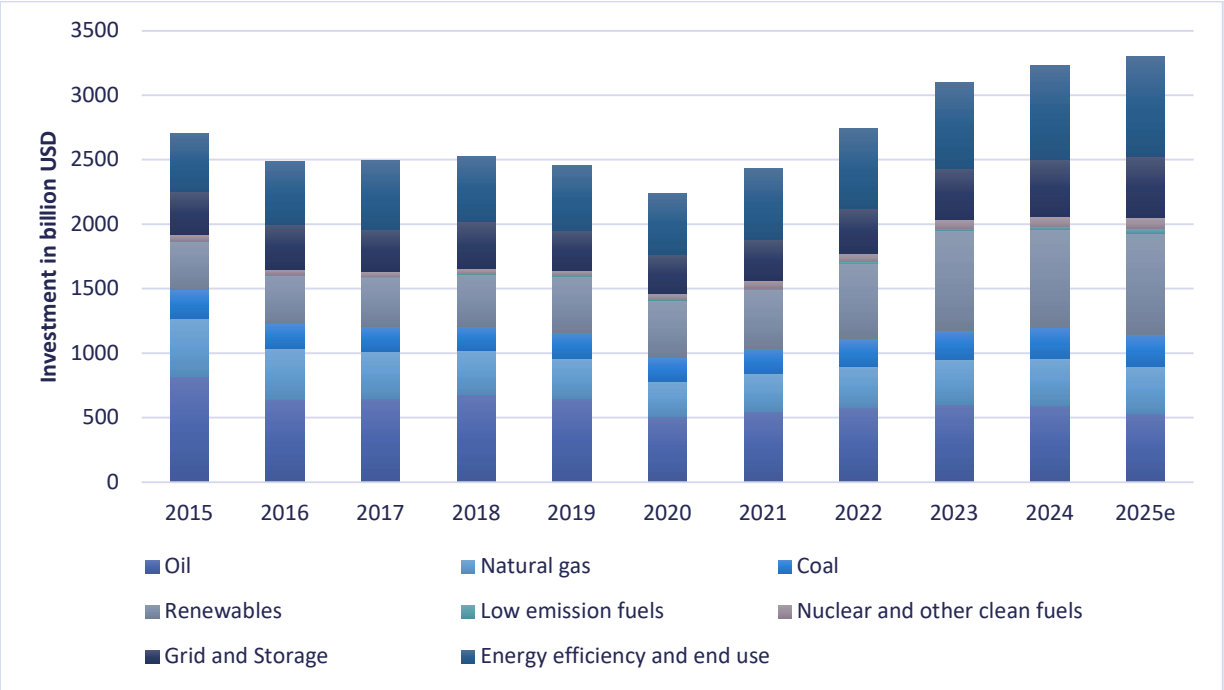

Figure 4. Global investment in energy, 2015 – 2025

Unit: billion USD (2024, market exchange rate)

Source: Authors' adaptation based on IEA's World Energy Investment 2025

This imbalance between generation investment and grid and flexibility investment mirrors Vietnam's own experience under PDP VIII: generation capacity can scale rapidly when policy signals are clear, but **grid deliverability, system flexibility, and revenue bankability increasingly determine whether projects reach financial close and commercial operation.** The relevance of global trends for Vietnam is therefore not that the world is investing "more," but that capital is now conditioned on bankability and system readiness rather than headline targets alone.

The relevance of global trends for Vietnam is therefore not simply that the world is investing "more," but that **capital is now deployed selectively, based on bankability, system readiness and financing structure rather than on planning targets alone**.

Capital is now flowing preferentially toward markets that offer:

- predictable and enforceable revenue frameworks,
- standardized procurement and contracting,
- credible counterparties and settlement systems,
- accelerated delivery of grid and flexibility infrastructure, and
- clear fiscal guardrails that limit contingent liabilities.

This is precisely the transition Vietnam must navigate as it moves from a FIT-driven buildout to a market-based investment regime.

3.1. How Global Capital Prices Risk in High-Renewables Systems

Across mature and fast-scaling energy markets, investors and lenders are converging on four structural requirements that directly align with the constraints identified in Chapter 2.

First, revenue certainty is increasingly priced as a system-level asset rather than a project-specific feature. Long-tenor debt and institutional capital are mobilized primarily where pricing rules are stable, settlement is credible, and offtake arrangements are legally enforceable. This explains why two-sided, long-term price-stabilization mechanisms dominate capital-intensive technologies such as offshore wind, while standardized PPAs matter more than nominal tariff levels.

Second, grid access and dispatch treatment have become core financial variables.
In systems with high renewable penetration, the key bankability question is no longer levelized cost alone, but the probability-weighted revenue after congestion, curtailment, and balancing costs. This directly reflects Vietnam's current exposure to interface constraints, peak-driven adequacy risks, and curtailment in renewable-rich regions.

Third, permitting speed and delivery discipline are now competitive advantages.
Markets that can run repeatable procurement rounds, standardize documentation, and deliver grid connections on schedule consistently attract lower costs of capital. Delays are no longer viewed as administrative inconveniences but as material credit risks.

Fourth, ministries of finance and public finance institutions increasingly act as risk allocators rather than simple payers.
Globally, ministries of finance play a central role in designing fiscal guardrails, budget envelopes, indexation rules, and contingent-liability management frameworks that allow long-term commitments to be made credibly without destabilizing public finances.

3.2. Key Investment Areas and Direct Implications for Vietnam

3.2.1. Renewable Power Generation: From "Build-to-Tariff" to "Build-to-Contract"

Global renewable energy investment continued to expand strongly in 2024, led by solar photovoltaic generation. A steep decline of nearly 60 percent in Chinese solar module prices since 2022 has sharply reduced upfront costs and enabled rapid deployment in many emerging markets. In 2024 alone, Pakistan imported approximately 19 GW of solar panels, largely for distributed and behind-the-meter applications, while India accelerated both utility-scale and rooftop deployment. Looking ahead, global solar investment is projected to reach about USD 450 billion in 2025, making it the single largest component of energy-sector capital expenditure.

Vietnam's solar ambitions are significant by any international benchmark. PDP VIII and its adjustments target between 46,459 MW and 73,416 MW of installed solar capacity by 2030, including large utility-scale projects such as the 420 MWp Dầu Tiếng complex and roughly 103,000 rooftop systems totaling around 9,500 MW. The availability of low-cost imported equipment has supported rapid scale-up, but it has also increased exposure to external supply shocks and price volatility. India's Production Linked Incentive scheme illustrates an alternative approach, using public funds of approximately USD 2.9 billion to attract domestic and foreign manufacturers, strengthen supply security, and capture value along the clean-energy value chain. While Vietnam's immediate challenge is not manufacturing capacity, the experience highlights how industrial policy can complement generation targets and stabilize long-term investment conditions.

Wind power presents a different risk profile. In 2024, offshore wind investment slowed in several advanced economies following cost inflation, higher interest rates, and policy adjustments, with high-profile cancellations such as Ørsted's Hornsea 4 underscoring the sensitivity of large projects to revenue certainty. Onshore wind proved more resilient globally but increasingly constrained by grid bottlenecks. Vietnam's own wind targets, including 6,000 MW offshore and 26,066–38,029 MW

onshore and nearshore by 2030, remain substantial, yet progress is hindered by regulatory uncertainty, particularly around marine spatial planning and long-term offtake arrangements.

Across all major markets, the common lesson is that renewable investment at scale no longer responds primarily to headline tariffs. Instead, it responds to bankable contracts that clearly allocate dispatch risk, curtailment treatment, change-in-law protection, termination compensation, and settlement discipline.

From a financing perspective, this shift also marks a transition from balance-sheet-driven investment toward project-finance and capital-recycling models, where standardized contracts allow developers to reach financial close, refinance operational assets, and recycle equity into new projects. Without this shift, scale remains constrained by sponsor balance sheets rather than by system needs. For Vietnam, which has moved decisively beyond FITs, the shift from "build-to-tariff" to "build-to-contract" is now the central determinant of whether renewable capacity targets can be delivered.

3.2.2. Storage and System Flexibility: Monetizing Reliability

Battery energy storage has become a core enabling technology in high-renewables power systems. Globally, investment in storage is projected to reach around USD 66 billion in 2025, following the installation of approximately 90 GW of battery capacity by 2023. Falling battery prices, particularly in emerging markets, have improved project economics, while policy reforms in China, India, Australia, and the United States have created new revenue streams linked to system services rather than energy arbitrage alone.

Vietnam's storage ambition—10,000 to 16,300 MW by 2030—is large relative to current deployment, yet investment has stalled because storage lacks a clear and durable revenue framework. International experience demonstrates that storage becomes financeable only when revenues are explicitly defined and contractually supported. India, for example, has reduced investment risk by extending transmission-charge waivers for storage linked to renewables and approving national procurement programs totaling more than USD 600 million to develop tens of gigawatt-hours of battery capacity. Australia's Frequency Control Ancillary Services markets provide another reference, compensating batteries for fast-response grid services at prices that, while modest per MWh, are sufficiently predictable to support project financing.

The underlying lesson is **that storage cannot be treated as a purely merchant asset in the early stages of market development. Bankability requires a stacked revenue model in which a contracted availability or capacity component provides a stable base for debt service, while market-based services offer upside**. Where such revenue lanes are absent, storage remains dependent on public pilots rather than private capital. For Vietnam, the binding constraint is therefore not technology readiness, but the absence of clearly specified services, payers, performance metrics, and settlement rules for flexibility and firming capacity.

3.2.3. Grids: The Global Bottleneck that Mirrors Vietnam's Constraint

Globally, electricity grid investment has failed to keep pace with generation expansion. In 2024, grid investment stagnated at roughly USD 400 billion, far below the levels required to integrate rising shares of variable renewable energy. Delays in permitting, shortages of key equipment such as transformers and high-voltage cables, and the limited balance-sheet capacity of state-owned utilities in many emerging economies have resulted in mounting connection queues and widespread curtailment.

Vietnam faces a comparable challenge. Although PDP VIII envisages approximately USD 18.1 billion of grid investment by 2030, rapid growth in renewable capacity risks outpacing transmission and system reinforcement. Past experience in China, where wind curtailment once reached 30 percent in some regions, illustrates the systemic costs of under-investing in grids. In response, advanced economies have increasingly treated grid delivery as a core component of the energy transition. The European Union's Green Deal emphasizes digitalized, flexible grids, while South Korea's Smart Grid Promotion Act established an early foundation for integrating renewables, storage, and demand response.

International best practice increasingly treats grid deliverability as part of the investment product rather than a residual engineering issue. Auctions are structured around "connection-ready" capacity, offshore wind sites are pre-developed by the state, and milestone enforcement ensures that awarded projects translate into operational assets. For Vietnam, where inter-regional transfer constraints and curtailment risks are already material, aligning generation targets with a parallel, financeable grid-delivery program is essential.

