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Liberalised Electricity Markets:

Lessons from global markets as South Africa transitions to a liberalised electricity system

Guidance

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Foreword

Across developing and emerging economies, securing a reliable, affordable, and sustainable electricity supply remains one of the most pressing challenges. It is also one of the greatest enablers of economic growth. Meeting this challenge requires unprecedented investment in new electricity infrastructure.

Electricity market reform is an important part of this journey, because it helps to attract the scale of capital required. By moving from regulated systems toward more competitive markets, reform can open access to new sources of capital and innovation. However, a more competitive market alone is not enough. It must be supported by other efforts aiming to mitigate the risks observed in mature markets, such as price volatility and underinvestment in firm capacity, and to help direct investment to where it is most needed.

As electricity market reform results in new sales routes, investors and lenders must first understand how risk is allocated and priced across evolving market structures. Catalytic funding from development finance institutions (DFIs) can help bridge this learning gap by demonstrating that new models can operate commercially and by building the confidence needed for broader participation.

This report explores how other markets have evolved compared with the process unfolding in South Africa. It highlights the emerging role of aggregators, a growing commercial model connecting independent power producers (IPPs) with consumers who cannot access long-term, utility-scale power purchase agreements (PPAs) or demand flexibility through shorter-term contracts. By opening up new routes to energy access, aggregators help expand customer choice and accelerate the rollout of new generation capacity. BII's partnership with Etana Energy, together with GuarantCo, demonstrates how targeted, catalytic finance can prove innovative commercial models that advance electricity infrastructure development and contribute to broader economic and development goals.

While this document focuses on South Africa's electricity market reform process, drawing on insights from other developed markets, the lessons within extend far beyond any single market. They highlight the key enablers of electricity market reform, as well as the signposts and risks to monitor as reform progresses. We hope this document, and the insights generated by our analysis, can help other developing markets navigate their own reform journeys and work towards sustainable, inclusive, and resilient energy systems.

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Executive summary

South Africa has made great progress in stabilising its electricity supply and addressing its historic problem of loadshedding, the controlled power cuts introduced when demand for electricity exceeded the available supply. To sustain this progress and secure the energy foundation for future economic growth, South Africa will require over $100 billion in new investment by 2035, one of the largest infrastructure programmes in its history. However, with rising public debt and significant contingent liabilities, the historic model of procurement through the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), which relied on state guarantees, can no longer serve as the only vehicle for new generation investment. To unlock the capital needed, risk must shift from the public balance sheet to those best placed to manage it.

Electricity market reform is key to enabling this transition. The Electricity Regulation Amendment Act (ERAA) provides the legal foundation for South Africa's shift from a regulated, single-buyer system toward a more competitive market. Reform can unlock new sources of capital and innovation by introducing greater transparency and expanding routes to market. However, international experience shows that competitive markets bring both opportunities and risks. In early stages, liquidity tends to be limited, as few participants are active in the competitive market. This low liquidity can amplify price movements, with small trades driving sharp swings in wholesale prices. As liquidity improves and renewable penetration increases, volatility can rise further, because low-marginal-cost renewables often set the wholesale price, which fluctuates sharply against high-cost peaking plants. Without safeguards, these dynamics can deter long-term investment in firm capacity critical for energy security.

In South Africa, aggregators[1] act as commercial intermediaries that pool demand from multiple customers and match it with supply from independent power producers (IPPs). They play a pivotal role in bridging the gap between traditional long-term, state-backed PPAs and new market-based contracting. By providing a structured route to market for IPPs and offering consumers access to flexible or shorter-term contracts, aggregators create scale, improve creditworthiness, and expand access to new capacity. Their success can complement central procurement mechanisms such as REIPPPP, deepening liquidity in emerging contracting pathways and strengthening investor confidence in the wider market transition.

As in many transitioning electricity markets, investors in South Africa have been cautious about financing aggregators, because their commercial viability in a newly liberalising system remains largely untested. To demonstrate that this business model can work in this context, BII, in partnership with GuarantCo, launched a $100 million guarantee facility in December 2024 for Etana Energy, one of the country's first licensed electricity traders.

The facility represents a first-of-its-kind credit enhancement, providing liquidity cover for a defined period. This structure gives Etana time to resolve issues such as replacing defaulting customers without requiring full debt exposure to be guaranteed. By balancing investor protection with commercial

1 In South Africa, these entities are referred to as aggregators rather than traders, as they do not trade on the wholesale market.

discipline, it signals a shift away from traditional guarantee-dependent frameworks. The credit enhancement helped Etana to reach financial close on nearly 300 megawatts (MW) of wind and solar photovoltaic (PV) projects, demonstrating early market traction, and it offers sufficient remaining guarantee capacity to scale the business to a portfolio size of around 700MW.

Designing the guarantee facility required an integrated understanding of credit risk, as well as the wider risks associated with South Africa's evolving electricity market. As reforms advance and new sales routes emerge, including potential participation in a future wholesale market, the nature of counterparty risk and revenue flows shifts. These shifts alter the risk profile of aggregators and therefore shape the appropriate scale and structure of credit enhancement.

Because the guarantee facility had to reflect the realities of South Africa's electricity market, BII used its technical assistance (TA) facility BII Plus[2] to commission BCG to analyse global electricity market reforms and identify ways to apply lessons learned.

The study benchmarked how liberalised markets have evolved, identifying key signposts, risk factors, and the conditions needed for successful reform. These insights helped quantify how market liberalisation dynamics, such as the pace of liquidity development and the diversification of sales routes, affect counterparty and revenue risk. The findings directly informed Etana's credit enhancement design, ensuring the facility was sized and structured to remain effective as market conditions evolve. The study also played a catalytic role in delivering the transaction, by illustrating the value TA can bring in relatively novel or early-stage markets.

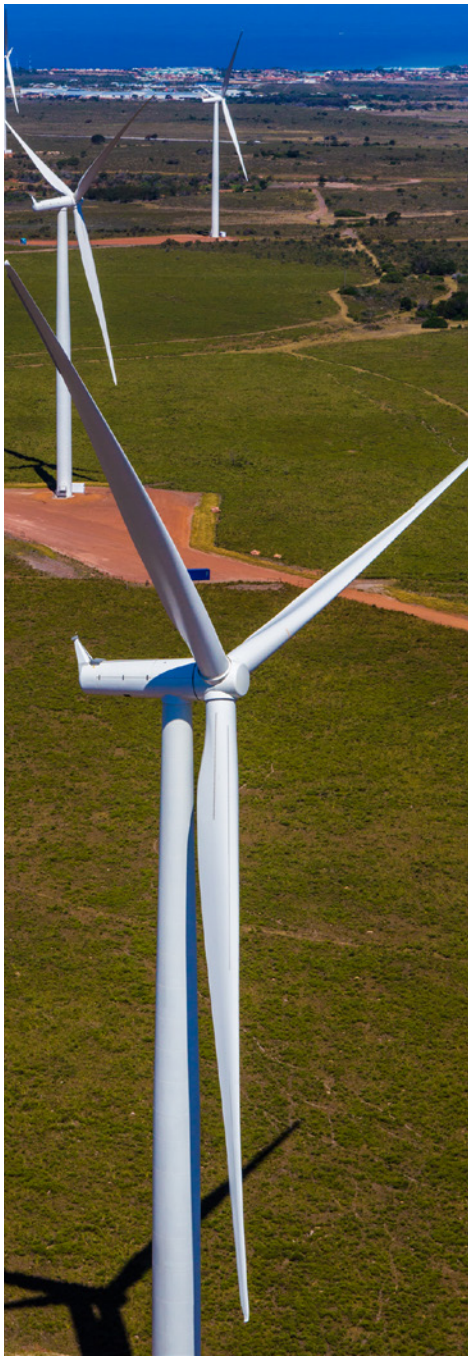
The benchmarking analysis identified four dimensions that are common to successful electricity market reforms and shape how effectively countries transition from regulated to competitive markets. These are:

1. Policy reform and market opening: establishing the legal and regulatory foundation for competition.
2. Third-party grid access: ensuring transparent, non-discriminatory network use.
3. Transmission unbundling: separating monopoly functions from competitive activities.
4. Market structure definition: clarifying how generation, trading, and supply interact.

