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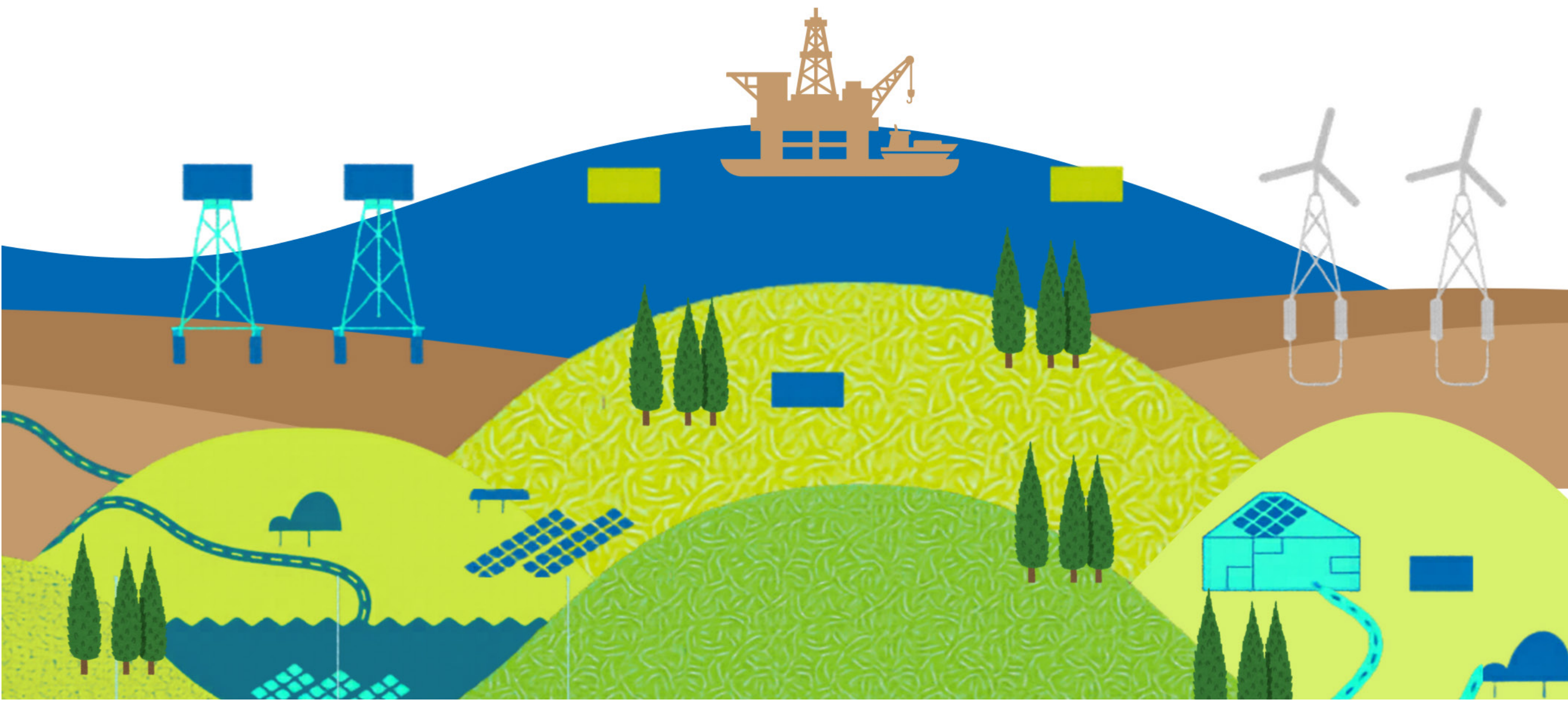
A POLICY STUDY ON SRI LANKA'S ENERGY TRANSITION, GEOPOLITICS, AND ENERGY FUTURE

Authored by Verangika Upananda



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ABBREVIATIONS

Trend Area	Description
ADB	Asian Development Bank
AI	Artificial Intelligence
BESS	Battery Energy Storage Systems
BOI	Board of Investment
BSTA	Bulk Supply Transaction Account
CEB	Ceylon Electricity Board
CPC	Ceylon Petroleum Corporation
EDB	Export Development Board
EDL	Electricity Distribution Lanka (Private) Limited
EFF	Extended Fund Facility
EGL	Electricity Generation Lanka (Private) Limited
EVL	Energy Ventures Lanka (Private) Limited
GHG	Greenhouse Gas
GIS	Geographic Information System
GW	Gigawatt
GWh	Gigawatt Hour
HVDC	High Voltage Direct Current
IEA	International Energy Agency
IMF	International Monetary Fund
IoT	Internet of Things
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
kW	Kilowatt
kWh	Kilowatt Hour
LECO	Lanka Electricity Company (Private) Limited
LNG	Liquefied Natural Gas
LTGEP	Long-Term Generation Expansion Plan
MOU	Memorandum of Understanding
MW	Megawatt
MWh	Megawatt Hour
NCRE	Non-Conventional Renewable Energy
NDC	Nationally Determined Contribution
NEPS	National Energy Policy and Strategies
NSO	National System Operator (Private) Limited

ABBREVIATIONS

Trend Area	Description
NTNSP	National Transmission Network Service Provider (Private) Limited
PPA	Power Purchase Agreement
PUCSL	Public Utilities Commission of Sri Lanka
RE	Renewable Energy
SAF	Sustainable Aviation Fuel
SDR	Special Drawing Rights
SLSEA	Sri Lanka Sustainable Energy Authority
SPPA	Standardized Power Purchase Agreement
TJ	Terajoule
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

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EXECUTIVE SUMMARY

Sri Lanka's ambitious climate commitments, including a 70% renewable electricity target by 2030, carbon neutrality by 2050, and a 20.09% reduction in Greenhouse Gas (GHG) emissions by 2035 under Nationally Determined Contributions (NDC) 3.0, stand in contrast to the slow pace of actual structural change. Despite major legislative and macroeconomic milestones, including the restructuring of the Ceylon Electricity Board (CEB), the 2026 gazetting of the National Electricity and Tariff Policies, and ongoing IMF stabilisation measures, a significant gap remains between these legislative milestones and the tangible deployment of renewable infrastructure on the ground.

National energy debates frequently conflate the electricity sector with the broader energy landscape. While fossil fuels dominate the supply mix, domestic production relies overwhelmingly on biofuels and agricultural waste. Looking ahead, the CEB's Long-Term Generation Expansion Plan 2025-2044 maps out a pathway to meet the aforementioned goals. Policy progress in the electricity sector, while significant, does not reflect a full energy transition, as biomass continues to dominate household energy consumption and petroleum remains the backbone of transport.

Structural constraints explain why the transition is not progressing at the required pace. Technologically, the grid has not kept pace with solar deployment, digitalisation remains aspirational, and planning continues to favour thermal generation. Institutionally, governance remains fragmented, coordination gaps persist, and renewables are being added without dismantling the fossil fuel base. Financially, sovereign debt has transferred the transition burden onto private and external capital, while currency risk and regulatory uncertainty make renewable projects less bankable than they should be.

Sri Lanka's geopolitical environment presents both opportunities and constraints, from regional grid interconnection with India and Trincomalee's potential as an energy hub, to competing bilateral interests and multilateral conditionality that do not always align with domestic priorities. China's project-specific capital, while comparatively fast-moving, has been asset-focused on large infrastructure rather than addressing Sri Lanka's core grid, storage, and system integration needs, and its associated financing structures carry long-term fiscal exposure concerns.