3.2.4. End-Use Electrification and Corporate Demand: Turning Load Growth into Bankable Offtake

Global investment in end-use electrification and energy efficiency is projected to reach nearly USD 800 billion in 2025, almost double the level a decade earlier. Electric vehicles, heat pumps, and efficient appliances are replacing fossil-fuel technologies across transport, buildings, and industry. In 2024, electric vehicles accounted for nearly 29 percent of new car sales in China, while several European countries recorded higher sales of heat pumps than fossil-fuel heating systems.

Rising electricity demand from industry, digital infrastructure, and data centers is reshaping power markets and strengthening corporate willingness to contract clean electricity. In this context, direct power purchase arrangements are strategically important not because of immediate volume, but because they diversify offtake channels, improve price discovery, and anchor project financing beyond the single-buyer model. However, the **bankability of such arrangements depends on detailed rules governing wheeling charges, curtailment allocation, imbalance settlement, creditworthiness of counterparties, and dispute resolution.** These issues sit squarely at the intersection of sector regulation and fiscal governance and require coordinated design.

3.3. Core De-Risking Instruments Used Internationally and Their Structure

Global scaling experience shows that bankability is not produced by a single policy tool. It is produced by an instrument stack in which each instrument targets a specific risk class, and the stack is governed by fiscal guardrails that make long-term commitments credible.

Three financing models dominate scalable clean-energy systems:

- **First, project-finance models anchored by standardized contracts.** These allow long-tenor debt from commercial banks, DFIs and export credit agencies to be underwritten against predictable cash flows. They dominate offshore wind, utility-scale renewables and contracted storage once PPAs or CfDs are enforceable.
- **Second, capital-recycling and refinancing models.** Once assets reach operation, refinancing through institutional investors, green bonds or portfolio sales lowers the cost of capital and frees developer equity for reinvestment. Jurisdictions that facilitate refinancing consistently achieve faster capacity scale at lower system cost.

- **Third, targeted public and concessional finance as a risk-reduction layer rather than a volume substitute.** Guarantees, subordinated tranches, currency-risk mitigation and liquidity backstops reduce specific risks that private capital cannot price efficiently, without crowding it out.

For Vietnam, the implication is clear: without financing models that enable long-tenor debt, equity recycling and selective de-risking, even well-designed policy instruments will struggle to mobilize capital at the scale implied by PDP VIII. The instruments below are the ones most consistently observed in markets that scale investment while avoiding fiscal blowouts and delivery failures.

3.3.1. Two-Sided Contract for Difference for Capital-Intensive Technologies, Especially Offshore Wind

One of the most widely adopted instruments for capital-intensive renewable technologies is the two-sided Contract for Difference. This mechanism addresses the fundamental financing challenge of large projects with high upfront capital costs and long construction periods by converting volatile wholesale electricity prices into a predictable revenue stream. Under a typical two-sided CfD structure, the project sells electricity into the market, but revenues are settled against a strike price determined through competitive auctions. When the market reference price falls below the strike price, the counterparty pays the difference; when it exceeds the strike price, the project pays back the surplus. Crucially, this structure is paired with explicit fiscal guardrails, including budget caps, technology-specific maximum prices, and delivery milestones.

The United Kingdom's offshore wind program illustrates how this approach balances bankability with fiscal discipline. CfDs are awarded through competitive auctions with pre-announced administrative maxima, and support payments are settled through a dedicated entity funded by a levy on electricity suppliers rather than the utility balance sheet. In recent auction rounds, the UK adjusted strike-price caps upward to reflect higher interest rates and supply-chain costs, while maintaining strict volume and budget controls. The result has been sustained investor participation and continued access to long-tenor financing even under more challenging macroeconomic conditions.

For Vietnam, where offshore wind projects will require multi-billion-dollar investments and long construction lead times, a CfD-type structure or an equivalent long-term price-guarantee mechanism is the most widely proven international solution.

3.3.2. Auctioned Sliding Feed-in Premium for Mature and Replicable Technologies

For mature technologies such as utility solar and onshore wind, many jurisdictions use auctioned sliding feed-in premiums because they reduce the overcompensation risk associated with fixed FITs while preserving bankability. Under a sliding premium, a project sells electricity into the market and receives a top-up when the market reference price is below a contract reference level set through competitive procurement or administrative benchmarks. When market prices rise above the reference, the premium automatically falls to zero, which protects consumers and public budgets and stabilizes political economy. Germany and France have deployed variants of this model at scale, pairing it with standardized metering and settlement procedures and clear eligibility thresholds.

The critical point for Vietnam is institutional. Sliding premiums only work as a bankable instrument when the market reference index is credible, settlement is reliable, and contractual terms are enforceable. If the market index is distorted, if dispatch and curtailment are opaque, or if settlement is delayed, the premium becomes a policy promise rather than a financeable revenue stream. Chapter 2 already identifies these as binding constraints. That is why a sliding premium must be treated as part of a broader system package that includes dispatch transparency, curtailment rules, and standardized contracting, rather than as a standalone pricing tool.

3.3.3. Storage Bankability through a Contracted Revenue Lane Plus Market Stacking

Storage becomes bankable when policy makes flexibility a contracted product. The most common international approach is to create a stable base revenue stream through either an availability contract or a capacity-type payment and then allow additional revenues through ancillary services and energy market optimization. This structure recognizes that storage provides multiple system services and that relying solely on merchant arbitrage is usually insufficient for project finance in early development stages. In practice, the base contract is what lenders underwrite, while the market revenues improve equity returns and incentivize efficient dispatch.

India's emerging storage approach is instructive because it demonstrates how a country can create scalable procurement lanes for storage and hybrid systems through policy design rather than waiting for ancillary markets to mature. China's large-scale deployment shows the effect of coordinated policy and finance channels in accelerating storage as a system integration tool. Australia's ancillary services experience demonstrates that markets can monetize fast-response services, but it also highlights that large storage projects often still seek contracted revenues to reduce volatility.

For Vietnam, the direct implication is that storage policy must specify the service products, the payment counterparty, and settlement rules. Without these, storage remains a planning target rather than a financeable asset class.

3.3.4. Grid Deliverability Instruments that Turn "Planned MW" into "Connectable MW"

Because connection and curtailment risks now dominate renewable bankability in constrained systems, leading jurisdictions increasingly embed deliverability into procurement. Some tender only capacity with confirmed connection readiness, while others auction explicit connection rights. In offshore wind, several European countries reduce early-stage risk by having the state pre-develop sites, completing marine spatial planning, resource assessment, baseline environmental studies, and defining grid landing points before tendering. This reduces development risk, lowers bid prices, and increases delivery certainty because bidders are competing on a de-risked product rather than on uncertain site and permitting outcomes.

For Vietnam, the connection between this instrument and Chapter 2 is immediate. Where inter-regional transfer constraints are binding and curtailment risk is material, investors cannot treat grid outcomes as a residual uncertainty. They either price it heavily or avoid the market. Treating grid deliverability as part of the procurement product is therefore not simply a technical reform. It is a financial reform that reduces uncertainty, improves debt sizing, and raises the probability that awarded capacity

actually reaches COD. Section 3.4. further describes specific models for grid financing given its importance and distinction compared to generation financing.

3.3.5. Fiscal-Risk Controls that Make Long-Term Commitments Credible

Across all successful scaling experiences, fiscal credibility is created through guardrails that make long-term commitments financeable without creating hidden liabilities. These guardrails typically include explicit budget envelopes per auction round, volume corridors by technology and year, and predefined indexation rules for inflation and foreign exchange. They also include standardized termination and change-in-law regimes, because lenders price legal uncertainty sharply. A further best practice is to record and disclose contingent liabilities systematically, including payment obligations under support mechanisms and guarantees, so the state can manage exposure transparently and avoid sudden reversals that destroy investor confidence.

Importantly, countries do not rely solely on price mechanisms. They also use capital-supply instruments. Japan's green transformation bond approach illustrates how sovereign-labelled financing can support strategic transition investments while building a credible pipeline discipline. South Korea's reliance on large policy-lending channels shows how governments can extend tenor and reduce financing costs for priority sectors. China's top-down green finance architecture demonstrates how taxonomy, guidance, and coordinated credit channels can shift capital at scale. In the EU, the combination of state aid, targeted industrial support, and EIB climate financing illustrates how public finance can catalyze supply chains and infrastructure investment without replacing private capital. For Vietnam, these are not "extra policies."

3.4. Grid Investment as the System Anchor: Financing Models and Institutional Arrangements

Vietnam's binding constraint is increasingly not the cost of renewable generation but the ability to deliver grid capacity and flexibility infrastructure on time and on terms that are financeable. Globally, this constraint is now widely recognized as the central bottleneck of high-renewables transitions. Recent international estimates suggest annual grid investment needs must rise sharply by 2030 to align with energy-transition pathways, while cumulative transmission investment to mid-century reaches multi-trillion-dollar levels in net-zero scenarios. In parallel, the IEA has warned that without major grid upgrades, a large volume of potential renewable generation could be curtailed by the end of this decade, directly undermining project revenues and debt serviceability.

For Vietnam, the implication is straightforward: grid investment is not a "supporting activity," it is a revenue-protection instrument for generation assets and therefore a core determinant of bankability. If grid expansion and reinforcement remain under-financed or delayed, the system shifts curtailment risk and congestion losses onto generators and lenders even when project-level CAPEX is competitive.

3.4.1. Distinctions between Grid Financing and Generation Financing

Grid assets are long-lived, capital intensive, and typically regulated monopolies. They are financed primarily on the credibility of (i) a stable revenue model, (ii) regulatory commitment to cost recovery, and (iii) institutional capacity to plan and deliver on schedule. **In practice, grid bankability is driven less by technology risk and more by governance and cashflow architecture: permitted cost recovery, allowed returns, tariff pathways, and credible settlement.**

This distinction matters for Vietnam because a post-FIT market regime increases the importance of system-level cashflow credibility. FITs could "hide" some system weaknesses by shifting risks into tariff settings; competitive procurement and market-linked pricing cannot do so. The risk is that Vietnam wins auctions on price but loses delivery on grid readiness.

3.4.2. Core Institutional Models Used Internationally and Implications for Vietnam

Internationally, electricity systems typically sit on a spectrum from vertically integrated utilities to unbundled structures with separate generation, transmission, distribution, retail, and system operation. **The financing consequence is that the more unbundled the system becomes, the more it depends on formal regulatory mechanisms to ensure network cost recovery and investment incentives.**

Four transmission ownership and operational models are most relevant as reference points:

i) full state ownership (e.g., state-owned grid companies)
ii) private ownership under regulation,
iii) concession/lease arrangements where the state retains ownership but grants long-term operating and investment rights, and
iv) hybrid PPP structures for specific corridors or reinforcement packages.

Vietnam's current structure is closer to the "state-owned monopoly with corporate finance" archetype for core transmission, which can be effective when the balance sheet is strong and tariffs are designed for predictable cost recovery. The challenge emerges when investment needs accelerate faster than (i) tariff headroom, (ii) utility balance-sheet capacity, and (iii) public investment ceilings.