Progress across these dimensions will help shape the speed and stability of a country's electricity reform transition.

As electricity markets liberalise, new operational and commercial challenges emerge. For aggregators and traders, two issues stand out, as they directly shape the sales routes available to them and, ultimately, their commercial viability: limited liquidity and price volatility. In low-liquidity markets such as South Africa, traders and aggregators manage risk mainly through physical strategies, holding generation or flexible capacity, including storage and peaking plants, to shift output from lower- to higher-priced periods. As markets mature and liquidity deepens, financial instruments such as futures, options and contracts for difference become increasingly important for stabilising revenues and managing market exposure.

As South Africa prepares to launch the South African Wholesale Electricity Market in 2026, it is important to recognise that market liberalisation occurs over time, not through any single reform step. The path toward a competitive electricity market will likely involve hybrid structures that combine regulated and market-based arrangements as the system transitions through successive stages. While significant progress has been made, achieving the liquidity and depth required for sustained trading will take time. With consistent policy delivery, institutional coordination and catalytic support from both public and private investors, South Africa can build a competitive, and investable electricity market that anchors long-term, sustainable growth.



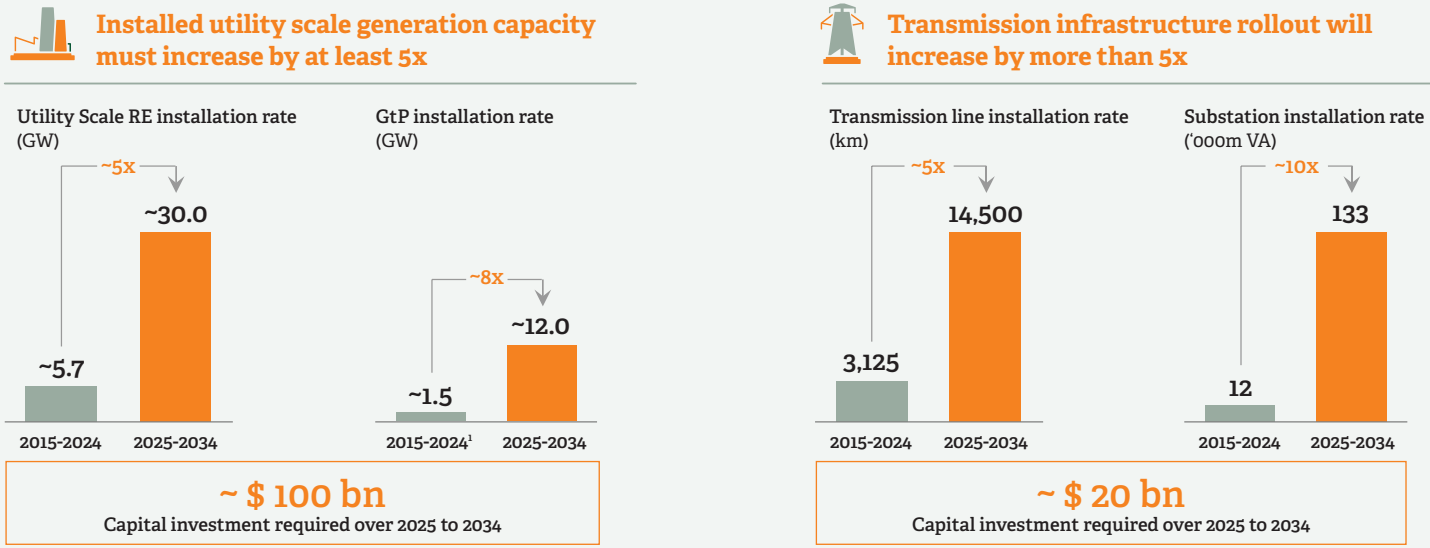
2 BII Plus provides advisory services that supports investees and unlocks systemic barriers for impactful investment across Africa and Asia.

1. The case for market liberalisation in South Africa

South Africa has made great progress in stabilising its electricity supply and addressing its historic loadshedding problem. It now has an opportunity to sustain this momentum through close to $100 billion of capital investment across the electricity system over the next decade (Figure 1). This would represent one of the largest capital investments in South Africa's history, supporting industrial growth, creating jobs, and strengthening its foundations for long-term development.

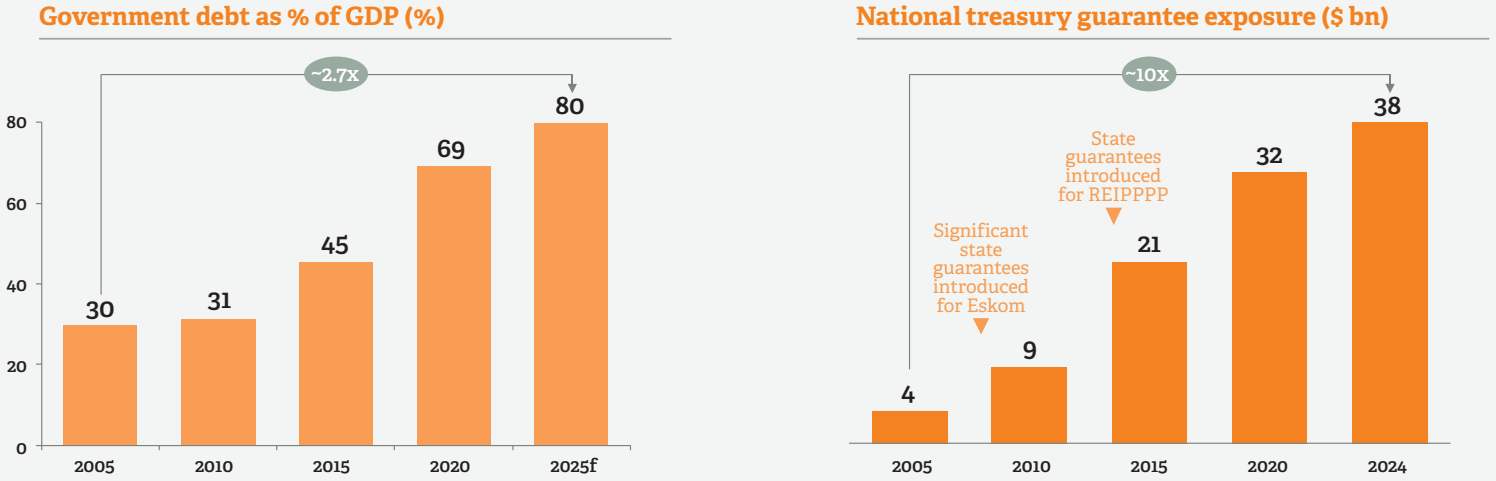
Over the past 15 years, new generation capacity has primarily been procured through the REIPPPP, with Eskom acting as the programme's single buyer. While this model successfully attracted nearly 6GW of renewable capacity and established South Africa as a regional leader in independent power procurement, it depended on sovereign guarantees. Given the scale of new investment now required, and National Treasury's contingent liabilities of around $40 billion, combined with fiscal constraints and public debt approaching 80 per cent of GDP, this approach is no longer sustainable as the sole mechanism for new generation investment (Figure 2).

Figure 1: South Africa needs an unprecedented generation and transmission expansion to ensure its energy security and economic growth



1 Devon and Avon power stations; Source: NTCSA TDP 2024; IRP 2025

Figure 2: SA faces low-growth, high debt; structural reforms are required to accelerate investment and shift risk away from fiscus to private sector



Source: StatsSA, WorldBank; GAIN; SARB; IMF; Statista; National Treasury Budget Review 2016-2025; ERAA; BCG analysis

To mobilise the $100 billion investment that the system requires, the allocation of risk must evolve, shifting from the fiscus to entities that are best equipped to manage it. The signing into law of the Electricity Regulation Amendment Act (ERAA) therefore marks an important milestone. The ERAA establishes the legal foundation for a more competitive and liberalised electricity market, creating the conditions for greater price transparency and deeper liquidity. These developments can incentivise more private sector participation from new IPPs, utilities, and aggregators, supporting diversification of risk away from the public balance sheet.

While these reforms create a strong foundation for a more competitive electricity system, international experience shows that market liberalisation brings additional risks and operational complexities that require careful management to ensure long-term system reliability and financial sustainability.