The immediate priorities are a formal Fossil Fuel Phase-Out Framework; a revised National Energy Policy; a National Energy Storage Roadmap; an AI-enabled grid management platform; a Least System Cost First investment policy; a National Renewable Energy Land Bank with single-window clearance; and a formal inter-ministerial coordination mechanism.

Sri Lanka's transition is not constrained by a lack of resources, technology, or ambition. The foundations are in place. What is needed now is coordinated governance across institutional, technological, and financial dimensions, pursued simultaneously rather than sequentially.

1. INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report provides a strategically grounded and policy-relevant assessment of Sri Lanka's energy transition at a moment marked by institutional reform, fiscal constraint, and geopolitical realignment. Although recent public and policy debates have largely centred on electricity-sector restructuring, this study deliberately adopts a broader lens while adopting renewable energy. It moves beyond reforms and restructuring of the electricity generation, transmission, and distribution segments to examine the energy sector, recognising that electricity is only one component of the wider energy system, which includes multiple fuels, institutional actors, stakeholders, and strategic considerations. The following are the three objectives of this study:

- Assess the status and future direction of Sri Lanka's energy transition, including technological, institutional, and financing frameworks.
- Analyse the geopolitical dynamics of energy and their implications for Sri Lanka, with a focus on regional energy integration, foreign investment, and diplomatic engagement.
- Develop key policy recommendations based on the overall findings of the assessment.

The study is grounded in both secondary policy and planning documents and in primary data collected through semi-structured stakeholder interviews. The respondents were drawn from public-sector institutions, private-sector actors, regulatory bodies, independent experts, and academics, all with direct stakes and influence over Sri Lanka's energy sector. The incorporation of firsthand perspectives enables the report to capture institutional dynamics, implementation bottlenecks, and competing policy narratives that are often not visible within formal documentation alone.

The report evaluates the coherence among the principal policy and planning frameworks guiding Sri Lanka's energy sector. It examines how national energy strategies and electricity-sector reforms interact, as well as other relevant regulatory and institutional documents. By assessing the alignment, tensions, and gaps across these frameworks, the study seeks to understand how stated policy ambitions translate into institutional arrangements and implementation realities. This integration of primary stakeholder evidence and secondary source analysis enables the study to move beyond formal policy documentation, capturing the institutional dynamics and implementation realities that shape the energy future in practice in Sri Lanka.

1.2 METHODOLOGY

This study adopts a qualitative research methodology. Data collection comprised both primary and secondary sources. Primary data were gathered through in-depth, semi-structured interviews with key informants who have both a stake in and influence over decision-making and transformation in the energy industry. Semi-structured interviews were selected as the principal method because they combine pre-planned guiding questions with the flexibility to probe, explore emerging themes, and produce deeper insights. Secondary data were collected from policy documents, statutory instruments, reports, and publicly available information published by government authorities, regulatory bodies, and international organisations relevant to Sri Lanka's energy sector. Analysis of secondary sources helped map the main actors, governance processes, policy debates, and transition dynamics within Sri Lanka's energy sector. This groundwork facilitated fieldwork planning and informed the direction of stakeholder interviews.

Before selecting key informants, a stakeholder analysis was conducted using the power–interest grid. As Bryson (2004) notes, "Stakeholder analyses are undertaken for a purpose, and that purpose should be articulated before the analyses begin. The purpose should guide the choices concerning who should be involved in the analyses and how." Given that this study is oriented towards the policy level, stakeholders were identified primarily from senior, top-level decision-making positions within relevant institutions and agencies. Accordingly, respondents were drawn from four broad categories: Policy and Regulatory Bodies; Operational and Implementation Bodies; Academia and Think Tanks; and the Private Sector/Industry. A total of 15 respondents were selected, representing the Ministry of Energy, Ceylon Electricity Board (CEB), Sri Lanka Sustainable Energy Authority (SLSEA), and Public Utility Commission of Sri Lanka (PUCSL). Further respondents were drawn from research institutions and academia, including the Advocata Institute, University of Moratuwa, and Open University of Sri Lanka, as well as from private sector developers and independent industry experts. By anchoring stakeholder selection in the power-interest framework, the study privileged depth of institutional insight over breadth of coverage, ensuring that interview evidence reflects the strategic and operational realities of Sri Lanka's energy transition as experienced by its principal decision-makers. As Guest, Bunce, and Johnson (2006) demonstrate, thematic saturation in qualitative research can be achieved with relatively small samples when the research population is sufficiently homogeneous, and the inquiry is confined to a specific policy domain, both conditions that characterise this study of the senior institutional landscape of Sri Lanka's energy sector. To ensure uniform ethical treatment for all participants, this study does not disclose any respondents' identities.

Fieldwork was conducted during October and November 2025. Interviews typically lasted between 45 and 90 minutes, depending on each respondent's availability and level of engagement. For participants from policy and regulatory bodies, as well as operational and implementation institutions, selection was guided directly by the stakeholder analysis and supported by a review of secondary data. Senior and strategically positioned officials were identified and approached for interviews. For respondents from academia, think tanks, and the private sector, selection was informed by secondary sources and further expanded through snowball sampling.

All interviews were conducted in Colombo, Sri Lanka's commercial capital. Interviews were conducted in either English or Sinhala, depending on the respondent's preferred language. Interviews were recorded or transcribed by hand, depending on each respondent's preference. All audio recordings and handwritten transcripts were subsequently translated into English for analysis. To ensure systematic coding and thematic identification, MAXQDA software was used. During the analytical process, it became evident that additional clarification was required to better understand certain institutional and policy intricacies. Follow-up communication was therefore conducted with selected respondents. Several participants shared supplementary documents, while others declined to provide written materials. Both interview data and secondary documents were systematically analysed to extract information and interpretive insights, thereby supporting the objectives of this study.

Methodological Scope and Design Parameters

This study is designed as a strategically focused, institutionally grounded policy assessment, and its methodological parameters reflect that purpose. Several design choices merit clarification. The research adopts a qualitative methodology combining semi-structured interviews with policy document analysis. This approach is deliberate: the study's objective is to surface institutional dynamics, implementation bottlenecks, and competing policy narratives that quantitative methods are not well-positioned to capture. Statistical generalisability is therefore neither a stated goal nor an appropriate evaluative criterion for this study. Respondents were selected from senior decision-making positions across policy, regulatory, and operational sectors, as well as from the private sector, academia, and independent research. This reflects the study's explicit focus on the three structural frameworks - technological, institutional, and financial - through which Sri Lanka's energy transition is being shaped. Grassroots, community-level, or regional subnational perspectives were deliberately outside the scope of this assessment, as they pertain primarily to implementation equity and social licensing dimensions that, while important, fall outside the analytical pillars examined here. Future research may productively engage these dimensions. The fieldwork was conducted during October-November 2025, a period of significant legislative and institutional reform in Sri Lanka's energy sector. It should be noted that fieldwork was conducted before the formal restructuring of the CEB in March 2026. This timing offers a contemporaneous reading of a sector in active transition, capturing stakeholder perspectives at a pivotal juncture. Findings should be understood by reflecting on this specific reform context. Finally, while the study situates Sri Lanka within South Asian geopolitical dynamics, it does not aim for systematic comparative benchmarking across regional energy systems. The focus is on Sri Lanka's institutional and geopolitical positioning, where depth of analysis is prioritised over regional breadth.