3.4.3. The Four Revenue Streams that Make Grid Cashflows Financeable

A grid is financeable when its revenue model is transparent and enforceable. Global practice tends to combine four revenue streams, with different mixes depending on political economy and market design:

- **First, use-of-system charges (UoS/TUoS).** These are regulated network tariffs paid by generators, distributors, and/or large consumers. **Well-functioning regimes are explicit about whether charges are volume-based, capacity-based, or hybrid and they specify indexation, loss factors, and pass-through mechanisms.** The essential point is that lenders underwrite UoS only when regulators commit credibly to timely tariff adjustments and enforcement.
- **Second, connection charges.** These are one-off payments by users connecting to the grid (often generators). **They reduce socialization burdens but can deter investment if poorly calibrated or unpredictable.** International best practice increasingly pairs connection charges with "connection-ready auctions" where bidders compete for capacity that already has a defined grid landing point and timeline, reducing the risk that connection costs explode after award.
- **Third, government support.** This can include direct budget allocations, viability gap funding, sovereign-backed borrowing, or concessional capital mobilized through MDBs and DFIs. **Government support is most effective when it is targeted at specific risk classes: permitting acceleration, land acquisition, early works, and credit enhancement rather than open-ended capex substitution.**
- **Fourth, market-based revenues.** These include congestion rents and ancillary-service-related revenues in markets where transmission operators can earn regulated or quasi-market returns. **However, these revenues are often too volatile or policy-dependent to serve as the primary debt-repayment base in emerging market contexts.**

3.4.4. Corporate Finance or Project Finance: Which Model Fits Which Grid Problem

Grid expansion can be financed through two dominant structures:

- **Corporate financing (balance-sheet finance).** This relies on the credit and asset base of the transmission company (often state-owned). It works best when the entity has stable regulated revenues, manageable leverage, and credible tariff reset mechanisms. It is administratively simple and can mobilize large volumes quickly when the balance sheet is strong.
- **Project financing (SPV-based finance).** This raises capital against the cashflows of a specific transmission project or corridor through an SPV, often with limited or no recourse to the sponsor's broader balance sheet. It is typically used where (i) the main utility is financially constrained, (ii) investors want ring-fenced risk, or (iii) the state seeks to crowd in private capital through concessions or PPPs. The trade-off is higher transaction complexity and heavier contract/regulatory requirements.

A practical implication for Vietnam is that "one size" will not work. Core backbone reinforcement may remain best served by corporate finance if tariff and balance-sheet conditions permit. But high-priority, discrete corridors that unlock large renewable zones can be structured as project-financed packages, especially where the state wants to ring-fence risks, define delivery milestones, and attract private construction and operating efficiencies.

3.4.5. Risk allocation choices and fiscal guardrails

Internationally, grid programs tend to fall into four risk-allocation buckets:

- **Direct public funding** (lowest private risk, highest fiscal exposure), **government-backed borrowing** (shifts financing to debt markets but retains sovereign risk),
- **PPP/project-financed concessions** (shares risk and can mobilize private capital but requires strong contracting), and
- **Fully private regulated investment** (highest reliance on regulatory credibility and investor appetite).

For Vietnam, the central design question is not ideological (public vs private) but financial: **how to allocate construction risk, FX risk, demand/volume risk, and regulatory risk to the parties best able to manage them while keeping contingent liabilities explicit and capped.** This is why grid financing must be discussed alongside MOF-style fiscal guardrails, including procurement caps, guarantee ceilings, standardized termination compensation, and transparent contingent-liability registries.

3.4.6. International Examples that Map to Vietnam's Challenge

Brazil's transmission expansion is frequently cited as a concession/auction model where discrete transmission lots are competitively tendered under long-term regulated revenue arrangements, enabling project finance and attracting international investors while relying on strong regulatory architecture. The key lesson is that private capital enters when the "product" is clear: defined assets, defined revenue formula, defined indexation, and enforceable milestones.

Australia provides a contrasting reference where many transmission investments are financed through corporate structures under a regulated asset base logic, but major new lines still require robust planning and approval gates, with fragmented jurisdictional responsibilities creating coordination challenges. The takeaway is that even wealthy systems with strong balance sheets treat planning coordination and permitting as binding constraints, not merely capital supply.

South Africa and Nigeria illustrate a different lesson: when utility financial health is weak and non-technical losses or revenue collection problems are severe, investors shift toward ring-fenced project

models (mini-grids, embedded networks) or require heavy credit enhancement for transmission**.** The point is not to replicate these systems but to underline that financial sustainability and settlement discipline are prerequisites for low-cost capital.

Overall, the international experiences inform the following insights for grid financing:

i) **Define the grid investment product.** Separate "national backbone reliability investments" from "renewable-zone unlocking corridors" and "connection interface reinforcements," because each category supports a different financing model.
ii) **Specify the revenue base and payer.** If UoS tariffs are the anchor, specify tariff methodology, indexation, reset frequency, and enforcement. If government support is used, specify it as targeted credit enhancement with explicit caps.
iii) **Choose the financing lane per asset type.** Use corporate finance where balance-sheet strength and tariff credibility are sufficient; deploy SPV/project finance or concessions where ring-fencing and delivery discipline are needed.
iv) **Embed deliverability into procurement.** Link generation awards to connection-ready capacity or staged grid milestones so that "auction winners" become "commissioned assets," reducing curtailment risk and improving debt sizing.
v) **Put fiscal guardrails in the instrument design.** Budget envelopes, guarantee ceilings, termination rules, and contingent-liability disclosure should be treated as bankability infrastructure, not as after-the-fact controls.

3.5. Implications for Vietnam's Policy Architecture

Taken together, global experience demonstrates that countries that scale renewable energy and supporting infrastructure successfully do not rely on policy intent or headline targets alone. Instead, they deploy a coherent and internally consistent portfolio of instruments that translate planning objectives into investable pipelines, allocate risk to the actors best positioned to manage it, and place explicit, enforceable guardrails around public and fiscal exposure. Where such instrument stacks are absent or incomplete, investment outcomes diverge sharply from planning ambitions, regardless of resource potential or political commitment.

Across the cases examined in this chapter, the binding constraints are remarkably consistent. Revenue predictability, grid deliverability, institutional coordination, and financing maturity repeatedly emerge as the decisive factors shaping cost of capital, investor participation, and delivery timelines. Leading markets address these constraints not through ad hoc interventions, but through standardized contracts, deliverability-based procurement, explicitly contracted revenues for flexibility and firm capacity, and fiscal frameworks led by ministries of finance that ensure long-term commitments remain credible within budgetary limits.

Crucially, international experience shows that no single instrument resolves these constraints in isolation. Bankability at scale is an emergent property of an integrated policy architecture. Pricing mechanisms without standardized contracts fail to mobilize long-tenor capital. Auctions without grid-ready capacity lead to awarded projects that stall. Flexibility targets without contracted revenue streams remain non-investable. And support mechanisms without fiscal guardrails ultimately face political and financial reversal. The instruments summarized in Table 2 are therefore best understood as components of a coordinated risk-allocation system rather than standalone policy tools.

Table 2. International instruments to improve bankability and manage fiscal risks

Instrument	Contracted Output	Typical Tenor	Primary Risk Reduced	Key Fiscal Controls
Two-sided Contract for Difference (CfD)	Stable price per MWh	15–20 years	Wholesale price volatility; revenue instability	Budget envelopes per auction round; strike-price caps; volume corridors; levy-funded settlement entity; contingent-liability disclosure
Auctioned Sliding Feed-in Premium (FIP)	Premium above market price	15–20 years	Overcompensation risk; price uncertainty	Annual capacity caps; technology-specific ceilings; automatic premium phase-out; transparent indexation rules
Long-term Storage Availability Contracts	MW of dispatchable capacity	8–15 years	Revenue insufficiency for storage	Procurement caps; availability payment ceilings; performance penalties; budget allocation within medium-term fiscal framework
Ancillary Services Markets (Storage/Flexibility)	Frequency response, reserves	Short-term, repeatable	Lack of monetization for flexibility	Market qualification standards; settlement rules; indirect fiscal exposure only (price-based)
Connection-ready / Deliverability-based Auctions	Guaranteed connectable MW	Auction-linked	Grid connection delay; curtailment risk	Limitation of auction volumes to grid-ready nodes; coordination with public grid investment plans
State-led Site Pre-development (Offshore Wind)	Permitted and surveyed sites	Pre-COD	Early-stage development and permitting risk	Public pre-development budget caps; cost-recovery mechanisms; staged approvals to limit sunk fiscal exposure
Capital-market Mobilization Instruments (Green bonds, guarantees, blended finance)	Refinancing / portfolio-level capital	10–30 years	Short debt tenors; refinancing risk	Sovereign or policy-bank guarantees; guarantee caps; exposure limits; transparent contingent-liability registry
Public Policy Lending / Credit Enhancement	Long-tenor debt	15–25 years	High cost of capital; tenor mismatch	On-lending ceilings; interest-subsidy caps; alignment with public debt and credit-risk limits
Contingent Liability Governance Framework	System-wide	Life of contracts	Unpriced fiscal exposure	Central registry of guarantees and support commitments; stress testing; disclosure in MTFF and budget documents

For Vietnam, the strategic question is therefore not whether to move beyond feed-in tariffs, but how to design a post-FIT architecture in which pricing mechanisms, procurement instruments, grid delivery

and fiscal governance are structurally aligned. The international evidence is unambiguous: bankability at scale emerges only when standardized contracts are embedded within transparent budget envelopes, supported by credible settlement arrangements, and governed by disciplined management of contingent liabilities.

This has direct implications for Vietnam's policy architecture. The Ministry of Finance plays a central role not as a tariff-setting authority, but as the institutional anchor that ensures long-term commitments are financeable, fiscally sustainable and repeatable across investment cycles. Procurement design, contract standardization, grid investment sequencing and financing instruments must therefore be treated as interdependent elements of a single system, rather than as sequential or sector-specific reforms.

These insights provide the foundation for the subsequent chapters, which translate international instruments into concrete design options for Vietnam. In particular, they motivate a differentiated approach that combines auction-based sliding premiums for mature technologies with CfD-type long-term price guarantees for capital-intensive assets such as offshore wind, complemented by storage revenue frameworks, deliverability-based grid procurement and financing structures aligned with Vietnam's fiscal and institutional context.

4. Mobilizing Capital for Sustainable Energy Infrastructure: From Planning Targets to Bankable Delivery Systems

Vietnam's challenge in scaling sustainable energy infrastructure is not defined by resource scarcity or a lack of investor appetite. Wind and solar potential remains among the strongest in Asia and domestic as well as international capital continues to search for scalable low-carbon assets. The binding constraint is institutional and financial: Vietnam still lacks a sufficiently coherent policy, market and fiscal architecture to translate the revised Power Development Plan VIII into a repeatable pipeline of projects that are simultaneously bankable, grid-deliverable and financeable at long tenors.