2. Market liberalisation challenges

A liberalised electricity market introduces a new sales channel by enabling wholesale trading on a spot market (Figure 3). This creates a transparent platform where multiple buyers and sellers transact directly, increasing competition and improving price discovery. However, wholesale trading also brings market dynamics that must be carefully managed to sustain investment and system reliability.

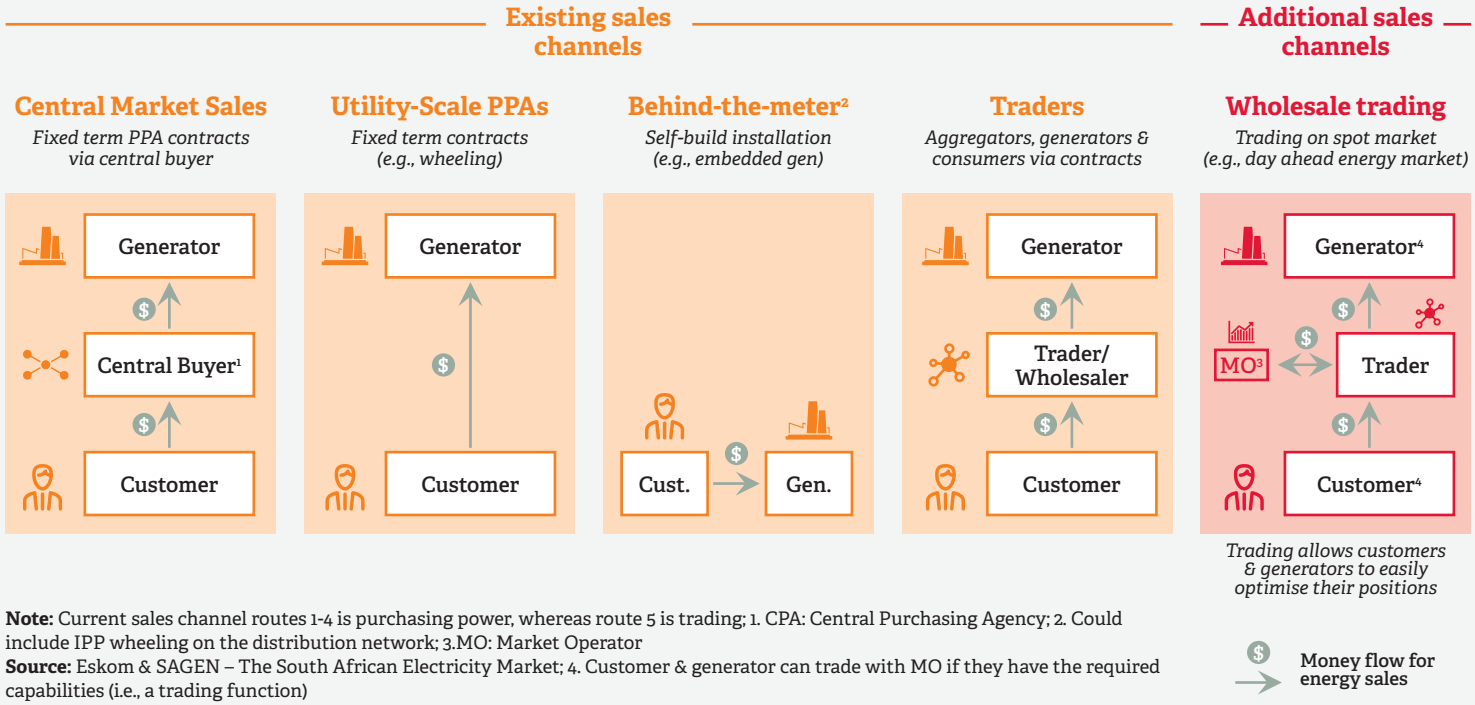
Experience from mature markets, such as those in Europe, shows that while the wholesale market drives efficiency and transparency, marginal pricing can also create structural challenges for different participants. For developers, exposure to real-time wholesale market prices can reduce revenue certainty and weaken incentives to invest in new capacity. For consumers, the market may increase exposure to price volatility, creating affordability challenges if not managed carefully.

For governments, reliance on short-term market signals often fails to incentivise long-term investment in the firm generation needed to maintain energy security and underpin economic growth.

A viable electricity market therefore requires a balance between competitive mechanisms that drive efficiency and transparency, and central procurement or capacity mechanisms that secure the capacity needed for system reliability. This balance helps countries to realise the benefits of competition while limiting the volatility and underinvestment observed in some liberalised markets.

While electricity market reform introduces many challenges, two issues are particularly important for aggregators because they directly shape the sales routes available to them and, ultimately, their commercial viability. The first is liquidity, which underpins an efficient wholesale market with a transparent price signal. The second is price volatility, which can undermine investment confidence and system stability. In practice, these two issues are closely linked. In early-stage markets, low liquidity often amplifies price volatility because each transaction has a larger impact on the market price, while high volatility discourages both trading activity and new entrants, further constraining liquidity.

Figure 3: A wholesale market within a liberalised market structure introduces a new sales channel – wholesale trading via a spot market



Note: Current sales channel routes 1-4 is purchasing power, whereas route 5 is trading; 1. CPA: Central Purchasing Agency; 2. Could include IPP wheeling on the distribution network; 3.MO: Market Operator
Source: Eskom & SAGEN – The South African Electricity Market; 4. Customer & generator can trade with MO if they have the required capabilities (i.e., a trading function)

2.1. Liquidity is key for an efficient wholesale market

The performance of a wholesale electricity market depends on liquidity, the ability of participants to buy and sell electricity without materially influencing its price. Deep liquidity supports accurate price signals, expands hedging opportunities, and helps ensure an efficient and continuous balance of supply and demand.

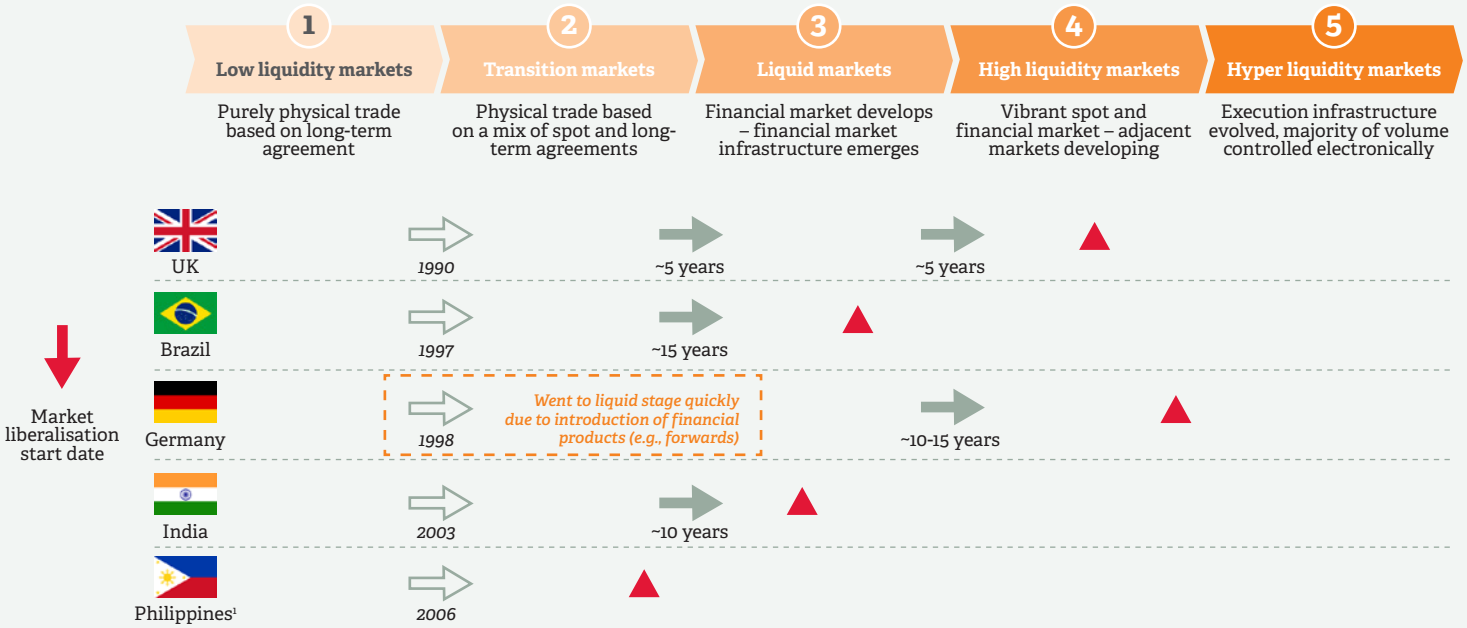
In many emerging liberalised electricity markets, limited liquidity restricts effective price formation and reduces participants' ability to trade, hedge risk, and manage exposure. In contrast, mature electricity systems, such as those in Europe, demonstrate deep liquidity supported by both physical and financial trading platforms that enable more stable and predictable market behaviour. Regulators typically influence liquidity through three main levers:

1. System adequacy and energy security: where licensing and registration requirements shape the speed at which new capacity comes online.
2. Trading infrastructure: the design and oversight of rules governing physical and financial trading platforms.
3. Market participation rules: establishing criteria and thresholds that determine who can enter the market and engage in trading.