1.3 ENERGY PICTURE OF SRI LANKA

Understanding Sri Lanka's energy picture requires distinguishing between four related but distinct concepts: primary energy supply, domestic energy production, electricity generation, and energy consumption. Total energy supply captures all energy entering the system, including imports, and is dominated by fossil fuels and biomass. Domestic energy production, by contrast, reflects only what Sri Lanka produces within its borders, which is overwhelmingly biomass and agricultural waste such as firewood, coconut shells, and rice husk, given that the country produces no fossil fuels domestically (SLSEA, 2022; IEA, 2023). Electricity generation represents only one component of the broader energy system, yet it occupies a disproportionate share of public and policy attention. Energy consumption, meanwhile, captures how energy is used across sectors such as household, industrial, and transport, and reveals that the majority of Sri Lanka's total energy use remains entirely outside the electricity system. This distinction is therefore fundamental to any rigorous policy assessment of Sri Lanka's energy transition and the structural reforms it demands.

1.3.1 Primary Energy Supply

Sri Lanka's primary energy supply remains structurally dependent on fossil fuels, with oil, coal, and petroleum collectively accounting for over half of the total energy mix (IEA, 2023; SLSEA, 2022). Biomass and biofuels constitute the second-largest share, reflecting the continued dominance of traditional and informal energy use, particularly in the household sector. The contribution of modern renewables, solar, wind, and new renewable energy sources, remains marginal, collectively falling below 10% of primary supply, while hydropower accounts for approximately 5-12% depending on annual rainfall variability. This structural composition underscores a persistent tension between Sri Lanka's stated renewable energy ambitions and the reality of its current energy system.

Table 1: Primary Energy Supply Mix

Primary energy supply mix, 2022 — % share of total supply

ENERGY SOURCE		%
Biomass and biofuels	Renewable	36.4
Petroleum	Fossil fuel	32.5
Coal	Fossil fuel	12.6
Major hydropower	Renewable	11.7
New renewable energy	Renewable	6.8

Sri Lanka Sustainable Energy Authority (2022)

Table 2: Use of Imported Energy Resources in Sri Lanka

Imported Energy Source	Typical User Groups	Typical Applications	Scale of use at Present
Crude Oil and refined products including LPG	Household	Lighting, cooking	Widespread
	Commercial	Hotels, bakeries	Widespread
	Industry	Furnaces, kilns, boilers	Widespread
	Power Generation	Combined cycle, gas, turbine, diesel engines, steam turbines	A number of thermal power plants
	Transport	Rail, road, air and sea	Widespread
Coal	Railways	Rail	Negiligible
	Industry	Kilns	Cement industry and foundries
		Boiler	Two or more
	Power Generation	Boiler	3 units of 300 MW (900W)

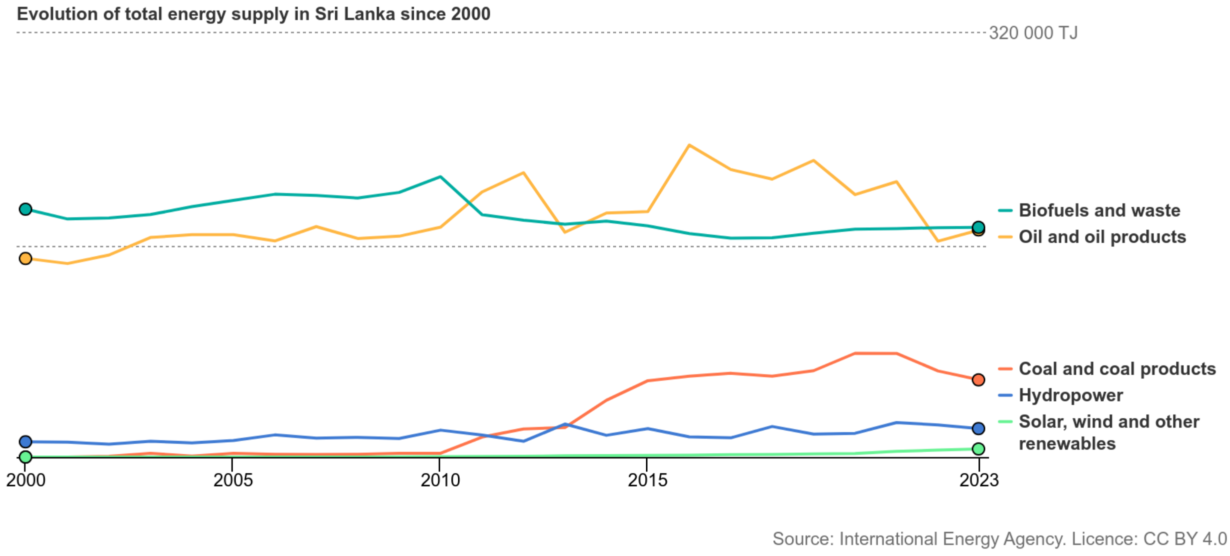
Energy Balance 2022 (SLSEA)

Table 3: Primary Sources of Energy in Sri Lanka

Indigenous Energy Source	Typical User Groups	Typical Applications	Scale of Use by End 2022
Biomass	Household	Cooking	Widespread
	Commercial	Hotels, bakeries	Widespread
	Industry	Tea drying, Brick and tile	Widespread
		Steam generation	Growing
	Private power plant	For sale to utility	14 power plants
		Own consumption	Several villages and factories
Hydro Power	Electricity utility owned large multipurpose Systems	For retail to custom-ers	Major power plants
	Commercial grid-connected	For sale to utility	217 power plants
	Village-level off-grid electricity	Household use	A few plants operating in the grid-connected mode, however, many now in disuse
	Industrial off-grid electricity	Tea industry	A few power plants
	Industrial mechanical drives	Tea industry	Negligible, one or two remaining
Solar Power	Solar photovoltaic	Rooftop systems	45,845 installations
		Household lighting	No longer reported in large numbers
	Grid connected PV	For sale to utility	83 power plants
	Solar Thermal	Hot water systems in commercial and domestic sectors	Widespread
	Informal use	Household and agricultural use	Widespread
Wind Power	Grid Connected Wind	For retail to customers	19 power plants
	Off-grid power plants	For residential use	A few dozens, most in disuse
	Water pumping	Agriculture	A few dozens, one or two in operation

Energy Balance 2022 (SLSEA)

Figure 1: Evolution of Total Energy Supply in Sri Lanka

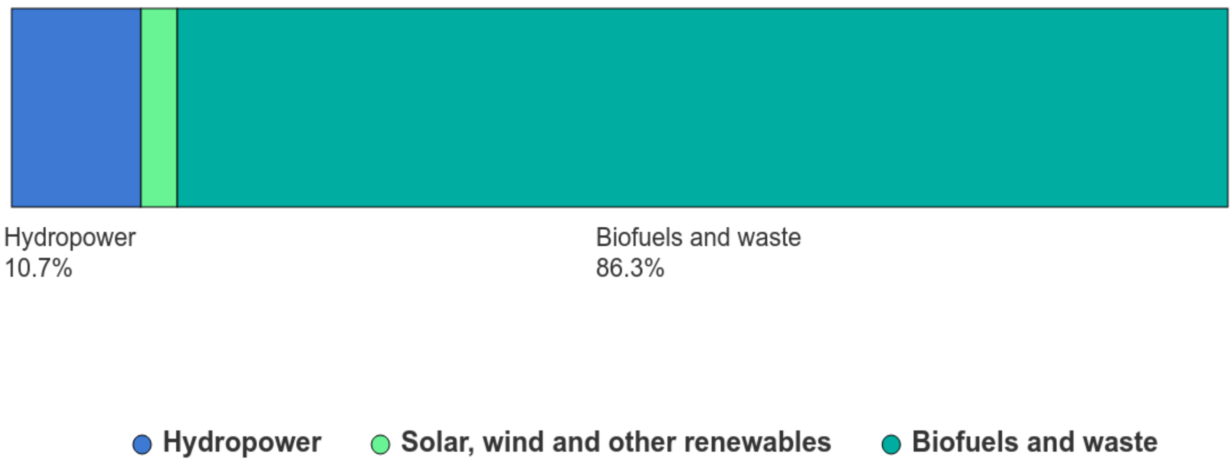


International Energy Agency (2023)

1.3.2 Domestic Energy Production

Domestic energy production is predominantly from biofuels and agricultural waste, which account for 86.3% of total production. The remainder comes from renewable sources, including hydropower. This indicates that a significant portion of Sri Lanka's energy use remains non-modern and informal. Sri Lanka does not produce fossil fuels domestically; consequently, its fossil-based energy supply is largely dependent on imports.