Vietnam is moving from a system designed around dispatchable thermal assets with predictable operating profiles into a system where variable renewable energy, congestion risk, flexibility constraints and settlement discipline become decisive determinants of investor confidence. In such systems, the key question for capital mobilisation is not whether headline tariffs are attractive, but whether risks are clearly allocated, contractually enforceable and priced within a credible fiscal envelope. Where this architecture is absent, investors delay commitments, lenders shorten maturities and the system tends to self-correct through ad hoc renegotiation and implicit fiscal support—outcomes that weaken credibility and raise long-run costs.

This section reframes the policy problem as an "investment system design" challenge. It sets out the core constraints that now bind Vietnam's transition, explains what international experience implies about bankability at scale and then proposes a set of priority policy packages that remain significant in their own right. The section also links the architecture to quantitative evidence from cost–benefit and macroeconomic modelling, demonstrating why transition-phase bankability is now the decisive lever for welfare, emissions and fiscal outcomes.

4.1. Why Vietnam's Investment Bottleneck Is Structural

Vietnam's investment environment is constrained by a set of mutually reinforcing frictions that operate across the full chain: planning → permitting → contracting → financing → dispatch → settlement → refinancing. These frictions are structural rather than cyclical because they stem from the inherent complexity of integrating variable renewables into a fast-growing system with evolving market institutions.

- **Administrative and institutional delay is a cost-of-capital risk, not a "soft issue."**
  Licensing, land clearance, environmental approvals and grid-connection permissions are still fragmented across agencies and levels of government. The consequence is not only slower delivery but higher interest during construction, higher equity contingency buffers and greater perceived execution risk, all of which increase weighted average cost of capital. In a context where the CBA already identifies a transition-period bankability gap, institutional delay becomes a direct financial constraint rather than a governance inconvenience.
- **The post-FIT revenue regime has weakened predictability before markets can price uncertainty.**
  Administered ceiling prices introduced after FIT withdrawal are occurring in a system where wholesale pricing, congestion signals and scarcity pricing remain incomplete. In mature markets, greater exposure to market prices can be bankable because volatility is managed through hedging instruments and enforceable contracts. In Vietnam's current market stage, price exposure combines with dispatch uncertainty and settlement risks, pushing expected

DSCR below lender thresholds and depressing project IRRs below viability ranges. This is why "price ceiling vs LCOE" is not a technical debate but a bankability determinant in 2025–2030.

- **Contracting and settlement remain the dominant bankability constraints.**
  Even where legal frameworks exist, project bankability is determined by what lenders can underwrite: dispatch treatment, curtailment allocation, payment timelines, termination compensation, change-in-law protection and enforceable dispute resolution. International experience shows that banks will accept lower returns when risk allocation is explicit and enforceable. They will not accept ambiguity. A system that relies on negotiation rather than standardised templates tends to stall precisely when investment volume must scale.
- **Grid deliverability has become a financial variable.**
  Vietnam's congestion and curtailment risks have already shifted investor perception: grid constraints reduce probability-weighted revenues and turn interconnection timing into a commercial risk. In global high-renewables systems, "deliverability" is treated as part of the investment product: projects are procured only where connection and dispatch can be made credible or where compensation rules are standardised. Without this, generation investment can outpace grids, pushing integration costs upward and eroding returns even if nominal tariffs appear adequate.
- **Flexibility is under-monetised, blocking storage and raising system costs.**
  Battery energy storage, demand response and other flexible capacity remain difficult to finance without contracted revenue lanes (availability payments, ancillary-service markets, capacity remuneration, or hybrid dispatch rights) and without clear stacking rules. When flexibility is not investable, curtailment rises, balancing costs increase and the transition becomes more expensive. Critically, this also feeds back into generation bankability because renewable revenues become more uncertain in congested hours.
- **The financial system is mismatched to asset lifetimes.**
  Renewables, storage and grids are long-lived assets, yet Vietnam's financing base is still dominated by domestic commercial bank debt with relatively short tenors. This maturity mismatch raises refinancing risk, increases DSCR requirements and pushes WACC upward. Green credit and bond markets are growing but remain insufficiently scaled and standardised to anchor long-duration institutional capital. This becomes binding for offshore wind, major transmission corridors and system-scale flexibility investments.
- **Fiscal risks are most dangerous when they are implicit rather than bounded.**
  When bankability gaps persist, systems tend to "solve" them ex post—through arrears, renegotiations, payment rescheduling or implicit guarantees to maintain system stability. These actions create contingent liabilities that are opaque, hard to price and difficult to control. International practice increasingly shows that fiscally safer transitions are those where support is explicit, capped and disclosed rather than implicit and reactive.

These constraints form a closed loop. Weak revenue predictability discourages long-tenor financing; short-tenor financing increases pressure for fast cash flows; cash-flow pressure increases sensitivity to dispatch and curtailment; curtailment rises when grid and flexibility lag; delivery delays raise financing costs further; and the system becomes more likely to rely on discretionary interventions. Breaking this loop requires an integrated policy architecture rather than incremental adjustments.

4.2. What Global Experience Shows: Bankability at Scale Comes From "Instrument Stacks," Not Single Policies

International benchmarking, from the EU (Germany/France), the UK, China, India, Japan, South Korea and the United States, shows that scaling renewables beyond early-stage deployment requires three shifts in policy practice.

- **From "support levels" to "risk allocation rules."**
  In leading markets, the central policy question is not how high a tariff should be, but which risks are borne by consumers, taxpayers, utilities and investors and how these risks are governed contractually. Sliding premiums, CfDs, capacity payments and availability contracts are tools for structuring risk, not simply subsidising energy.
- **From "auction volumes" to "deliverability-based procurement."**
  Markets that maintain high delivery rates do not auction purely on headline price. They impose pre-qualification and grid readiness conditions, limit volumes to connectable nodes, pre-develop offshore sites, or standardise curtailment compensation. These approaches reduce bid uncertainty and lower capital costs because lenders can underwrite delivery.
- **From "project-by-project negotiation" to "repeatable templates and settlement institutions."**
  Where PPAs are standardised and settlement is credible, transaction costs fall, financial close accelerates and secondary market activity becomes possible. This matters because scaling beyond bank balance sheets requires refinancing, securitisation and portfolio recycling. Without standardisation, each project becomes a bespoke credit event and scaling stalls.
- **From "implicit fiscal backstopping" to explicit guardrails and registries.**
  Countries that scale at pace while protecting fiscal space embed revenue support within budget envelopes, levy-funded settlement entities, volume corridors and contingent-liability disclosure. This creates credibility: investors see that the State can support bankability without open-ended exposure.

This global logic is directly relevant to Vietnam. Vietnam's system is not short of policy intent; it is short of an integrated mechanism that converts planning targets into investable assets with enforceable risk allocation and visible fiscal boundaries.

4.3. Analytical Validation: What the Quantitative Impact Assessment Implies About Policy Priorities

The combined results of the Cost–Benefit Analysis and Vector Autoregression[1] modelling point to a consistent conclusion: Viet Nam's challenge in scaling sustainable energy infrastructure is not one of long-term economic viability, but of short-term implementation credibility. The quantitative evidence therefore supports architectural reform of policy and market design, rather than marginal adjustment of tariffs or planning targets.

[1] These quantitative methods were detailed in the previous report (Assessment of Current State of Vietnam's Energy Infrastructure Investment Landscape). Cost-Benefit Analysis (CBA) was used to evaluate the long-term economic returns of projects, while Vector Autoregression (VAR) was employed to model the dynamic interdependencies between energy prices, demand, and macroeconomic stability.

4.3.1. Welfare Is Driven by Capacity Structure, Not Short-Term Price Suppression

Across all scenario families, the CBA shows that pathways aligned with the revised Power Development Plan VIII generate substantial net social benefits relative to Business-as-Usual. These welfare gains arise overwhelmingly from structural changes in the generation mix, notably the displacement of fossil capacity by renewables over asset lifetimes, rather than from short-run price controls or temporary cost containment.

This distinction is critical for policy design. Measures that suppress electricity prices in the near term may appear politically attractive, but they do not materially improve long-run welfare. By contrast, delays in delivering the PDP VIII capacity mix impose large and persistent welfare losses that compound over time through higher emissions, fuel import exposure and health costs.

However, the same analysis identifies a binding implementation vulnerability during the 2025–2030 transition period. Under current administered price ceilings and prevailing dispatch and settlement practices, many renewable projects that are welfare-positive over their lifetimes are not financeable in the short run. In practical terms, Viet Nam faces a paradox: the transition is economically justified, yet investment can stall unless short-term bankability is addressed explicitly.

- **Policy implication:** protecting long-term welfare requires prioritising mechanisms that enable timely investment delivery, even if these mechanisms involve limited, transparent and temporary support during the transition phase.

4.3.2. Macroeconomic Stability Depends on Pricing Discipline and Implementation Credibility

The VAR results reinforce that renewable-intensive pathways are compatible with economic growth and emissions stabilisation—but only under specific institutional conditions. Growth and decarbonisation outcomes remain favourable when capacity expansion follows PDP VIII, electricity prices are allowed to adjust endogenously under State management and investment sequencing is disciplined.

By contrast, rigid administrative pricing weakens investment signals, amplifies volatility and increases the probability that corrective interventions will be required later. From a macro-fiscal perspective, this is a crucial insight. Market-oriented pricing is not merely an efficiency reform; it functions as a stabilisation mechanism that reduces the likelihood of reactive fiscal measures to compensate for investment shortfalls, system stress or utility balance-sheet weakness.

For the Ministry of Finance and system planners, the lesson is clear. Attempts to insulate the economy from energy-price adjustment through administrative controls tend to shift risk rather than eliminate it. That risk reappears downstream in the form of arrears, restructuring, contingent support or accelerated public borrowing.

- **Policy implication:** disciplined pricing frameworks reduce macro volatility and fiscal exposure by allowing adjustment to occur transparently and predictably, rather than through ad hoc intervention.

4.3.3. The Central Lesson: Bankability Is a Form of Fiscal Risk Management

Taken together, the quantitative evidence reframes the notion of bankability. Ensuring that projects can reach financial close under clear and enforceable rules is not a concession to investors; it is a tool for controlling fiscal risk.

When bankability constraints are left unresolved, experience shows that governments rarely avoid intervention altogether. Instead, costs surface later through delayed payments, renegotiated contracts, emergency support to utilities or credibility losses that raise the cost of future capital. These outcomes create opaque contingent liabilities that are harder to monitor and manage than explicit, well-designed support mechanisms.

The CBA and VAR results therefore support a counter-intuitive but robust conclusion: explicit, capped and well-governed support instruments are fiscally safer than implicit support. Addressing revenue risk, dispatch uncertainty and settlement credibility ex ante reduces the probability that the State will be forced to intervene ex post under less favourable conditions.

- **Policy implication:** resolving bankability problems early through structured instruments with clear fiscal guardrails lowers long-term fiscal exposure and improves budget discipline.

4.3.4. What the Evidence Prioritises and What It Does Not

The quantitative assessment also helps clarify policy priorities by exclusion.