System adequacy and energy security are often the biggest constraints on market liquidity. When generation capacity is insufficient or unreliable, market participants prioritise maintaining supply over engaging in trade. In such conditions, trading remains limited and markets struggle to develop the depth needed for meaningful liquidity. International experience shows that moving from low to high liquidity is a gradual process taking 10-15 years, as shown in Figure 4.

Liquidity is therefore not only a sign of market maturity but also a prerequisite for stability, because without it, price signals are unreliable, and investment is less likely.

Figure 4: Benchmarking shows that transitioning to high liquidity electricity market is a ~10-15 year journey



1 The Phillipines has no financial spot market and their physical spot market is mature but limited
Source: IEA; Ofgem 2023; WESM; EEX Power Futures; Central Electricutyt Regulatory Commission; Government of Brazil; BCG analysis

~10-15 years

Benchmarking shows that transitioning to high liquidity electricity markets is a ~10-15 year journey.

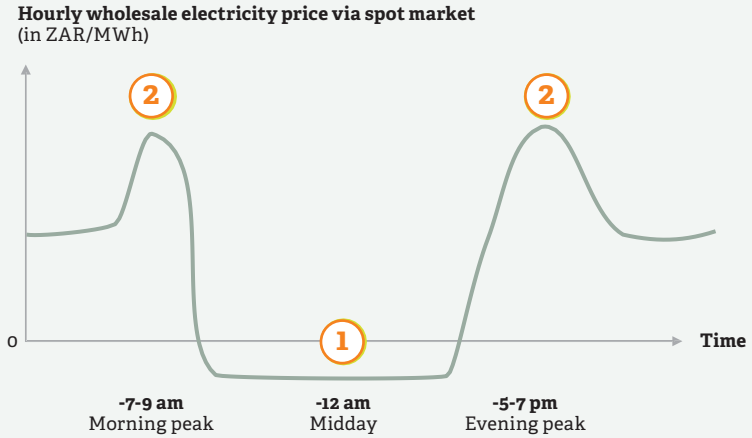
2.2. Price volatility and low pricing in wholesale market

As liquidity deepens and higher shares of variable renewable energy (VRE) are integrated, wholesale price dynamics begin to shift in different ways. In early stages, before large-scale VRE deployment, electricity markets typically exhibit limited price variation, as dispatchable thermal plants determine the marginal price and maintain stability throughout the day.

As low-marginal-cost VRE capacity increases, average prices fall, the residual load curve[3] flattens, and periods of oversupply push wholesale prices sharply downward. The prices sometimes reach zero or even negative values, for example when thermal plants submit bids at negative prices to remain online (Figure 5).

At the same time, mid-merit thermal plants become less viable to operate due to reduced utilisation. As these plants exit the market, systems increasingly rely more on expensive peaking plants during VRE shortfalls.[4] The result is greater intraday volatility, characterised by more distinct oscillations between low prices during high VRE production periods and high prices when these more expensive peakers are required due to low VRE output (Figure 6).

Figure 5: Excess supply could result in negative prices during certain periods of the day

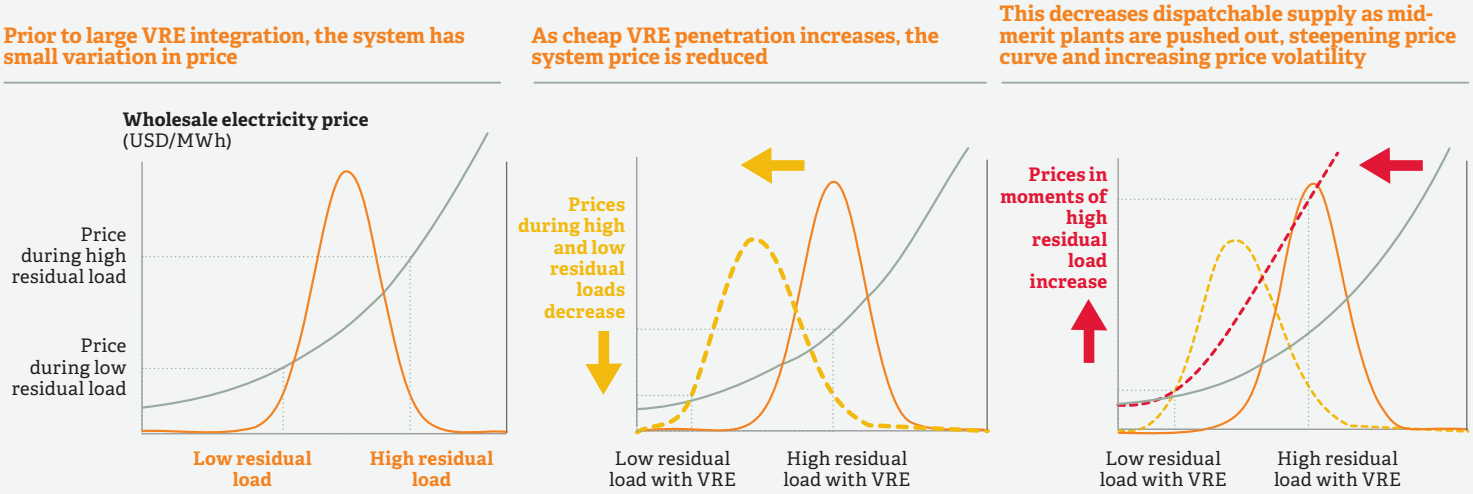


1 Coal plants bid at a **negative price at their minimum load** to place them first in the merit order, and ensure they are dispatched ahead of RE

2 Since coal cannot shutdown and restarted within a day, bidding a negative price at their minimum load maximises their **income by allowing them to be online during the high price periods**

Source: BCG analysis

Figure 6: Increasing RE penetration has seen mid-merit plants become uneconomical, with this increasing price volatility