Figure 2: Total Domestic Energy Production, 2023



International Energy Agency (2023)

1.3.3 Electricity Generation

Electricity occupies a central position in Sri Lanka's broader energy system, and its generation mix reflects continued dependence on fossil fuels. According to the CEB (2023), coal and oil together account for nearly half of total electricity generation, making thermal power the dominant source in the electricity generation mix. Hydropower follows as the single largest clean source, contributing close to a third of total generation, and reflecting the country's long-standing reliance on its major river systems for electricity. Renewable sources, including wind, rooftop solar, ground-mounted solar, and other non-conventional renewables, remain collectively modest, together accounting for less than a fifth of total electricity generation.

Table 4: Electricity Generation Mix

Electricity generation mix, 2024 — Net generation (GWh) & % of total

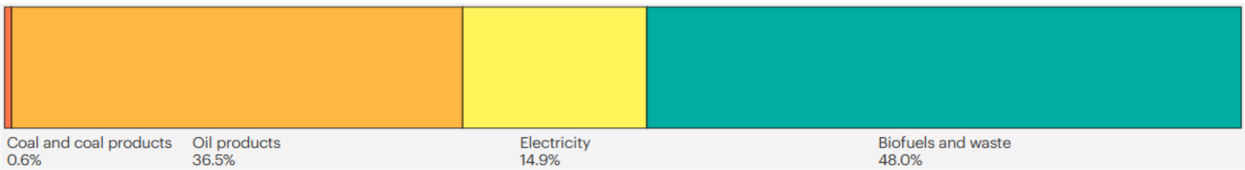
SOURCE	GWH	% OF TOTAL
CEB State-owned	12,861	76.5%
Major hydro	5,426	32.3%
Thermal (coal)	5,482	32.6%
Thermal (oil)	1,568	9.3%
NCRE wind	383	2.3%
Small islands	2.8	0.0%
IPP Private	3,940	23.5%
NCRE mini hydro	1,473	8.8%
Thermal (oil)	768	4.6%
NCRE rooftop solar	867	5.2%
NCRE grid-connected solar	257	1.5%
NCRE wind	409	2.4%
NCRE other	167	1.0%
Total generation	16,802	100%

CEB Statistical Digest Report (2024)

1.3.4 Energy Consumption

The total energy consumption is distributed across three broad sectors. They are industry, transport, and household and commercial, each drawing on a distinct combination of fuel sources (SLSEA, 2022; IEA, 2023). The household, commercial and other sectors collectively represent the largest share of national energy demand, with biomass remaining the dominant fuel. Industry follows as the second-largest consumer sector, relying substantially on biomass and petroleum for thermal applications. The transport sector is almost entirely dependent on liquid petroleum. Across all sectors, biomass continues to account for close to half of total final energy consumption, a figure that reflects how much of Sri Lanka's energy system remains outside the formal, modern energy economy. Electricity, while its share of final consumption has grown steadily over time, still represents a comparatively modest portion of total energy demand.

Figure 3: Total Energy Consumption



International Energy Agency (2023)

1.3.5 International Climate Commitments and Energy Transition

Sri Lanka's energy transition is anchored in a set of formal international and domestic climate commitments that together define its low-carbon trajectory. As a signatory to the Paris Agreement, Sri Lanka has progressively strengthened its climate obligations through successive Nationally Determined Contributions (NDCs), culminating in NDC 3.0, submitted in September 2025 to the United Nations Framework Convention on Climate Change (UNFCCC) and covering the period 2026 to 2035.

From a sectoral perspective, the electricity sector is expected to account for the largest share, approximately 75% of total emission reductions, reflecting the Government of Sri Lanka's commitment to expanding renewable energy and enhancing energy efficiency (Ministry of Environment, 2025). These commitments are reinforced by the National Energy Policy and Strategies (2019), which envisions carbon neutrality across all energy value chains by 2050, and by the Carbon Net Zero 2050 Roadmap and Strategic Plan, which translates this long-term vision into sectoral pathways. Within the electricity sector specifically, the Government of Sri Lanka has committed to achieving a 70% share of renewable energy in generation by 2030, a target formally endorsed by Cabinet, embedded in the Long-Term Generation Expansion Plan 2025-2044, and reaffirmed under NDC 3.0 (CEB, 2025). The domestic policy architecture underpinning these commitments is rooted in the National Energy Policy and Strategies of Sri Lanka, 2019. This foundational document established the 10 pillars of Sri Lanka's energy governance framework and set the long-term vision of achieving carbon neutrality and the complete transition of all energy value chains by 2050.

Yet translating these commitments into practice has not been straightforward. As Theiventhran (2024) observes, despite Sri Lanka's significant solar and wind potential and its stated commitment to carbon neutrality, energy planning frameworks have continued to accommodate coal and other fossil fuels within the transition pathway. While recent policy reforms increasingly prioritise renewable energy expansion, fossil-fuel dependence remains structurally embedded in long-term system planning, driven by energy-security concerns, baseload assumptions, and transitional fuel strategies. Consequently, a tension persists between Sri Lanka's international climate commitments and the practical realities of domestic energy governance. In the absence of a clear fossil-fuel phase-out framework, the pathway toward a substantive energy transition remains uncertain.

Chapter Conclusion

Understanding this tension requires situating Sri Lanka's energy system within a broader set of interconnected dynamics. The system cannot be understood purely in technical or economic terms; it is deeply embedded within domestic political dynamics, regional geopolitics, and the influence of external actors. The broader discourse on energy transition in Sri Lanka is shaped by the interplay between the cost of importing fossil fuels, international climate commitments, domestic electricity governance frameworks, and the evolving shift toward renewable energy. Taken together, these dynamics signal that energy transition is no longer a peripheral environmental aspiration but a core dimension of Sri Lanka's national strategy: one with far-reaching consequences for energy security, macroeconomic stability, and the country's strategic positioning in an increasingly contested South Asian region.

2. STRUCTURAL CONSTRAINTS IN SRI LANKA'S ENERGY TRANSITION

This chapter analyses Sri Lanka's ongoing energy transition through an integrated assessment of the technological, institutional, and financial frameworks that shape its trajectory, drawing on both policy documents and primary data from stakeholder interviews. It is structured around three core frameworks, each examined through a consistent analytical sequence: the relevant policy and system context is outlined first, followed by identification of the central constraint shaping outcomes, presentation of interview-based primary findings, and an integrated analytical interpretation. This structure enables a systematic examination of why Sri Lanka's energy transition, despite strong policy ambition and available resources, remains constrained in practice.