- It shows that carbon pricing, while useful, is not decisive for welfare outcomes under PDP VIII-aligned pathways. Structural capacity change dominates the results.
- It demonstrates that planning targets alone are insufficient without delivery mechanisms that investors and lenders regard as credible.
- It indicates that delaying grid, flexibility and settlement reforms increases system costs and fiscal risk rather than preserving fiscal space.

Conversely, the analysis consistently prioritises policies that:

1. stabilise revenues during the transition phase without open-ended commitments,
2. align pricing with cost and scarcity signals under State oversight,
3. embed delivery discipline into procurement and grid readiness, and
4. make fiscal exposure explicit, bounded and transparent.

4.3.5. Implications for Policy Architecture Going Forward

The quantitative evidence does not prescribe individual instruments, but it sharply narrows the set of policy architectures that are likely to succeed. Viet Nam's transition is welfare-enhancing and compatible with growth, but only if PDP VIII implementation is supported by mechanisms that translate long-term economic logic into short-term investment credibility.

This validates the report's emphasis on:

- market-compatible revenue stabilisation,
- grid-deliverable procurement,
- system flexibility monetisation and
- explicit fiscal governance.

In this sense, **the energy transition should be understood not as a sectoral programme, but as a core component of investment planning and fiscal risk management**. The quantitative results confirm that when policy architecture aligns these dimensions, Viet Nam can mobilise private capital at scale while preserving macroeconomic stability and fiscal sustainability on the path to net zero.

4.4. Proposed Piority Policy Packages for Vietnam

To translate PDP VIII into bankable, deliverable investment, Vietnam requires a coherent portfolio of priority policies that operate as an integrated system. The packages below are intentionally designed to be significant. They reshape risk allocation, contracting discipline, financing maturity and grid deliverability. They are also designed to be modular: Vietnam can sequence and pilot them without requiring full system liberalisation upfront.

These packages are not intended to be implemented simultaneously or uniformly across all technologies. Their strength lies in sequencing and interaction. Revenue stabilisation and contracting discipline must come first to unlock investment (Package A), while deliverability-based procurement (Package B) prevents system stress as volumes scale. System flexibility (Package C) becomes increasingly critical as renewable penetration rises, while financing maturity and fiscal guardrails (Package D) ensure that scaling does not translate into hidden public liabilities. Institutional delivery and capability (Package E) underpins all packages by reducing execution risk and sustaining investor confidence over time.

4.4.1. Package A. Revenue Stabilisation That Preserves Market Signals and Caps Fiscal Exposure

Objective: Restore revenue predictability for investable projects in the 2025–2030 transition period while maintaining price discovery and containing fiscal exposure.

Core instruments:

1. **Auction-based sliding Feed-in Premiums for mature technologies (solar PV, onshore wind).** Generators sell into the market and receive a premium when market prices fall below an auction-set reference level. When prices rise, support automatically declines to zero, protecting consumers and the State. This shifts support from fixed prices to conditional top-ups and limits overcompensation risk. Key design features that make this bankable include: transparent indexation rules, reference price methodology, and a credible settlement entity.

2. **Selective two-sided CfD-type instruments for capital-intensive technologies (offshore wind, storage-backed hybrids).**
   For technologies with high CAPEX and long lead times, price volatility cannot be efficiently borne by private capital. Two-sided contracts stabilise cash flows while requiring payback in high-price periods, enabling long-tenor financing and lowering WACC. The essential fiscal safeguard is to embed CfDs within budget envelopes and volume corridors so exposure is bounded and disclosed.

3. **Standardised bankable PPAs and codified settlement discipline.**
   Revenue stabilisation instruments are not sufficient if PPA risk allocation remains ambiguous. Standardisation must define: curtailment allocation and compensation principles, dispatch treatment, termination payments, change-in-law regimes, payment timelines and dispute resolution. This reduces negotiation risk and enables lenders to treat projects as repeatable credits rather than bespoke cases.

4. **DPPA expansion as a strategic complement, not a substitute.**
   DPPAs diversify offtake channels, support corporate decarbonisation and improve price discovery. However, they become bankable only when wheeling charges, imbalance settlement and enforcement mechanisms are transparent and predictable. The strategic value

of DPPA in the transition phase is not immediate volume but the creation of credible alternative contracting pathways that reinforce market discipline.

Implication for Vietnam's policy architecture: This package shifts Vietnam from administered ceilings and negotiation-based contracting toward a system where revenue risk is structured ex ante, bounded fiscally and credible to lenders.

Table 3. Revenue risk allocation and bankability outcomes by instrument

Instrument	Price Risk	Dispatch Risk	Settlement Risk	Typical Tenor Enabled	Bankability Outcome
FIT (legacy)	State	State	High	15–20 yrs	High but fiscally open-ended
Price Ceiling	Investor	Investor	High	7–10 yrs	Low
Sliding FIP	Shared	Shared	Medium–Low	12–18 yrs	Medium–High
Two-sided CfD	State/Investor (bounded)	Medium	Low	15–25 yrs	High
DPPA (current VN)	Corporate	Investor	High	7–10 yrs	Medium–Low

4.4.2. Package B. Deliverability-Centered Procurement: Linking Generation Volumes to Grid Reality

Objective: Reduce curtailment risk and delivery failures by making grid deliverability a formal condition of procurement and investment planning.

Core instruments:

1. **Connection-ready or deliverability-based bidding.**
   Bidding volumes should be tied to grid-ready nodes or to pre-committed network reinforcement plans with clear delivery milestones. This prevents procurement from outrunning the grid and reduces curtailment as a probabilistic revenue risk.
2. **State-led pre-development for offshore wind and strategic zones.**
   For offshore wind, the State can lower risk and reduce bid prices by conducting marine spatial planning, baseline environmental surveys, seabed studies and identifying grid landing points before auctioning sites. This reduces early-stage permitting risk that private capital cannot efficiently price.
3. **Grid-enhancing technologies as a near-term capacity multiplier.**
   Dynamic line rating, advanced conductors, digital substations and automation can increase network capacity without full rebuilds, lowering congestion and improving utilisation. This is a fast-acting complement to long-cycle transmission investment. In Vietnam's current market structure, settlement credibility ultimately rests on the performance of the single-buyer and system operator functions. Bankability therefore depends not only on contract text, but on enforceable payment timelines, transparent reconciliation procedures and credible remedies

in the event of delay. Strengthening settlement discipline reduces reliance on balance-sheet buffering and lowers the probability that fiscal support will be required indirectly.

4. **Curtailment rules as financeability rules.**
   Whether curtailment is compensated, socialised, or assigned to generators has direct financing implications. Vietnam does not need to adopt maximal compensation everywhere, but it must adopt consistent, transparent rules that can be priced. Ambiguity is worse than conservative policy because lenders cannot underwrite ambiguity.

Implication for Vietnam's policy architecture: This package makes "deliverability" a core investment attribute and prevents the system from transferring grid risk to investors through uncertainty, which increases capital costs.

4.4.3. Package C. System Flexibility as an Investable Asset Class

Objective: Make storage and flexibility financeable so that renewable scaling does not collapse into higher curtailment and rising integration costs.

Core instruments:

1. **Contracted availability revenues for storage and flexible capacity.**
   Storage is unlikely to scale solely on energy arbitrage in an emerging market. Availability contracts or capacity-style remuneration provides a bankable revenue floor, allowing lenders to underwrite long-tenor debt. Performance penalties protect value-for-money.

2. **Ancillary service market design with clear stacking rules.**
   Frequency response, reserve, congestion management and other services should have defined products, qualification standards and settlement rules. The key is not only to create markets but to allow stacking with contracted revenues without regulatory ambiguity.

3. **Mandates for hybridisation where economically justified.**
   For certain zones, requiring new renewable projects to include a defined share of storage can reduce curtailment, improve dispatchability and create system benefits. Such mandates must be paired with revenue recognition so they do not become purely cost-additive obligations.

4. **Demand-side management and time-of-use as flexibility procurement tools.**
   DSM is often cheaper than building peaking assets or oversizing grids. Time-of-use tariffs, demand response programs and industrial flexibility contracts reduce peak load pressure and improve system efficiency. Treating DSM as a procurement resource aligns with global practice.

Implication for Vietnam's policy architecture: This package converts flexibility from a technical aspiration into a financeable segment, reducing integration costs and stabilising renewable revenues.

4.4.4. Package D. Financing Maturity and Fiscal Guardrails: Mobilising Long-Tenor Capital Without Hidden Liabilities

Objective: Extend financing tenors, diversify capital sources beyond bank balance sheets and ensure public exposure is explicit, capped and disclosed.

Core instruments:

1. **Policy-bank and development finance channels for long-tenor lending and credit enhancement.**
   Concessional lines, partial risk guarantees and structured on-lending can reduce WACC and

extend maturity. The core requirement is to integrate these into public debt and credit-risk limits with transparent caps.

2. **Green bond and infrastructure finance market deepening with credible taxonomy and verification.**
   Scaling institutional capital requires standardised classification, disclosure and verification to reduce greenwashing concerns and lower risk premia. Vietnam's taxonomy progress can be used to standardise issuance and attract long-duration investors.

3. **Portfolio refinancing and capital recycling frameworks.**
   Scaling cannot rely purely on new project finance. It requires refinancing and secondary market activity once assets are operational. Standard contracts, predictable settlement and stable regulation are prerequisites for asset recycling and securitisation.

4. **A Ministry of Finance-led contingent liability governance framework.**
   This is the core fiscal integrity component. It includes: a central registry of guarantees and support commitments, stress-testing of exposure under price and volume scenarios, disclosure in medium-term fiscal frameworks and explicit budget envelopes for revenue support programs.

Implication for Vietnam's policy architecture: This package ensures that bankability support does not become uncontrolled fiscal exposure and that long-tenor capital can scale without relying on implicit state backstopping.

4.4.5. Package E. Institutional Delivery and Capability: Making Execution Predictable at Scale

Objective: Reduce non-financial risk that drives up cost of capital, while building operational and innovation capability for a more complex system.

Core instruments:

1. **One-stop digital permitting with statutory timelines and transparent accountability.**
   Streamlining approvals reduces delay risk, lowers financing costs and improves delivery rates. Statutory timelines and digital transparency prevent discretionary bottlenecks.

2. **Benefit-sharing and social acceptance frameworks for land and offshore development.**
   Large projects require durable social legitimacy. Transparent compensation, community benefit schemes and consultation reduce opposition risk that can derail timelines.

3. **Workforce development and technical standardisation.**
   Vietnam needs targeted programs in grid operation, storage, offshore wind engineering and project finance. Partnerships between universities, SOEs and private developers should focus on applied capability rather than generic training.

4. **Applied R&D and domestic supply chain strategy in strategic segments.**
   Targeted incentives for battery systems, offshore wind components and digital grid solutions can reduce import dependence, lower costs over time and improve resilience.

Implication for Vietnam's policy architecture: This package addresses the "execution premium" that investors price into projects and supports durable scaling beyond the early deployment phase.