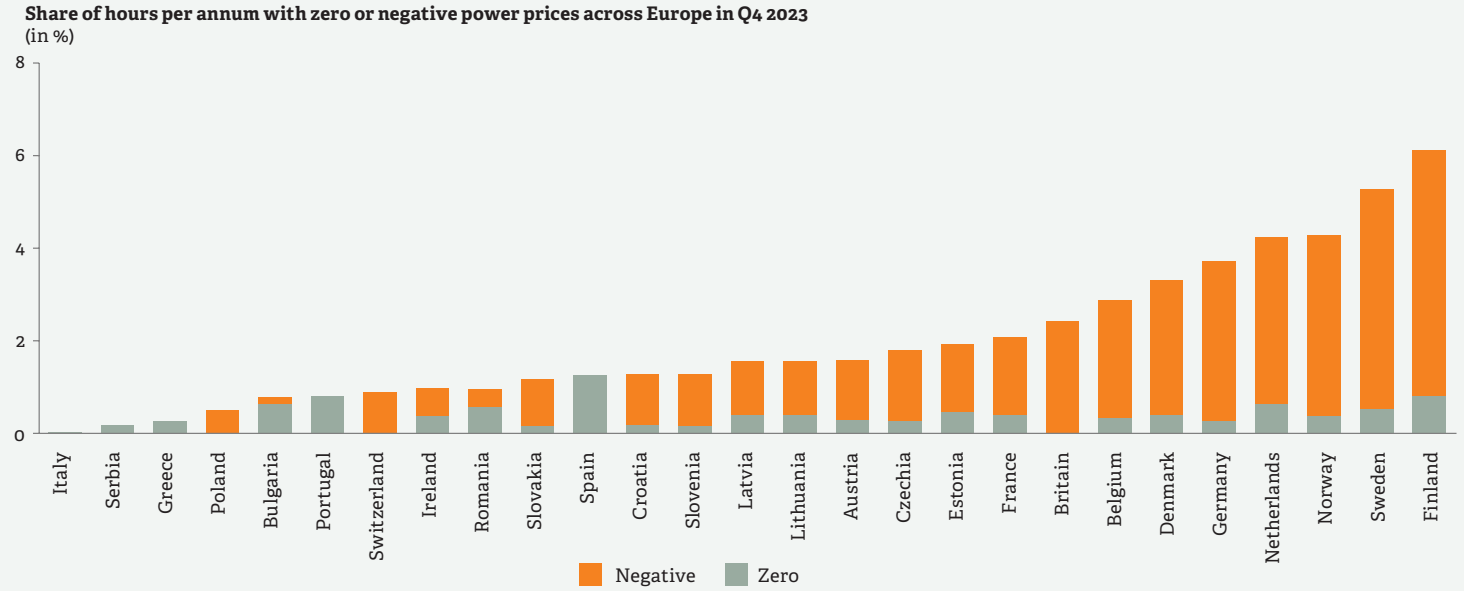


Note: MWh = megawatt hours; GW gigawatts
Source: Energy Market and Planning; Energy Sector management Assistance Program; BCG analysis

3 The residual load curve is the portion of electricity demand that must be met by non-VRE generation once variable renewable output has been accounted for.
4 Examples include gas or diesel open-cycle gas turbines (OCGTs), which can start quickly but are expensive to operate and therefore set high prices when dispatched.

This pattern is evident in mature, liquid markets with high VRE penetration, including Germany, the Nordics, and Australia, where sustained periods of low and sometimes negative wholesale prices have become common (Figure 7). As these dynamics intensify, market participants require new mechanisms for managing exposure and ensuring reliability. This creates a critical role for traders and aggregators in stabilising the system and maintaining market liquidity.

Figure 7: Negative and zero prices are common in mature liquid markets



Source: Electricity Insights Quarterly Reports (2023); BCG analysis

3. The critical role aggregators play in enabling market liberalisation

Aggregators represent a new model for electricity markets in transition by providing a commercial route that differs from traditional state-backed procurement frameworks. In systems accustomed to long-term PPAs that allocate most commercial risk to the buyer and insulate developers from market dynamics, aggregators show how market-based transactions can distribute risk more efficiently. They create a bridge between regulated and competitive markets, demonstrating that investment and reliability can be achieved without sovereign guarantees or multi-decade contracts.

By consolidating demand from multiple offtakers and matching it with supply from different IPPs, aggregators increase participation in the market and support more efficient contracting. Their ability to pool smaller offtakers perhaps lacking the balance-sheet strength for utility-scale IPP contracts, creates greater scale, stability, and flexibility. This helps unlock additional offtake routes for new generation projects and ensures a broader set of participants can engage directly in the market.

The success of aggregators demonstrates how competition can create liquidity and build confidence in a liberalised market. As they scale, aggregators build credibility among investors and lenders, proving that market-based contracting can mobilise capital. This helps shift investment risk away from the public balance sheet, enabling the large-scale generation build-out required for energy security and economic growth.

> *Our ambition is to make a meaningful contribution to South Africa's energy transition and energy security, unlocking investment in new renewable energy generation capacity by providing businesses with affordable, low-carbon power through the grid.*
>
> ***Evan Rice, CEO at Etana Energy***

4. Showing what is possible: Etana Energy

As in many transitioning electricity markets, investors in South Africa have been cautious about committing capital to aggregators given the commercial viability of their business models remains largely untested. Uncertainty around revenue stability, counterparty risk, and how the regulatory framework will develop has stifled investment appetite, even as aggregators are viewed as critical to the success of electricity market liberalisation.

To demonstrate the model's potential in South Africa, BII and GuarantCo launched a $100 million guarantee facility in December 2024 for Etana Energy, one of the country's first licensed electricity traders.[5] Etana purchases VRE from IPPs and sells it to commercial and industrial customers. However, not all of the capacity Etana has contracted from IPPs is fully matched with long-term end-customer demand. This creates volume and counterparty risk that must be actively managed.

The guarantee facility was designed to mitigate these risks while maintaining commercial discipline. It provides liquidity cover for a defined period, giving Etana time to resolve issues such as replacing customers rather than guaranteeing the full debt exposure (Figure 8). This limited guarantee is first-of-its-kind credit enhancement that balances the needs of developers and lenders while developing a commercially sustainable trading model in an early-stage liberalised market. The credit guarantee mechanism has helped Etana close on nearly 300MW of wind and solar PV projects so far, with enough guarantee capacity to scale the business to a portfolio size of 700MW. Etana is already supplying electricity to Growthpoint Properties from the 5MW Boston Hydro project operated by Serengeti Energy.

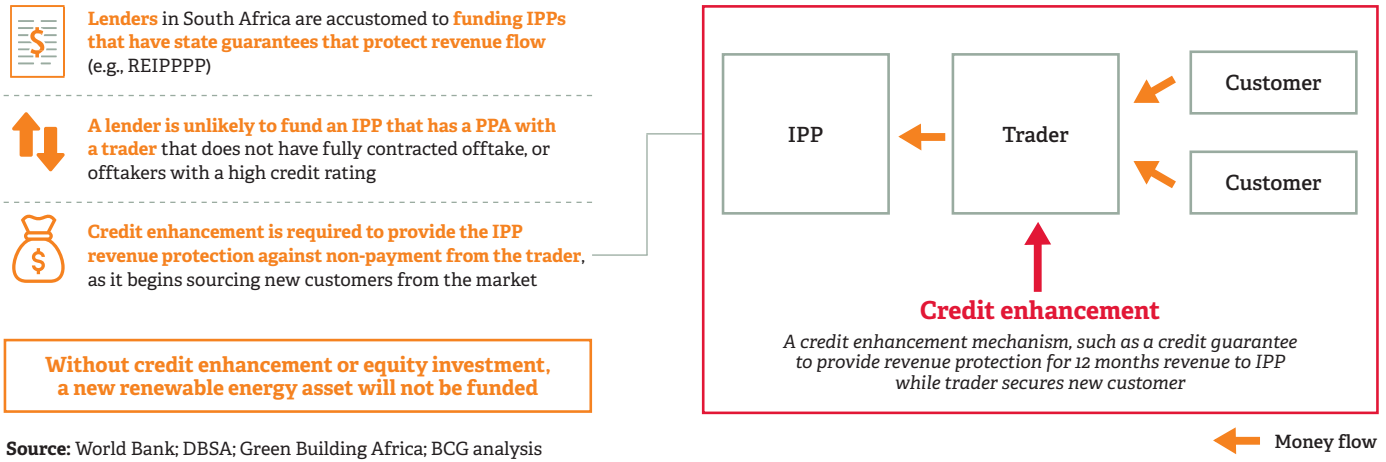
Designing the facility required a new approach to risk evaluation, tailored to South Africa's evolving electricity market and the role of aggregators. The process included:

- Analysing the company's management calibre, governance and operational capabilities.
- Stress-testing its financial model under multiple market scenarios.
- Re-evaluating the bankability of PPAs from aggregator, generator and customer perspectives, including gap analysis on a back-to-back basis.

BII Plus commissioned BCG to analyse global electricity market reforms, to get a better understanding of the risks faced in South Africa's market. The study explored how different liberalised electricity markets have evolved, identifying key signposts, risk factors, and the conditions required for meaningful progress. These insights quantify how dynamics such as the pace of liquidity development and the diversification of sales routes, affect counterparty and revenue risk. The findings directly informed the design of Etana Energy's guarantee facility, by ensuring it was sized and structured appropriately to remain effective as the market evolved.

Taken together, the Etana facility and the global benchmarking exercise underscore that successful market liberalisation depends on more than individual innovation. It requires a structured reform programme that creates an environment where such business models can scale sustainably.