2.1 TECHNOLOGICAL FRAMEWORK

2.1.1 Technological Context and Policy Direction

Sri Lanka's energy transition is anchored in ambitious national targets, including achieving a 70% renewable energy share in electricity generation by 2030 and carbon neutrality across energy value chains by 2050. These goals are articulated in the National Energy Policy and Strategies (2019) and reinforced through legislative reforms introduced under the Sri Lanka Electricity Act, No. 36 of 2024 and its 2025 Amendment. The Long-Term Generation Expansion Plan 2025-2044 (2025), prepared by the CEB, operationalises these ambitions by defining technology deployment pathways, reliability criteria, and integration strategies suitable for an islanded electricity system vulnerable to variability (CEB, 2025). In practical terms, the Long-Term Generation Expansion Plan 2025-2044 plans for significant battery storage capacity, a large-scale pumped-hydro facility by 2034, and fast-response gas-fired power plants that can quickly adjust their output to cover gaps when solar and wind generation fluctuates. The plan also anticipates that managing the growing share of renewables will require curtailment of excess generation from 2026 onwards and calls for dedicated forecasting and monitoring tools at the National System Control Centre to manage this transition in real time. Within the electricity generation mix, large hydropower remains the dominant clean source, with rapidly expanding contributions from rooftop solar, driven by net metering and net accounting schemes, alongside ground-mounted solar and wind. Despite this progress, coal and LNG are projected to continue playing a transitional role in ensuring system stability until grid upgrades, storage, and flexible generation reach sufficient scale. This coexistence of expanding renewable energy and continued fossil-fuel reliance defines the central technological tension examined in this section.

2.1.2 Primary Findings: Technological Bottlenecks

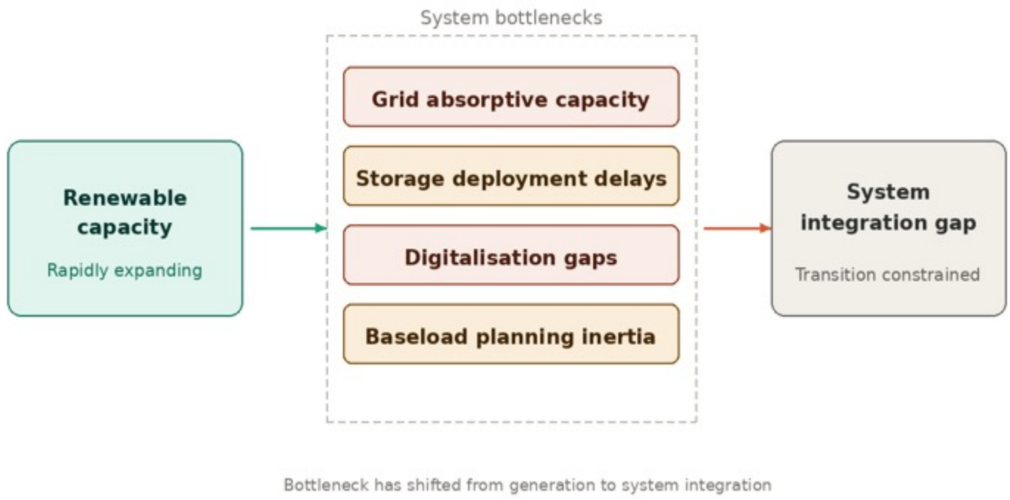
While renewable generation capacity has expanded rapidly, Sri Lanka's electricity system remains fundamentally configured for a centralised, thermal-dominated model. Transmission and distribution infrastructure was historically designed to evacuate power from large fossil-fuel and hydropower plants rather than to absorb decentralised, variable renewable inputs. This structural mismatch has shifted the bottleneck in the transition from generation to system integration, leading to curtailment, frequency instability, and operational stress, particularly during low-demand periods and on weekends. As an isolated grid with no operational interconnections, Sri Lanka faces amplified balancing risks. Until options such as the proposed HVDC link with India materialise, domestic solutions, particularly grid reinforcement and energy storage, are essential to avoid constraining renewable penetration below system limits without substantial upgrades. Interview-based evidence consistently identified grid absorptive capacity as the most critical technological constraint. Stakeholders across institutional levels highlighted that renewable generation, especially rooftop solar, has expanded faster than the grid's ability to manage reverse power flows and variability. This has resulted in connection refusals, forced curtailment, and uneven treatment of decentralised versus ground-mounted projects.

A second dominant theme concerned the delayed deployment of energy storage technologies. Battery Energy Storage Systems (BESS) and pumped storage were widely framed not as optional enhancements but as foundational requirements for a highly renewable system. Interviewees consistently argued that storage planning should have preceded, or at a minimum accompanied, the rapid expansion of solar generation rather than following it reactively. Several expressed concern that current procurement processes remain skewed toward large-scale solar parks, while the distributed and decentralised nature of rooftop generation, which has grown significantly through net metering and net accounting schemes, continues to receive insufficient policy and planning attention. Another key constraint is the continued reliance on baseload thinking. Even though modern renewable systems combined with storage can provide reliable power, system planning still treats baseload mainly as something that must come from coal, diesel, or gas. Interviewees described this as an institutional inertia rather than a technical requirement, thereby encouraging ongoing investment in fossil fuels and limiting the integration of renewable energy.

Digitalisation and smart grid technologies were widely recognised as essential but largely aspirational. Interviewees noted the absence of advanced metering infrastructure, real-time data integration, predictive forecasting, and automated dispatch systems, forcing system operators to rely on conservative grid limits and curtailment as primary control mechanisms. Technological feasibility was also closely linked to land and sitting constraints. Developers described land acquisition as a major barrier for ground-mounted projects due to overlapping jurisdictions and environmental regulations. While innovative solutions such as floating or lagoon-based solar were adopted to avoid agricultural land, these approaches were described as costlier and more complex, highlighting the embeddedness of technology within broader governance and spatial constraints.

2.1.3 Analytical Interpretation: Technological Framework

Figure 4: Transition Bottleneck: From Generation to Integration



Factum (2026)

Taken together, the evidence indicates that Sri Lanka's energy transition is constrained not by renewable resource availability or policy ambition, but by an electricity system that has not been fully adapted to integrate high shares of renewables. While policy frameworks and the Long-Term Generation Expansion Plan 2025-2044 outline a clear pathway toward a renewable-dominant system, implementation gaps persist in grid reinforcement, storage deployment, digitalisation, and system governance. Rapid solar expansion has shifted the bottleneck in the transition from generation to integration, leading to operational stress and curtailment. Storage delays and baseload-centric planning further reinforce these constraints. Overall, the transition is technologically feasible but systemically constrained. Without the accelerated implementation of grid, storage, and digital reforms envisioned under recent legislation, renewable deployment is likely to underperform against national targets despite favourable policy direction.

2.2 INSTITUTIONAL FRAMEWORK

2.2.1 Institutional Architecture and Reform Trajectory

Sri Lanka's energy sector governance involves multiple statutory bodies with overlapping but distinct mandates across the broader energy system. The Ministry of Energy holds overall policy responsibility spanning electricity, petroleum, and renewable energy, while the CEB, PUCSL, and SLSEA each exercise authority over specific dimensions of energy governance. Beyond the electricity sector, the Ceylon Petroleum Corporation (CPC) manages the downstream petroleum supply chain, which remains central to Sri Lanka's overall energy consumption, given the country's continued dependence on imported fossil fuels across the transport, industrial, and household sectors. Historically, the CEB operated as a vertically integrated monopoly within the electricity subsector, acting as a single buyer under earlier legislation. The Sri Lanka Electricity Act No. 36 of 2024 mandated restructuring of generation, transmission, and distribution, a reform recalibrated under the 2025 Amendment Act through a model of controlled restructuring under full state ownership, aimed at improving efficiency while retaining central oversight of National System Operations and the National Transmission Grid.