4.5. Strategic Implication: The Post-FIT Question Is an Architecture Question

Taken together, the five packages operate as a coherent risk-allocation system rather than a collection of incentives. Revenue risk is stabilised ex ante rather than renegotiated ex post; grid and flexibility risks are priced and managed structurally rather than transferred implicitly to investors; and fiscal exposure is capped, disclosed and governed rather than absorbed through contingent liabilities. This architecture aligns private incentives with system needs while preserving policy control and budget discipline.

Table 4: Summary of proposed policy packages

Package	Primary Risk Addressed	Investor Impact	Fiscal Impact	Timing
A	Revenue volatility	Enables financial close	Explicit, capped	2025–2030
B	Curtailment & delay	Lowers WACC	Reduces renegotiation risk	Immediate
C	Integration costs	Improves realised revenues	Avoids future grid overbuild	2026+
D	Tenor mismatch	Crowds in institutional capital	Improves liability management	Ongoing
E	Execution risk	Lowers risk premium	Reduces delay-driven overruns	Cross-cutting

Benchmarking and modelling jointly imply that Vietnam's strategic policy question is about how to construct an architecture in which:

- revenue stabilisation mechanisms are **bankable but bounded**,
- procurement is **deliverability-based**,
- flexibility is **monetised and investable**,
- financing maturity is **extended and diversified**, and
- fiscal exposure is **explicit, capped and disclosed**, not absorbed implicitly through arrears or balance-sheet stress.

This is the minimum architecture required to restore investor momentum, reduce curtailment and integration costs and mobilise long-duration capital for offshore wind, storage and strategic transmission corridors. It also provides the bridge from analytical evidence to policy design: the CBA shows the transition is welfare-dominant but vulnerable in 2025–2030, while the VAR shows macro stability depends on disciplined pricing and credible implementation rules. The priority policies above directly target these binding constraints.

5. Translating Policy Architecture into Delivery: Fiscal Control, Sequencing, and Execution at Scale

The previous chapters establish that Viet Nam's energy transition is economically justified, fiscally manageable and compatible with long-term growth. The quantitative evidence also makes a practical point that is more important than any single instrument: outcomes are shaped by the interaction between revenue rules, grid deliverability, investment readiness and fiscal governance over time. In other words, the difference between a welfare-dominant pathway and a stalled pathway is not the target itself but whether implementation converts planning into bankable, grid-deliverable and financeable pipelines with credible settlement and explicit fiscal guardrails.

This chapter therefore focuses on implementation strategy rather than tool design. It sets out an "operating system" for delivery: (i) how to treat market instruments as part of fiscal architecture, (ii) how to sequence revenue support, grid readiness and market deepening without recreating hidden liabilities, (iii) how to hardwire predictability and enforceability into procurement and contracts and (iv) how to monitor performance and adapt rules without losing credibility. The aim is to maximise security-of-supply and investment momentum while avoiding uncontrolled tariff impacts, fiscal stress and the accumulation of contingent liabilities through arrears or balance-sheet pressure.

5.1. The Implementation Operating System: Turning Policy into Investable Delivery

Implementation succeeds when four conditions hold simultaneously: projects can reach financial close, they can connect and deliver energy, payment and settlement discipline is credible and the public sector can explain and cap its exposure. This report's framework can therefore be maximised by designing implementation around four implementation principles that behave like system rules, not aspirations.

5.1.1. Treat Revenue Instruments as Fiscal Commitments, Not Sector Policy

Bidding, sliding feed-in premiums and CfD-type contracts mobilise private capital because they reduce revenue volatility and improve debt serviceability. In fiscal terms, however, they create multi-year obligations that behave like quasi-fiscal commitments: they can accumulate across rounds, become difficult to unwind and will not be credible to lenders unless backed by predictable settlement and disclosure. This is not a reason to avoid such instruments. It is a reason to govern them as part of the State's fiscal architecture.

For Viet Nam, the implication is that support mechanisms should be designed with the same discipline applied to public investment programmes: annual capacity volumes and contract tenors should be authorised within explicit fiscal envelopes; support obligations should be recorded and monitored as contingent exposures over the life of contracts; and settlement architecture should be transparent enough that bankability does not depend on assumptions of implicit state backstopping. This approach prevents a common failure mode in transition phases: weak bankability in early years appears "cheap" under capped prices but is later resolved through arrears, ad hoc adjustments, restructuring or implicit guarantees that are fiscally opaque and credibility-damaging.

A practical implementation translation is that each procurement round should be accompanied by an ex ante fiscal note: expected support payments under conservative price scenarios, a maximum exposure ceiling, a statement of funding source and rules for adjustment if exposure approaches the cap. This is how revenue support becomes a credible financing tool rather than a political negotiation.

5.1.2. Make Predictability The Main Instrument and Generosity the Residual

Investor behaviour, financing terms and delivery rates are more sensitive to stability than to short-term parameter changes. Frequent resets of price ceilings, unclear dispatch treatment, negotiated PPA terms and inconsistent settlement practices raise the cost of capital even when nominal pricing looks sufficient. This creates the worst combination of outcomes: delayed pipelines, higher WACC and increasing pressure for fiscal intervention.

Maximising impact therefore requires shifting from a culture of recurrent recalibration to a culture of multi-year predictability. A published multi-year auction calendar, standardised contract templates and settlement rules with clear enforcement do more to lower total system cost than a higher headline ceiling, because they reduce risk premia, shorten negotiation time, reduce litigation and lower interest during construction. Predictability is also fiscally cheaper: it reduces the probability of emergency interventions and stabilises the tariff and budget profile over time.

This principle should apply not only to pricing instruments but to operational rules. Curtailment allocation principles, settlement timelines, change-in-law and termination compensation, indexation rules and eligibility standards should be stable across rounds except under pre-defined triggers. Policy updates should be rule-based rather than discretionary, because discretion is priced as risk.

5.1.3. Sequence instruments by readiness and by technology financeability

The evidence indicates that macro coherence improves when prices adjust endogenously under state management rather than remaining rigidly administered. However, this is conditional on readiness. Exposing investors to market volatility before settlement and dispatch rules are credible can stall financial close. Prolonged reliance on fixed support, on the other hand, recreates the FIT-era pathologies: distorted investment signals, weakened system incentives and opaque fiscal exposure.

Maximising impact therefore requires a portfolio sequence that is anchored in two maturity tests: market maturity (price formation and settlement) and technology financeability (CAPEX intensity, construction horizon and refinancing need). Mature, replicable technologies with strong competitive depth such as solar PV and onshore wind are suited to competitive procurement supported by one-sided auction-linked sliding premiums that provide a floor during the transition while preserving market signals. Capital-intensive assets with long lead times and multi-year construction risk, notably early offshore wind and grid-dependent renewable clusters, require stronger revenue certainty through two-sided CfD-type structures or equivalent long-term contracts, because private finance cannot efficiently price multi-year volatility against long-tenor debt.

This sequencing is fundamentally different from the FIT era. It allocates instruments based on bankability conditions and system integration constraints rather than applying a single mechanism uniformly. It also provides an exit logic: support intensity should narrow as market formation strengthens, not expand as risks accumulate.

5.1.4. Ensure Market Foundations Prevent Support from Becoming De Facto Fixed Tariffs

Revenue support mechanisms only function as intended when wholesale price formation and settlement are meaningful. If the system marginal price remains constrained by a cap below the feasible cost range of new renewables, premiums will be triggered too often and support becomes effectively fixed. That increases quasi-fiscal exposure and weakens the incentive for system-friendly behaviour such as hybridisation, congestion response and flexibility investment.

Maximising impact therefore requires completing a minimal market foundation package. First, the SMP methodology should be transparent and auditable, including treatment of marginal costs, scarcity conditions and how caps are adjusted. Second, settlement obligations must be credible and enforceable,

particularly when top-ups are required. Third, the transition path from wholesale pilot to deeper wholesale competition and later retail competition should be published and support instruments should be explicitly calibrated to these milestones. Without these foundations, well-designed bidding and contracts can still fail to mobilise investment or can mobilise it only by recreating hidden fiscal risks.

5.2. Implementation Workstreams

Rather than viewing implementation as a sequence of policy "launches", the framework should be delivered through six integrated workstreams that jointly determine whether pipelines become investable and deliverable.

Workstream 1: A bankable revenue stack with explicit caps and credible settlement

The operational objective is to move from negotiated outcomes to repeatable credits. This requires three components to be built in parallel: a predictable procurement schedule, standardised contracts and a settlement backbone that investors and lenders can trust.

A multi-year bidding schedule should specify capacity volumes by technology and zone and should be linked to readiness gates. Sliding premium rules should define the reference price methodology, indexation and settlement timing. CfD-type structures should specify two-way settlement, strike price indexation and enforcement. Standardised post-award PPAs should codify curtailment treatment, dispatch rules, termination payments, change-in-law clauses, payment timelines and dispute resolution. The fiscal implementation requirement is equally important: each instrument must sit under an explicit envelope with publication of cumulative commitments and stress tests under price and volume scenarios.

This workstream is the fastest way to restore investment momentum because it directly lowers WACC by reducing revenue ambiguity and negotiation risk. It is also the fastest way to reduce long-run fiscal risk because it replaces implicit support with explicit, governed exposure.

Workstream 2: Deliverability-based procurement and grid readiness as an eligibility condition

In high-renewables systems, "deliverability" is a financial variable. Curtailment and delayed interconnection reduce probability-weighted revenues and can destroy bankability even when headline tariffs look viable. The implementation objective is therefore to ensure that procurement cannot outrun the grid.

This requires a deliverability gate embedded in auctions and project selection. Capacity should be allocated only in zones with confirmed connection readiness or under published network reinforcement plans with milestones and accountability. Offshore wind requires a state-led pre-development approach in which marine spatial planning, baseline surveys and grid landing points are prepared before auctions. Curtailment rules must be consistent and bankable: Viet Nam does not need maximal compensation everywhere, but it needs a clear, repeatable rule that investors can price. Ambiguity is more expensive than conservatism.

Grid-enhancing technologies should be deployed as near-term capacity multipliers to reduce congestion while longer-cycle transmission corridors are built. This reduces curtailment risk and lowers total system cost, improving both bankability and fiscal stability.

Workstream 3: Flexibility as a financeable asset class rather than a technical aspiration

Storage and flexibility will not scale in an emerging market solely on energy arbitrage. Bankability requires contracted revenue lanes. The implementation objective is therefore to create a "flexibility stack" that combines contracted floors with market upside without regulatory ambiguity.

This requires contracted availability revenues for storage and flexible capacity with performance penalties, clear product definitions for ancillary services and explicit stacking rules so investors can underwrite combined revenues. Where mandates for hybridisation are used, they must be paired with revenue recognition so they do not become pure cost-additive obligations. Demand-side management and time-of-

use tariffs should be treated as flexibility procurement instruments because they are often cheaper than building peaking capacity or oversizing grids.

From a fiscal perspective, this workstream is best framed as cost avoidance and risk reduction. It reduces curtailment, avoids emergency procurement and improves system resilience, lowering the probability of disorderly interventions later.