Figure 8: A credit enhancement is needed to overcome nascency of the trading market, and allow the renewable energy asset to be funded



Source: World Bank; DBSA; Green Building Africa; BCG analysis

5 Traders in South Africa are referred to as aggregators in other markets, as they do not trade on the wholesale market

5. Four key drivers of market reform

The benchmarking carried out in the study identified four dimensions of market reform that determine how effectively a market transitions from a regulated to a competitive market. Tracking progress across these dimensions offers a practical way to gauge the maturity of liberalisation, identify where risks remain, and highlight where additional policy or institutional action could help sustain momentum:

1. **Policy reform and market opening:** establishing the legal and regulatory foundation for competition.
2. **Third-party access to the transmission network:** ensuring transparent and non-discriminatory grid use.
3. **Transmission unbundling:** separating monopoly functions from competitive activities.
4. **Market structure definition:** determining how generation, trading and supply interact within the system.

These core building blocks of electricity market reform are detailed in the following sections, along with an assessment of South Africa's progress across each of them.

Figure 9: Three steps that typical power market reform follows across countries

	1 Creating the legal framework	2 Breaking down monopolies	3 Full market opening
	Create legal basis for market reform, and market transition	Unbundle utilities into separate Gx, Tx & Dx entities	Enable consumer choice by fully liberalizing the market
UK	– 1989: Electricity Act privatised the state-owned electricity companies and introduced competition into the market	– 1991-1995: Electricity Act created three separate private companies (i.e., horizontal unbundling), and required Tx legal unbundling	– 1998-1999: Full market competition was introduced in stages between September 1998 and June 1999
Singapore	– 1995: Corporatisation of public utilities board under the Teamsek Holdings	– 1995-2008: Singapore Power created as the HoldCo for new Gx, Tx & Dx Cos. Temasek's divestment of Gx Cos completed by 2008	– 2018: Open Market Electricity initiative saw all customers have option to buy power from their retailer of choice
Chile	– 1982: Electricity Law in passed in 1982 outlined initial electricity market structure	– 1983-1989: 2 large state-owned Cos unbundled into 7 Gx & 8 Dx Cos, the majority of which were privatised	– 2004: consumers with a peak power below 5 MW can opt between free or regulated status – partial liberalization

Source: UK Department for Business, Energy & Industrial Strategy – Competition in UK electricity markets; EMA – Introduction to National Electricity Market of Singapore; Chile's electricity markets: Four decades on from their original design; BCG analysis

5.1. Policy reform and market opening

The foundation of electricity market reform is government policy that provides the legal basis for liberalisation and the transition from regulated to market-based pricing. This process usually follows three broad steps (Figure 9):

- Establishing the legal and regulatory framework.
- Breaking up vertically integrated monopolies.
- Fully opening the market to competition and price liberalisation.

Experience from countries including Hungary and Brazil shows that large industrial consumers are typically transitioned first, as they have the financial capacity to manage market-based price fluctuations. Residential customers are brought into the market later, once systems are stable and risk-management mechanisms are well developed.

In South Africa, the ERAA has been signed into law and now provides the legal basis for a competitive electricity market.

5.2. Third-party access to the transmission network

A competitive electricity market requires open and non-discriminatory access to the transmission network. This allows IPPs and the incumbent utility alike to 'wheel' or move electricity across the grid, and sell or trade it directly with customers or traders. Establishing transparent, rules-based access to the grid is essential for breaking monopolistic control and ensuring no single entity can restrict network use to protect its market position.

Typically, transmission network access evolves in two stages (Figure 10):

1. **Restricted access** where participation is limited to centrally procured REIPPP-type programmes.
2. **Unrestricted access** where all qualified participants can connect and trade, provided technical and regulatory requirements are met.

South Africa has already made significant progress toward network wheeling and open access, with the Interim Grid Capacity Allocation Rules (IGCAR) now in effect and the Grid Capacity Allocation Rules (GCAR) under development. These are important steps towards establishing a transparent and standardised grid access framework that will increase competition, attract new entrants, and mobilise investment in new generation capacity.

Figure 10: Third-party access to transmission network is a pre-requisite for competition in generation, and is typically introduced in two steps

	0 No access	1 Resticted access	2 Unrestricted access
	Transmission access limited to VIU generator(s) only	Transmission access allowed conditionally (e.g., central procurement)	Transmission access allowed conditionally (e.g.,: central procurement)
India	– **Prior to 1991:** only regional VIUs had network access	– **1991:** IPPs introduced but RE unable to be integrated - only IPPs with certain energy mix profiles were allowed acces	– **2003:** Electricity Act removed single buyer model – no longer standardized access requirements that excluded many IPPs
Brazil	– **Prior to 1997:** only VIU (Electrobras) had network access	– **1997:** IPPs introduced but only those geographically close enough to transmission could access	– **2004:** market segmented into regulated (ACR) and free (ACL) – IPPs were permitted open access in ACL
Germany	– **Before 1998:** only regional VIUs had network access	– **1998:** IPPs introduced, extent of transmission unbundling increased with EU EDs (1998 – 2009)	– **2009:** Germany adopted ITO model, with strict regulatory oversight on transmission to diverse IPP connection

Source: Bundesnetzagentur; Agora Energiewende; Euspri Forum; Energy Prayaspune; World Bank; ERA; BCG Analysis

5.3. Transmission unbundling

Unbundling separates the natural monopoly of transmission and system operation from competitive activities such as energy sales. This ensures transparency, neutrality, and efficiency in how the grid is managed.

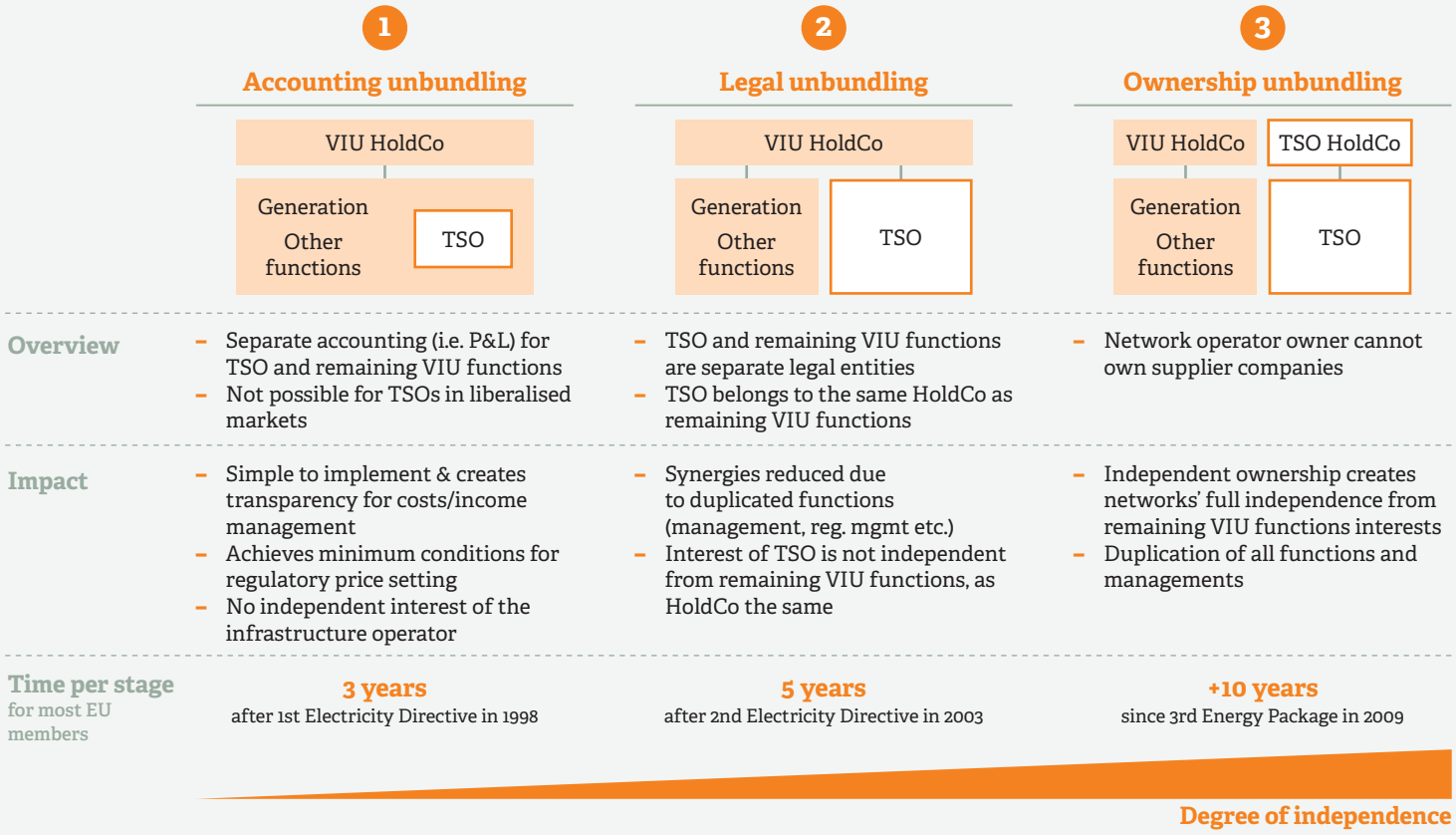
Unbundling typically proceeds in three stages (Figure 11):