Although this study was conducted during the restructuring phase of Sri Lanka's energy sector, the CEB was officially dissolved in March 2026, under the Sri Lanka Electricity Act, No. 36 of 2024 (as amended by its Amendment Act No. 14 of 2025), and its operations were restructured into six new state-owned successor companies. These entities include Lanka Electricity Generation Lanka (Private) Limited (managing power generation), the National Transmission Network Service Provider (Private) Limited (managing high-voltage transmission), the National System Operator (Private) Limited (handling grid system operations and control), Electricity Distribution Lanka (Private) Limited (directing consumer retail and distribution), Ceylon Electricity Board Employees' Funds (Private) Limited (safeguarding staff pension and provident funds), and Energy Ventures Lanka (Private) Limited (managing ancillary and new business ventures). Coinciding with this restructuring, the Ministry of Energy gazetted the National Electricity Policy and the National Tariff Policy (2026), both of which serve to update and integrate directly into the existing framework of the National Energy Policy and Strategies 2019.

2.2.2 Primary Findings: Institutional Practice

Despite formal reforms, fossil fuel phase-out remains institutionally constrained by the absence of a binding retirement strategy for coal and oil-based generation. Long-term planning assumptions continue to prioritise thermal assets for system security, resulting in a transition that adds renewables without dismantling the electricity system's fossil-fuel-dependent structure. Regulatory ambiguity and overlapping mandates further complicated governance.

The governance relationship between PUCSL, CEB, and SLSEA reflects deeper coordination failures across the energy governance architecture, where formal authority exists but effective control remains concentrated within incumbent institutions. Procurement processes, while legally compliant, are characterised by procedural complexity and prolonged approval timelines that collectively undermine the timely delivery of transition-related investments.

Across interviews, Sri Lanka's energy governance was consistently described as institutionally fragmented, with overlapping mandates and insufficient coordination mechanisms among key entities. Project approvals require sequential engagement with multiple institutions, each exercising partial authority without clear end-to-end accountability, a structural feature that gives rise to delays, uncertainty, and inconsistent decision-making, which affect investor confidence and project delivery.

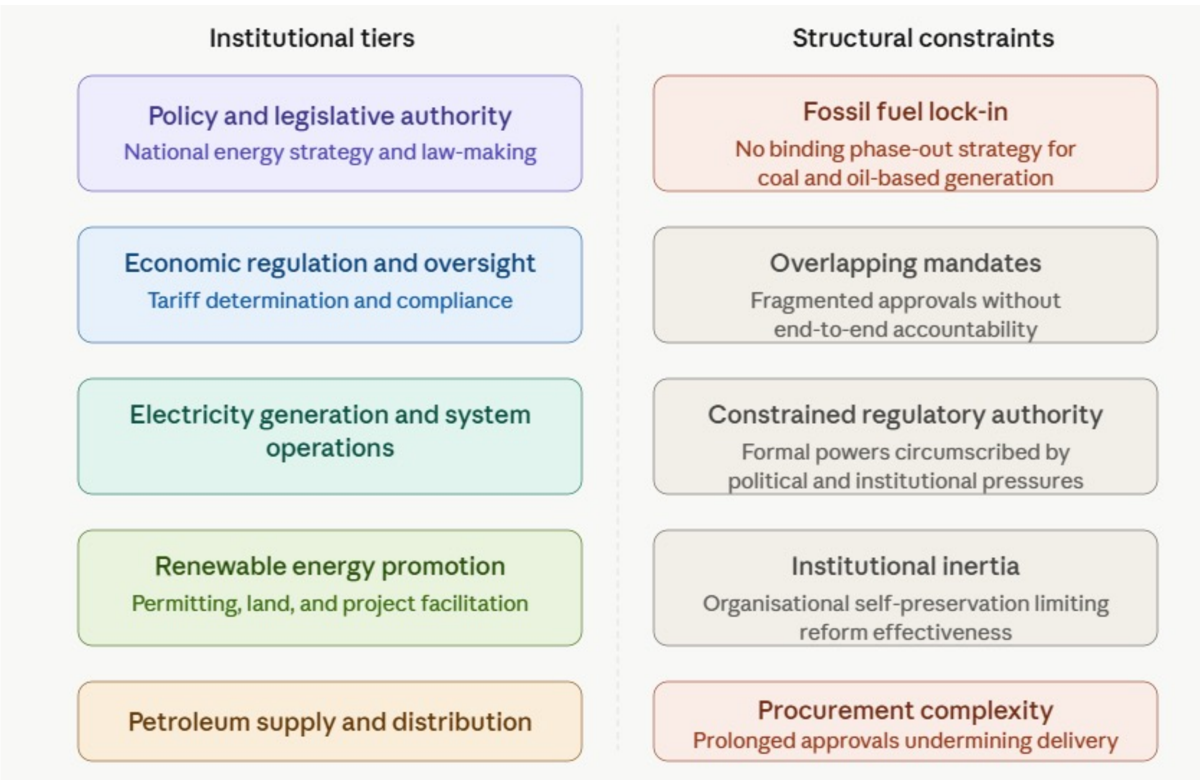
Within this governance landscape, the CEB has historically occupied a central and decisive role, with its control over grid access, power purchase agreements, and system planning giving it significant influence over the pace and direction of renewable energy development. This institutional positioning has at times allowed implementation outcomes to diverge from policy commitments articulated at the ministerial or legislative level. It is noteworthy, however, that stakeholders expressed measured optimism that the restructuring of the CEB presents an opportunity to rebalance institutional roles and create a more enabling environment for renewable energy investment.

The SLSEA, while formally mandated to promote renewable energy development and to exercise statutory functions, including land acquisition and energy permitting, has, in practice, operated with a more limited scope of effective authority. Stakeholders observed that key decisions, particularly at the power purchase agreement stage, have remained subject to CEB concurrence, constraining SLSEA's ability to function as a proactive leader of the energy transition rather than a procedural intermediary. Strengthening SLSEA's operational autonomy and statutory effectiveness is therefore identified as a prerequisite for a more coherent transition governance framework.

The PUCSL was widely recognised as an important regulatory institution, procedurally well-established and technically capable in its core functions of tariff review and generation planning oversight. However, stakeholders noted that its ability to compel compliance or meaningfully reshape entrenched planning assumptions has been circumscribed, particularly where decisions intersect with broader ministerial or political considerations, thereby limiting its effectiveness as a strategic driver of transition-oriented reform.

Beyond formal institutional architecture, stakeholders pointed to a set of underlying factors, including institutional inertia, organisational self-preservation, and the influence of political considerations on sector decisions that shape institutional behaviour in ways that legal restructuring alone may not adequately address. This suggests that the effectiveness of reforms will depend not only on changes to institutional mandates and structures but on the extent to which the incentive environment within which these institutions operate is genuinely transformed.

Figure 5: Energy Governance: Key Elements



Factum (2026)

2.2.3 Analytical Interpretation: Institutional Framework

The combined analysis shows that Sri Lanka's energy transition is constrained not by the absence of institutions or policies, but by how institutions function in practice. While the restructuring of the CEB into successor entities marks a significant formal step toward a more competitive and accountable governance architecture, the effectiveness of this transformation will depend on the extent to which effective control over approvals, procurement, and system planning is genuinely redistributed rather than reconcentrated within the newly established entities. Regulatory authority across PUCSL and SLSEA remains formally established but functionally circumscribed, and the coordination challenges that characterised the pre-restructuring period are unlikely to resolve automatically through structural change alone. The persistence of overlapping mandates, combined with the influence of political considerations on institutional decision-making, suggests that legal restructuring is a necessary but insufficient condition for a more enabling transition governance environment. The critical question at this juncture is therefore not whether reform has occurred; it demonstrably has, but whether the incentive environment within which successor institutions operate will be sufficiently transformed to translate structural change into accelerated transition outcomes.