Workstream 4: Financing maturity, capital recycling and public finance guardrails

Viet Nam's reliance on domestic bank lending with shorter tenors makes the system vulnerable to refinancing risk and maturity mismatch. The implementation objective is to lengthen capital duration and diversify sources while ensuring that public support remains explicit, capped and disclosed.

This requires policy-bank and development finance channels that provide long-tenor instruments, partial risk guarantees and structured on-lending within explicit exposure caps integrated into public debt and credit-risk limits. Green bond market deepening requires credible taxonomy, verification and disclosure, lowering greenwashing risk premia and attracting institutional capital. Capital recycling requires standard contracts, stable regulation and predictable settlement so operating assets can refinance and free bank balance sheets for new projects.

A Ministry of Finance-led contingent liability governance framework is the anchor. It should include a central registry of guarantees and support commitments, scenario stress testing, disclosure in the medium-term fiscal framework and explicit budget envelopes for revenue support programmes. This turns bankability into fiscal discipline rather than fiscal drift.

Workstream 5: Enabling institutions that reduce the execution premium

Delays in permitting, land clearance and connection approvals translate directly into higher interest during construction and higher equity risk premia. The implementation objective is therefore to reduce the execution premium by making approvals predictable and enforceable.

This requires one-stop digital permitting with statutory timelines, published status tracking and accountability. Benefit-sharing and consultation mechanisms should be systematised for land and offshore projects to reduce social opposition and litigation risk. Technical standards for grid connection, storage licensing and safety must be clear so project development does not become iterative negotiation.

Workforce development should target grid operation, storage, offshore engineering and project finance in applied programmes linked to industry needs rather than generic training. Applied R&D and supply chain strategies in strategic segments reduce import dependence and improve resilience.

Workstream 6: Data transparency as an enforcement tool and a risk-control mechanism

In transition phases, trust is built through transparent performance evidence. Publication of dispatch outcomes, curtailment levels, settlement flows and support payments reduces disputes and financing costs while strengthening accountability. For MOF, transparency is not only informational. It is a fiscal control mechanism that prevents hidden liabilities, enables early identification of pressure points and reinforces guardrails. For system operators and regulators, it improves investment signals and supports policy learning through observable auction and settlement outcomes.

5.3. Sequencing Roadmap Through Readiness Gates Rather Than Calendar Phases

A conventional roadmap lists reforms by year. A more robust roadmap ties reforms to readiness gates, because premature deployment of market risk can stall investment while delayed reform can recreate hidden liabilities. The implementation roadmap should therefore be structured around three readiness gates that determine what can be scaled.

Gate 1: Bankability Gate — can lenders underwrite the cash flow?

This gate is passed when standardised contracts exist, settlement rules are enforceable, and support instruments operate under explicit fiscal envelopes. Without this gate, auctions can produce nominal winners that fail at financial close. In practice, the first priority is to establish the contract and settlement backbone, because it unlocks both domestic bankability and international finance participation.

Gate 2: Deliverability Gate — can the project connect and deliver?

This gate is passed when procurement is linked to grid readiness, connection milestones are credible, curtailment rules are bankable and grid-enhancing technologies and transmission planning are aligned with procurement. Without this gate, investment becomes stranded capacity and fiscal pressure re-emerges through renegotiation or ad hoc support.

Gate 3: Market Deepening Gate — can market signals gradually replace support intensity?

This gate is passed when wholesale price formation reflects system conditions with transparent methodology, ancillary services provide monetisation channels for flexibility and retail tariffs begin transmitting time- and scarcity-based signals with targeted social protection.

These gates provide a sequencing logic that is easier to communicate than methodology-heavy modelling: support is scaled when the system can discipline it and market exposure is increased when the system can price it.

5.4. A Practical Roadmap: Priority Actions in the Transition Stabilisation Window and Beyond

The period to 2030 remains the most fragile phase of the transition. Long-run welfare is strong, but early-year bankability can fail due to revenue uncertainty, dispatch risk, settlement ambiguity and price caps misaligned with feasible costs. The objective in the transition stabilisation window is therefore to restore investment momentum while preventing uncontrolled quasi-fiscal commitments and avoiding tariff shocks.

Priority actions should be structured as an integrated delivery package. First, publish a multi-year procurement calendar tied to zonal readiness and establish standardised documentation and pre-qualification requirements. Second, implement one-sided auction-linked sliding premiums for mature technologies with automatic tapering and explicit MW and budget ceilings approved ex ante. Third, pilot two-sided CfD-type contracts only for a limited set of capital-intensive projects where long-tenor financing cannot be mobilised otherwise, with obligations recorded as contingent exposures and subject to stress testing. Fourth, issue standardised post-award PPAs with codified rules on curtailment, dispatch treatment, termination payments, change-in-law and settlement timelines. Fifth, operationalise DPPA for large creditworthy buyers as a complement that diversifies offtake channels and supports industrial competitiveness, while integrating wheeling charges and imbalance settlement rules transparently. Sixth, clarify that price ceilings operate as safety valves rather than substitutes for auctions and avoid setting caps below feasible cost ranges in ways that induce non-participation.

Grid readiness and permitting reforms are not parallel reforms; they are binding conditions. Transmission investments, grid-enhancing technologies, readiness gating and statutory permitting timelines determine whether the revenue stack becomes financeable or collapses into curtailment and renegotiation.

In the market deepening window, the emphasis shifts from investment recovery to efficiency and integration. Sliding premium eligibility should narrow to residual segments or policy needs. CfDs become the standard for capital-intensive strategic technologies. Ancillary markets and stacking rules should mature so storage and demand response become investable. Retail tariff reforms should scale time-of-use pricing with targeted transfers rather than broad price suppression. Wholesale price formation should progressively reflect system conditions while managing affordability through social policy rather than

across-the-board caps. Fiscal exposure should decline in practice as support tapers, with periodic audits of contingent exposures and clear sunset logic.

In the longer horizon, the objective is consolidation and alignment with Net Zero requirements. Long-term contracts should be limited to strategic or capital-intensive technologies where financing needs remain incompatible with pure merchant exposure. Fiscal policy shifts from direct support toward oversight, transparency enforcement and targeted social mitigation to prevent new quasi-fiscal commitments from accumulating unintentionally.

Table 5. Indicative sequencing timeline anchored to readiness gates

Phase / Window	Indicative period*	Primary objective	Instruments scaled	Key readiness condition	Fiscal posture
Transition stabilisation window	2025–2030	Restore bankability and investment momentum	Sliding FiPs (mature tech); pilot CfDs (capital-intensive); standard PPAs; DPPA pilots	Bankability Gate passed: standard contracts, settlement discipline, fiscal envelopes	Explicit, capped, disclosed
Early market deepening	Post-bankability, pre-full market	Improve efficiency and integration	Narrowed FiP eligibility; expanded CfDs; storage availability contracts; ancillary markets	Deliverability Gate passed: grid readiness, curtailment rules, connection milestones	Declining exposure
Market deepening and consolidation	Beyond initial scaling	Reduce reliance on support and align with Net Zero	Limited long-term contracts; market-based flexibility; TOU tariffs	Market Deepening Gate passed: price formation, settlement credibility	Oversight-focused
Long-term steady state	Net Zero alignment	Preserve fiscal discipline and system resilience	Residual strategic contracts only	Stable market institutions	Minimal direct support

5.5. Governance and Institutional Choreography: Making the MOF–MOIT Axis Work as a Delivery System

Implementation requires governance that prevents fragmentation and prevents implicit liabilities. The central delivery axis is the MOF–MOIT relationship: MOF anchors fiscal envelopes, contingent liability governance and tariff pass-through analysis, while MOIT anchors market design, technical regulation and alignment with PDP VIII planning.

A standing coordination mechanism should jointly approve bidding calendars, eligibility gates, fiscal envelopes and settlement rules. The key design choice is to make adjustment rule-based, not discretionary: triggers for recalibration should be tied to observable outcomes such as auction clearance rates, delivery rates, curtailment levels, settlement performance and exposure against caps.

EVN and NSMO remain the operational settlement hub, but payment credibility depends on ring-fenced accounts, transparent funding rules and strict arrears protocols subject to audit. Clear rules on payment priority, remedial actions if shortfalls occur and publication of settlement flows are essential for bankability and fiscal oversight. Domestic finance mobilisation also depends on SBV guidance: lending norms on DSCR assumptions, tenor expectations, currency risk treatment and exposure limits materially affect WACC and therefore support needs. Coordination between MOF and SBV ensures that fiscal guardrails and financial-sector incentives operate as one system.

Local authorities remain decisive for land, licensing and readiness. Auction scheduling and project award should be linked to enforceable readiness criteria monitored at provincial level to avoid awarding capacity that cannot be delivered.

Table 6. Integrated implementation plan and stakeholder roles by workstream

Legend: L = Lead (accountable) | CL = Co-Lead (joint accountable) | S = Supporting (execution support) | C = Consulted (inputs/validation)

Workstream	Sub-task cluster	Key deliverables / outputs	Sequencing gate	MOF fiscal control points	MOF	MOIT	NSMO	EVN	NPT (EVNNPT)	SBV	Policy banks	MAE	MOJ	PPCs
1. Bankable revenue stack + settlement	A. Procurement calendar + eligibility	Multi-year auction calendar (tech/zone volumes) + eligibility rulebook + pre-qualification checklist	**Bankability Gate**	Annual capacity envelopes and budget ceilings approved ex ante; cancellation/deferral rule if envelope breached	**L**	**CL**	**C**	**C**	S	C	C	C	C	**S**
	B. Sliding FiP design + reference price	FiP scheme decree/circular; reference price methodology; indexation; settlement timeline; premium taper rules	Bankability Gate	Explicit fiscal envelope (VND ceiling) and volume corridor; periodic stress test under low SMP	**L**	**CL**	**C**	**C**	S	C	C	C	C	C
	C. CfD-type long-term contract pilots	Standard CfD template (2-way settlement); strike price indexation; performance	Bankability Gate	Commitments recorded as contingent exposure; cap per round; FX risk policy note; audit trail	**L**	**CL**	C	C	S	C	**S**	C	C	C

		security; milestones												
	D. Standard PPA package	Standard PPA suite: curtailment rule, dispatch treatment, change-in-law, termination payments, payment timelines, dispute resolution	Bankability Gate	"No standard contract, no award" rule; enforceability review to reduce renegotiation risk	**CL**	**L**	C	**S**	S	C	C	C	**S**	C
	E. Settlement backbone	Ring-fenced settlement accounts / fund; arrears protocol; reporting template; cash waterfall; audit procedures	Bankability Gate	Ring-fencing rules, arrears triggers, remedial actions; disclosure in MTFF/budget docs	**L**	**CL**	**CL**	**CL**	S	C	C	C	C	C
2. Deliverability-based procurement + grid readiness	A. Grid readiness zoning	Zonal "grid-ready nodes" list; capacity hosting maps; interconnection queue rules	**Deliverability Gate**	Procurement volumes tied to deliverability status to avoid stranded awards and implicit fiscal pressure	**CL**	**L**	**CL**	**CL**	**CL**	C	C	C	C	**S**
	B. Bidding linkage to	Auction rules requiring signed	Deliverability Gate	Stop-go rule tied to network milestone	**CL**	**CL**	**CL**	**CL**	**L**	C	C	C	C	**S**