1. **Accounting unbundling:** separating financial reporting so that transmission costs and revenues within the vertically integrated utility[6] are transparent.
2. **Legal unbundling:** creating a transmission entity that is legally separate but still owned by the incumbent.
3. **Ownership unbundling:** placing the transmission entity outside of the incumbent so that it operates independently.

Experience from EU member states shows that these stages can take several years: roughly three years for accounting unbundling, five for legal unbundling, and up to a decade for full ownership unbundling.

South Africa has made substantial progress, with the establishment of the National Transmission Company South Africa (NTCSA) as the legally unbundled transmission entity. The ERAA sets out plans to establish an independent Transmission System Operator (TSO) by 2030, which would represent full ownership unbundling and enable greater operational and governance independence.

Figure 11: Transmission unbundling is a journey – there are three stages in unbundling transmission from the VIU, with increasing degrees of independence



Source: EU Commission; BCG Analysis

6 Covered in section 5.4.

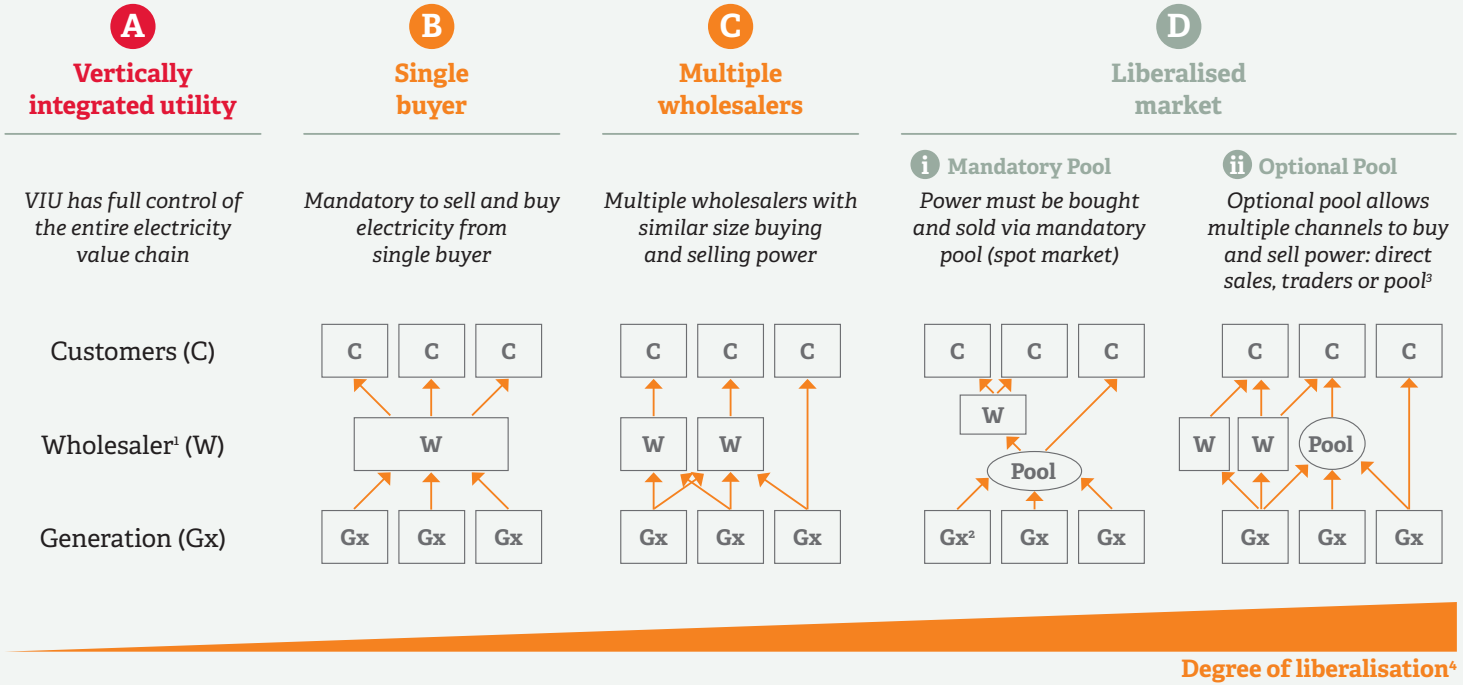
5.4. Market structure definition

The structure of the electricity market determines the extent of competition and the roles of different participants, and different sales routes which impacts project bankability. There are four options for market structures (Figure 12):

1. **Vertically integrated utility (VIU):** generation, transmission and supply are managed by a single entity.
2. **Single buyer:** one central entity (often the utility) purchases all electricity from producers.
3. **Multiple wholesalers:** several buyers purchase and resell electricity, introducing partial competition.
4. **Fully liberalised market:** generation and supply are fully competitive, with trading conducted through either a mandatory pool or an optional multi-channel market.

7 Asian Development Bank, Developing an Electricity Market: Technical Assistance Completion Report (2023); Analysis on single buyer market model and pool market model in deregulated electricity market (2023)

Figure 12: There are four typical market structure models, each with progressive degrees of liberalisation



1. Wholesale purchases and sells power in bulk. This could also be referred to as a large trader; 2. A generator could include a trading function; 3. There may be a single pool or many; 4. Degree of liberalisation: Extent of competition across electricity value chain, and ease of entry for new participants | Source: BCG analysis

Countries such as Germany, Australia and Singapore transitioned directly from a VIU model to a liberalised market. Others, such as Pakistan and Malaysia, adopted transitional models, such as the single-buyer or multiple-wholesaler structures, to manage the complexity of implementation. While these interim arrangements are simpler to administer, they generally limit competition and continue to depend on state-backed guarantees to attract investment.

Political commitment and sustained policy support are essential to initiate and advance electricity market reform. Without these foundations, progress often stalls. Several developing countries, such as Pakistan and Malaysia, have remained in the single-buyer model for decades due to limited political consensus and insufficient regulatory action.[7]

In contrast, South Africa's reform trajectory is clearly defined. The ERAA and the draft Market Code set out a structured transition toward a liberalised electricity market based on an optional pool or multi-market model. This establishes a transparent end state for reform, giving clarity to investors, regulators, and market participants on how competition will evolve and how different sales routes will coexist within the future market framework.

6. What it takes for a successful aggregator play

The liberalisation of electricity markets creates new opportunities for aggregators, but only those able to manage market risks will be commercially viable. Success requires more than access to generation or customers, it depends on the ability to navigate evolving market dynamics and manage risk effectively. As liberalisation progresses, aggregators must address the two key challenges outlined in Chapter 2: limited liquidity and price volatility.