2.3 FINANCIAL FRAMEWORK

2.3.1 Fiscal Context and Policy Position

Sri Lanka's financial framework for energy transition cannot be understood in isolation from the country's broader macroeconomic circumstances. Severe fiscal constraints fundamentally shape Sri Lanka's energy transition. The scale of investment required for generation expansion, grid strengthening, storage, and renewable integration far exceeds available public financing capacity.

Following the severe economic crisis of 2022, Sri Lanka entered a 48-month Extended Fund Facility (EFF) arrangement with the IMF in March 2023, committing to a comprehensive programme of fiscal consolidation, revenue mobilisation, debt restructuring, and structural reform in exchange for approximately US$ 3 billion in financing support (IMF, 2023). This programme fundamentally shapes the fiscal environment within which energy transition investments must be planned and executed. The government of Sri Lanka's borrowing capacity is constrained by programme performance criteria, sovereign debt levels remain elevated with restructuring nearing but not yet complete, and electricity tariff policy has been formally incorporated as a structural benchmark. Meaning that cost-recovery pricing in the energy sector is not merely a domestic regulatory preference but a binding condition for continued access to IMF financing. Structural reforms to the electricity sector are expected to attract renewable energy financing, foster greater competition among generators, and reduce the overall cost of electricity supply. The most recent IMF programme reviews continue to reaffirm the requirement to restore and maintain cost-recovery pricing for both fuel and electricity, underscoring that external fiscal conditionality remains a persistent and direct influence on the financial architecture of Sri Lanka's energy sector. This means that national electricity and tariff policies are not merely domestic governance choices. They are a binding condition for accessing IMF financing. It is within this constrained and externally conditioned fiscal environment that the energy transition must be financed, making the mobilisation of private and multilateral capital not merely a policy preference but a structural necessity.

2.3.2 Primary Findings: Financial Barriers

The central financial constraint facing Sri Lanka's energy transition is not legal permissibility but bankability. Large-scale renewable energy investments require long-term, stable revenue streams, which current institutional and tariff structures have struggled to guarantee. Financial risk is therefore shaped less by the availability of resources than by regulatory credibility, policy consistency, and the solvency of the off-taker, considerations that remain unresolved within the current governance environment.

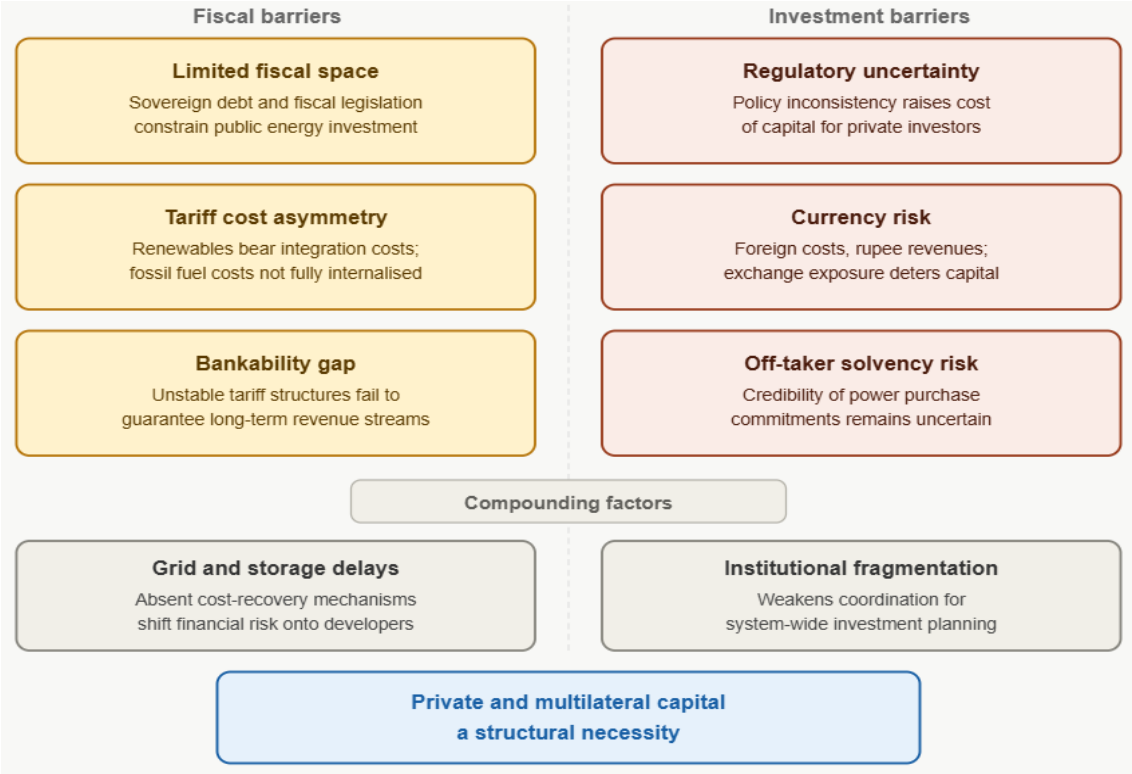
Limited fiscal space emerges as the primary constraint on public investment in grid upgrades and storage infrastructure. Sovereign debt levels and restrictions under fiscal legislation significantly curtail the state's borrowing capacity, shifting the primary responsibility for financing the transition onto private and external capital, a structural dependency that the IMF programme parameters have further reinforced rather than resolved.

Regulatory uncertainty and currency risk represent significant barriers to private investment. The removal or limitation of dollar-indexed tariffs has been identified as a particular concern, given that project costs, including equipment procurement and debt servicing, are typically denominated in foreign currency while revenues are earned in Sri Lankan rupees. In this context, exchange-rate fluctuations can materially erode investor returns, and where tariffs are not indexed to the dollar, that currency risk is transferred entirely onto the project, reducing bankability and increasing the cost of capital as investors price in additional exposure.

Tariff structures have also been criticised for failing to reflect the full system-level cost savings attributable to renewable energy. Renewables are frequently characterised as expensive only when storage and grid integration costs are added to the comparison, while equivalent transmission infrastructure costs and fuel import expenditure associated with fossil fuel generation are not fully internalised in the same analysis. This asymmetry distorts investment decision-making and structurally reinforces continued reliance on thermal generation.

These financial bottlenecks are closely linked to the delayed deployment of grid modernisation and storage infrastructure. The absence of clear cost-recovery mechanisms for storage and grid upgrades shifts financial risk further onto project developers, either raising tariff costs or deterring investment altogether. Institutional fragmentation compounds this challenge by weakening financial coordination across entities, complicating the integrated system-wide planning that large-scale transition investments require.

Figure 6: Key Financial Constraints Shaping Energy Transition



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2.3.3 Analytical Interpretation: Financial Framework

The analysis reveals that Sri Lanka's financial constraints are systemic rather than technical, rooted in the intersection of sovereign fiscal weakness and an investment environment lacking the credibility needed to attract transition capital at scale. Investors need predictable returns, stable tariffs, and reliable counterparts to commit capital over the long periods required by energy infrastructure. The current environment does not consistently offer these assurances, and as a result, financing the transition remains difficult despite genuine policy ambition and strong renewable resource availability.

The IMF programme has brought important fiscal discipline to the energy sector, particularly through its insistence on cost-reflective electricity pricing. However, when tariff decisions are shaped more by debt repayment requirements than by a coherent long-term energy investment strategy, they can create the very uncertainty that drives investors away. There is a risk that the measures designed to stabilise public finances could end up making energy transition more expensive rather than less. At the same time, the way costs are compared between renewable and fossil fuel generation remains skewed. Renewables are frequently assessed as expensive because storage and grid costs are added to their price, while the full costs of fossil fuel infrastructure transmission investment, fuel imports, and foreign exchange exposure are rarely counted in the same way. Until these underlying conditions change, Sri Lanka will continue to attract energy investment only at a premium, making electricity costlier for consumers and slowing the transition to the extent required by the country's own targets.