	network milestones	connection agreement or published reinforcement plan with milestones		delivery; prevent procurement outrunning network											
	C. Curtailment framework	Curtailment allocation rulebook; compensation principle (if any); deemed energy rules; measurement methodology	Deliverability Gate	"Curtailment ambiguity = bankability risk = contingent liability risk" framing; publish rule to reduce disputes	**C**	**L**	**CL**	**CL**	S		C	C	C	C	C
	D. Grid-enhancing technologies (GETs)	GET investment plan (dynamic line rating, advanced conductors, digital substations); procurement specs	Deliverability Gate	Value-for-money criteria; capex prioritization consistent with PDP VIII & MTIP	C	**CL**	C	C	**L**		C	C	C	C	S
	E. Offshore wind site pre-development	Marine spatial plan; baseline surveys; seabed studies; grid landing points;	Deliverability Gate	Staged approvals to cap sunk fiscal exposure; cost-recovery mechanism design	**CL**	**CL**	C	C	**S**		C	C	**L**	C	C

		auctionable sites package												
3. Flexibility as investable asset class	A. Storage licensing + technical standards	Storage licensing regime; safety standards; grid code amendments; metering & telemetry requirements	**Market Deepening Gate**	Avoid open-ended support: define eligible services, caps and sunset logic	C	**L**	**CL**	**CL**	S	C	C	C	**S**	C
	B. Availability / capacity-style contracts	Standard availability contract (MW); performance penalties; verification; procurement approach	Bankability Gate	Procurement caps; payment ceilings; medium-term budget allocation; stress tests	**L**	**CL**	C	C	S	C	**S**	C	C	C
	C. Ancillary services market	Product definitions (FR, reserves, congestion); qualification; settlement; stacking rules	Market Deepening Gate	Minimize direct fiscal exposure: prefer price-based market settlement; define guardrails	C	**L**	**CL**	**CL**	S	C	C	C	C	C
	D. Hybridization mandates	Zone-based hybrid rules; storage ratio thresholds;	Deliverability Gate	Ensure mandates are not unfunded requirements; pair	C	**CL**	C	C	S	C	C	C	C	**S**

	(where justified)	compliance checks; revenue recognition		with monetization lanes										
	E. DSM + TOU as flexibility procurement	TOU tariff pilots; demand response programs; industrial flexibility contracts	Market Deepening Gate	Targeted social mitigation design to avoid tariff shock; budgeted support if any	**CL**	**CL**	C	**CL**	S	C	C	C	C	C
4. Financing maturity + fiscal guardrails	A. Contingent liability registry	Central registry of guarantees/support commitments; classification; reporting calendar	Bankability Gate	Integrate into MTFF; publish exposures and ceilings; auditability	**L**	C	C	C	C	C	C	C	C	C
	B. Stress testing + fiscal envelopes	Scenario stress tests (price/volume/FX); annual envelope setting rules; triggers for recalibration	Bankability Gate	Explicit budget envelopes; predefined adjustment triggers; prevent hidden liabilities	**L**	**CL**	C	C	C	C	C	C	C	C
	C. Policy-bank credit enhancement	Partial risk guarantees; concessional lines; on-lending framework; eligibility criteria	Bankability Gate	Guarantee caps; exposure limits; alignment with debt sustainability	**L**	C	C	C	C	**CL**	**CL**	C	C	C

	D. Green bond + verification ecosystem	Taxonomy alignment; verification standards; issuer guidance; pipeline of eligible projects	Market Deepening Gate	Reduce greenwashing risk; consistent disclosure; link to public investment pipeline	**L**	C	C	C	C	C	**S**	C	C	C
	E. Capital recycling / refinancing	Standard contract bankability package; refinancing pathways; securitization guidance	Market Deepening Gate	Reduce pressure on bank balance sheets; minimize contingent backstops	**CL**	**CL**	C	C	C	**CL**	**S**	C	C	C
5. Execution institutions + capability	A. One-stop digital permitting	Digital platform; statutory timelines; public status tracking; appeal mechanism	Deliverability Gate	Lower IDC = lower required support; reduce renegotiation/arrears risk	C	**L**	C	C	C	C	C	C	**CL**	**CL**
	B. Benefit-sharing / social acceptance	Community benefit schemes; consultation standards; compensation protocols	Deliverability Gate	Avoid project stoppages and fiscal surprises; define funding channels transparently	C	**CL**	C	C	C	C	C	**CL**	C	**L**
	C. Workforce development	Applied training: grid ops, storage, offshore, project	Market Deepening Gate	Multi-year funding plan; align with productivity and industrial policy	C	**CL (MOET as lead)**	C	C	C	C	C	C	C	**S**

		finance; certification													
	D. Applied R&D + supply chain	Targeted incentives; R&D platforms; localisation strategy (components, digital grid)	Market Deepening Gate	Ensure incentives time-bound and performance-based; avoid permanent subsidies	**CL**	**CL**	C	C	C	C	C	C	C	C
6. Transparency + monitoring (policy learning)	A. Data publication protocol	Monthly publication: dispatch, curtailment, settlement flows, support payments, arrears	All gates	Transparency as fiscal control tool; early warning for contingent liabilities	**CL**	**CL**	**L**	**L**	S	C	C	C	C	C
	B. KPI dashboard + review cycle	KPI set; quarterly review; rule-based recalibration triggers	All gates	Trigger-based changes to avoid discretionary policy risk	**L**	**CL**	S	S	S	C	C	C	C	C
	C. Independent audit + assurance	Annual audit of support obligations, arrears protocols, registry completeness	All gates	Audit trail strengthens credibility and reduces financing costs	**L**	C	C	C	C	C	C	C	C	C

5.6. Monitoring, Adaptation and Policy Learning Without Credibility Loss

The framework must be adaptive because demand growth, technology costs, global fuel markets and climate finance conditions are uncertain. However, ad hoc adjustment undermines credibility and raises financing costs. The solution is to institutionalise predictable review cycles based on transparent metrics and pre-defined adjustment rules.

A monitoring dashboard should track: bidding clearance and pricing outcomes, financial close rates, construction and COD performance, curtailment and congestion patterns, settlement performance and arrears risk, cumulative fiscal exposure and contingent commitments, tariff impacts and mitigation costs, DPPA uptake and credit performance, storage and flexibility deployment and emissions trajectories relative to PDP VIII milestones. Each metric should have an associated response rule. Auction prices inform cost trends. Settlement performance reveals payment risk. Curtailment patterns reveal where grid readiness and flexibility investments are binding. Fiscal exposure tracking prevents the accumulation of hidden liabilities.

This approach turns policy learning into disciplined governance. It supports Viet Nam in updating policy without undermining investor confidence and without recreating the cycle of credibility loss that characterised the end of the FIT period.

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6. Conclusion

This report demonstrates that Viet Nam's transition beyond the Feed-in Tariff era is not primarily a question of ambition or resource potential, but one of institutional design and investment delivery. The core challenge is no longer whether renewable energy should scale, but whether planning targets can be translated into a bankable, grid-integrated and fiscally sustainable investment pipeline at the pace required by the revised Power Development Plan VIII and the Net Zero 2050 commitment.

The quantitative analysis provides a consistent foundation for this conclusion. Cost–benefit analysis confirms that PDP VIII–aligned pathways are welfare-dominant relative to Business-as-Usual across a wide range of assumptions. The principal gains arise from structural changes in the generation mix and long-term emissions reductions, not from short-term tariff suppression or carbon pricing alone. At the same time, the analysis identifies a binding vulnerability during the 2025–2030 transition period: administered price ceilings, dispatch uncertainty and weak settlement discipline can render otherwise welfare-positive projects unfinanceable. This creates a paradox in which the transition is economically justified but operationally fragile unless bankability is addressed explicitly.

Macroeconomic analysis reinforces this finding. Renewable-intensive pathways can support economic growth while stabilising power-sector emissions, but only under a managed market orientation in which electricity prices adjust credibly under State oversight. Rigid price controls weaken investment signals, increase volatility and raise the likelihood of ex post fiscal intervention. Generation expansion alone is therefore insufficient. Without coordinated investment in transmission, grid reinforcement and system flexibility, renewable deployment risks higher curtailment, deteriorating revenue certainty and rising system costs.

Taken together, the evidence shows that Viet Nam's energy transition has entered a "system-building" phase. Investment needs are dominated by capital-intensive and long-lived assets such as offshore wind, storage, major transmission corridors and grid digitalisation. These assets require long-tenor capital and predictable cash flows, yet the current financing structure remains heavily reliant on short-tenor domestic bank lending and negotiated contracting. The resulting maturity mismatch elevates financing costs and limits scalability.

International experience demonstrates that countries that successfully scale renewables do not rely on policy intent alone. They deploy coherent policy architectures that align pricing mechanisms, procurement design, grid deliverability and fiscal guardrails. Standardised contracts, deliverability-based auctions, monetisation of flexibility and centralised management of contingent liabilities are not peripheral reforms; they are the mechanisms through which planning becomes investable.

Against this backdrop, the report proposes a set of priority policy packages that operate as an integrated system. Transitional revenue-stabilisation instruments, notably auction-based sliding Feed-in Premiums and selective CfD-type contracts, are required to restore bankability while preserving market signals and capping fiscal exposure. Deliverability-centred procurement links generation awards to grid readiness, reducing curtailment and execution risk. Explicit monetisation of storage, demand response and ancillary services transforms system flexibility from a technical requirement into an investable asset class. Financing-maturity instruments and fiscal governance frameworks extend capital tenors while ensuring that public exposure remains explicit, bounded and disclosed. Finally, institutional and capability reforms address the non-financial risks that raise the cost of capital and slow delivery.

Implementation is therefore the decisive factor. The report emphasises that effective delivery depends on a clear institutional choreography, anchored by a strong MOF–MOIT axis. Market-oriented instruments function as quasi-fiscal commitments and must be governed with the same discipline as public investment and debt. Settlement credibility, transparency and rule-based adjustment mechanisms are essential to

prevent implicit liabilities from accumulating through arrears, renegotiation or balance-sheet stress. Sequenced implementation allows Viet Nam to stabilise investment in the near term, deepen markets as system capacity grows and consolidate toward a resilient, price-based framework over time.

In conclusion, Viet Nam's pathway to Net Zero is not achieved by expanding renewable generation in isolation, nor by replicating past support regimes. It requires a market-oriented, fiscally anchored and system-aware policy architecture that aligns revenue stabilisation, grid deliverability, flexibility investment and institutional capacity. By translating planning ambition into disciplined execution, Viet Nam can mobilise long-duration private capital at scale, reduce integration costs and safeguard fiscal resilience. In doing so, the energy transition becomes not a source of macroeconomic risk, but a foundation for sustained growth, energy security and long-term development.

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