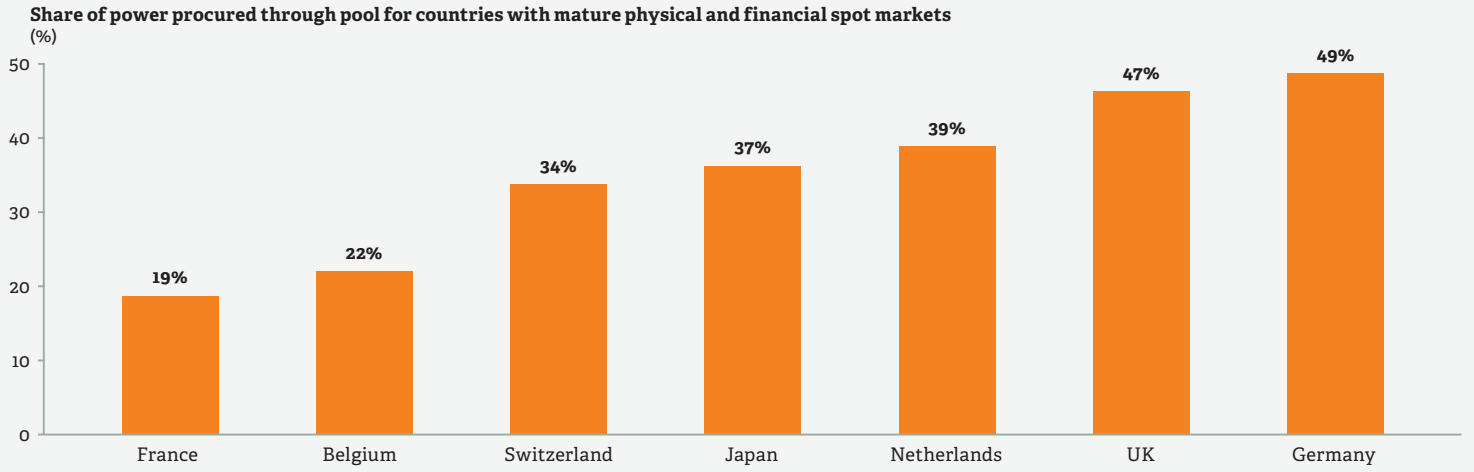
6.1. Liquidity risk mitigation

As electricity markets liberalise, the ability of traders to adapt their strategies to changing levels of market liquidity becomes a key determinant of success. Liquidity shapes how contracts are structured, how counterparties interact, and how risk is managed across the system. As markets deepen, trading strategies shift from long-term, relationship-based deals toward shorter-term, data-driven transactions that enable greater flexibility and efficiency.

- In low-liquidity markets, such as those in early liberalisation stages, transactions are primarily negotiated bilaterally. Traders focus on relationship-based contracting, often through long-term PPAs or multi-offtake arrangements that balance exposure across counterparties.
- In transitioning markets with growing liquidity, bilateral and pooled trading models coexist. Traders start playing a bigger role, combining multiple offtakers into consolidated portfolios to improve creditworthiness and contract efficiency.
- In high-liquidity markets, such as those in the Europe, a large share of electricity is traded through spot, forward and futures markets. Traders rely on advanced analytics, algorithmic execution, and automated risk management to optimise performance in near real time.

Even in mature markets, bilateral contracts remain critical, often accounting for over half of total volumes (Figure 13), because they provide long-term price and volume certainty. As a result, when an aggregator's existing offtake agreements expire or default, there is typically a route to secure new bilateral contracts that ensure the aggregator remains financially viable.

Figure 13: Even in highly liquid markets bilaterals will still exist, as trading via pool accounts for less than 50% of power procured



Note: EU countries (e.g., France, Belgium, Germany, Switzerland) are interconnected in a single market
Source: RMI: Transforming India's Electricity Markets; India Energy Exchange (IEX), Argus, IEMO Philippines; BCG Analysis

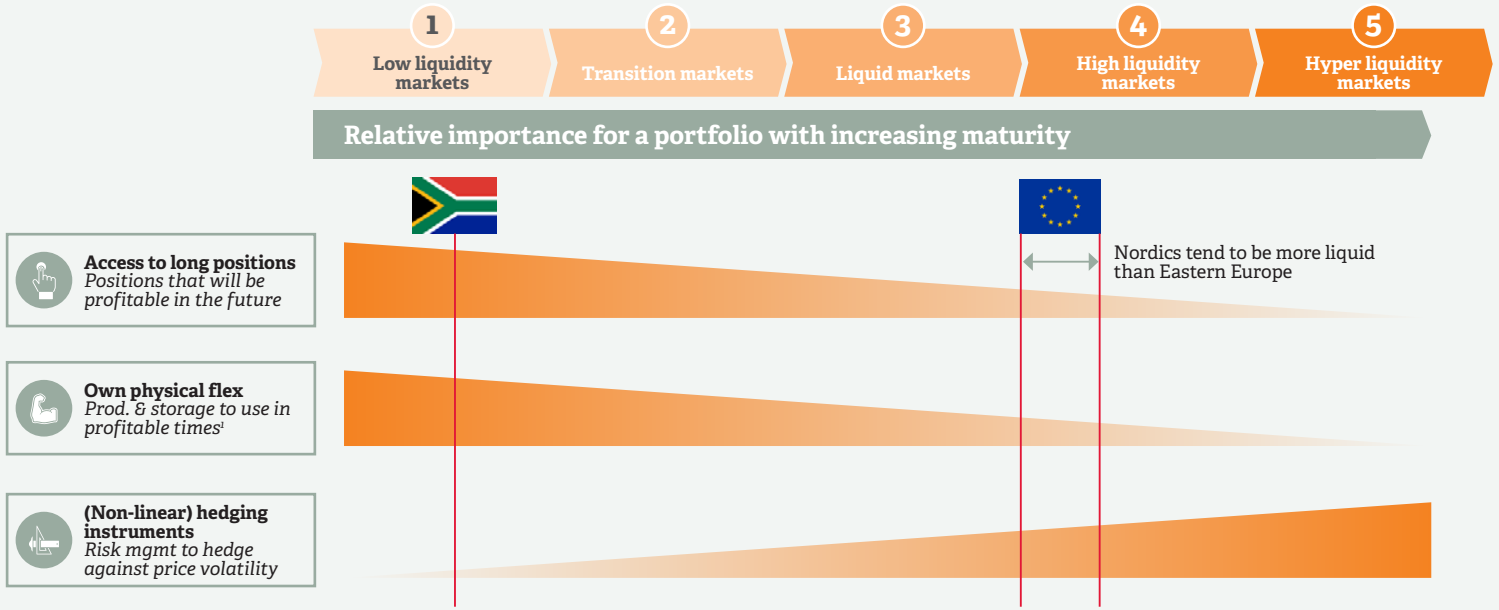
6.2. Price volatility risk mitigation

As markets liberalise and liquidity deepens, price volatility becomes a defining feature of electricity trading. Aggregators must demonstrate they can manage exposure to fluctuating prices while maintaining profitability.

In less mature markets with lower liquidity, such as South Africa, risk is managed primarily through physical strategies - holding long positions in generation and access to flexible capacity such as battery storage or dispatchable generation (Figure 14). These assets allow traders to shift sales to higher-priced periods and avoid exposure when prices fall.

In mature, high liquidity market, such as Europe, financial instruments become more accessible and play a growing role in managing price risk. Traders begin to complement physical strategies with financial hedging tools – such as futures, options, and contracts for difference – to stabilise revenues, lock in margins, and manage exposure more efficiently.

Figure 14: In low maturity markets such as South Africa, a trader should have access to long-positions and flexible capacity



1. Different technologies (e.g., wind and solar) can be combined to create a portfolio that's profitable throughout the day
Source: Oxford Energy; Axpo; BCG Analysis

7. Looking ahead

As the South African Wholesale Electricity Market prepares for launch in April 2026, it is important to recognise that market liberalisation is a gradual journey, not a single event. The path toward a fully competitive electricity market will likely involve hybrid structures as the system transitions through various stages. Throughout this evolution, flexibility and agility will be critical for market participants seeking to capitalise on new opportunities as they emerge.

While South Africa has made significant progress in advancing the key elements of market reform, achieving the liquidity and depth required for sustained electricity trading will take time.

Ultimately, creating a trading platform is just the beginning of South Africa's electricity market reform journey. Success depends on building the institutional, physical, and financial foundations for a modern, resilient, and competitive electricity system that supports the country's long-term growth. With continued commitment to reform, infrastructure expansion, and investor confidence, South Africa has an opportunity to realise its growth ambition.

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