2.4 CROSS-FRAMEWORK SYNTHESIS

The structural constraints hindering Sri Lanka's transition to a high-penetration renewable energy future cannot be resolved as isolated, sector-specific challenges; rather, they form a highly interconnected, co-reinforcing trilemma across technological, institutional, and financial dimensions. At the core of this systemic bottleneck is circular vulnerability. The technical integration of variable renewable energy is restricted by a rigid, centralised grid infrastructure. However, overcoming this technological system inflexibility requires massive, front-loaded capital investments in smart-grid technologies, grid-scale battery energy storage systems, and pathways for upgrading transmission infrastructure. Here, the technological bottleneck collides directly with constraints in Sri Lanka's financial framework. Severely restricted by sovereign debt limits, high currency volatility, and weakened off-taker creditworthiness, the state lacks the fiscal capacity to fund this grid modernisation publicly. Consequently, the transition is entirely dependent on mobilising private and multilateral capital. Yet, this capital remains locked out due to the institutional framework's regulatory unpredictability and fragmented bureaucracy, which collectively heightens project risk, undermine the bankability of power purchase agreements, and delay project delivery.

A final cross-cutting dysfunction identified through this analysis is the persistent conflation of "energy" and "electricity" in both public discourse and policy formulation. Sri Lanka's total final energy consumption remains dominated by biomass and petroleum products across household, industrial, and transport sectors. Electricity represents a comparatively modest share of total energy demand. Consequently, even a dramatic expansion of renewable electricity generation will not, by itself, constitute a comprehensive energy transition. The policy attention lavished on electricity sector restructuring, while necessary, risks diverting institutional focus and fiscal resources from the broader decarbonisation challenges embedded in the use of thermal fuels for transport and industry, and from the modernization of informal biomass consumption, which continues to dominate household energy profiles.

Taken together, these findings indicate that Sri Lanka's energy transition cannot be understood as a linear substitution of renewable for fossil-fuel sources within an otherwise stable system. It is, rather, a structural reconfiguration that demands simultaneous transformation of technological infrastructure, institutional authority, financial methodologies, and conceptual frameworks. The transition's success will depend less on setting ambitious targets than on dismantling the systemic interlock that currently prevents those targets from materialising. This requires moving beyond isolated reforms, whether legislative restructuring, tariff adjustment, or generation procurement, to pursue coordinated intervention across all three frameworks, ensuring that technological modernisation, institutional redistribution, and financial recalibration advance in concert rather than at cross-purposes.

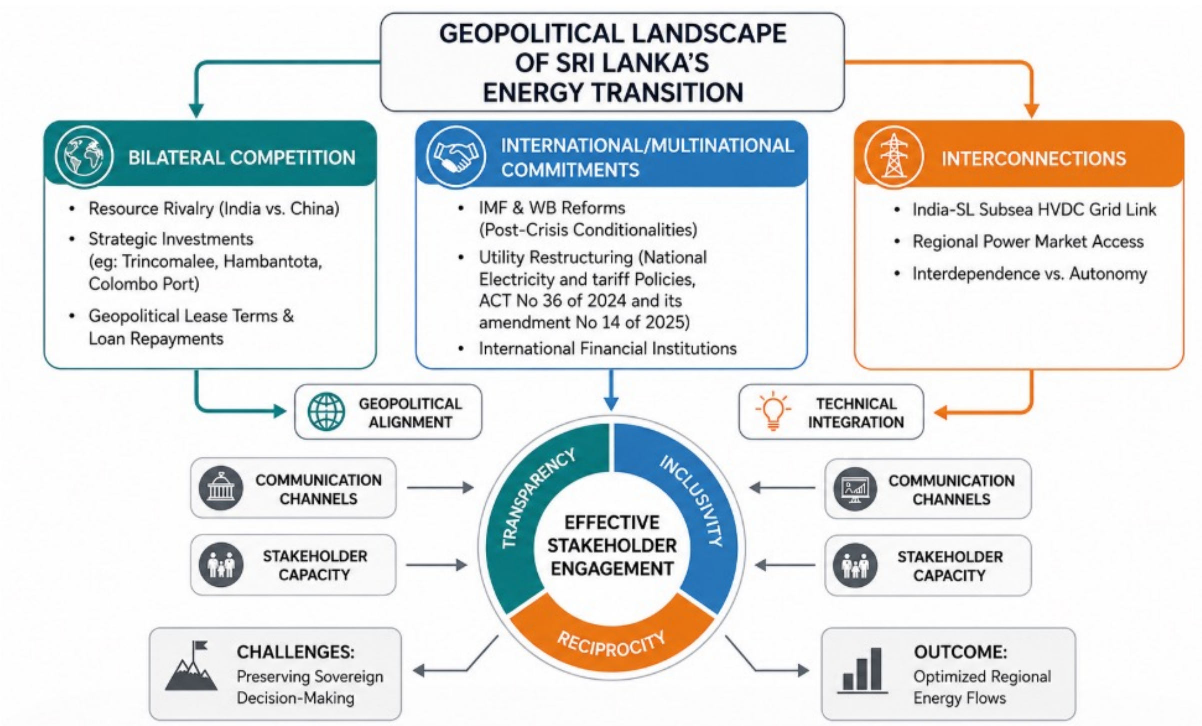
Chapter Conclusion

Sri Lanka's energy transition faces structural challenges across three interconnected dimensions. Technologically, grid infrastructure has struggled to keep pace with the expansion of renewable energy, while storage deployment has remained slow, and planning has continued to rely on fossil-fuel baseload assumptions. Institutionally, overlapping mandates and fragmented coordination have at times caused implementation to fall short of policy ambitions. The ongoing sector restructuring offers an opportunity to address this, though its effectiveness remains to be seen. Financially, fiscal constraints following the 2022 economic crisis, currency risk, and questions around off-taker credibility have made attracting large-scale private investment challenging. These three dimensions are closely interrelated, meaning progress in one area depends on advances in the others. The chapter also notes that the predominant focus on electricity may understate the broader challenges of the energy transition, given that petroleum and biomass still account for the majority of Sri Lanka's total energy consumption.

3. GEOPOLITICS OF SRI LANKA'S ENERGY SECTOR: NAVIGATING MULTIPOLAR CONTEXT

This chapter examines the geopolitics of Sri Lanka's energy transition, extending the financial, institutional, and technological lenses developed in Chapter Two to the regional scale. Rather than treating geopolitics as an external or abstract force, the analysis conceptualises it as operating through financing arrangements, institutional pathways, and technology choices that shape domestic energy outcomes. The study period coincided with extraordinary global turbulence: the prolonged aftermath of the 2022 energy price crisis, the weaponisation of energy supplies in major international conflicts, intensifying competition for critical minerals essential to clean technology, and the strategic contention between India and China across the Indian Ocean region.

Figure 7: Geopolitical Landscape of Sri Lanka's Energy Transition



Factum (2026)

Sri Lanka's energy transition does not occur in isolation. It is shaped by a geopolitical landscape characterised by competing bilateral interests, international commitments, and the growing prospect of regional interconnection. As illustrated in the figure above, Sri Lanka's geopolitical energy landscape operates across three interconnected dimensions: bilateral competition between regional powers, international and multilateral commitments, and physical and institutional interconnections with the region. Running through all three is the challenge of effective stakeholder engagement, built on transparency, inclusivity, and reciprocity and the fundamental tension between optimising regional energy flows and preserving sovereign decision-making.

3.1 BILATERAL COMPETITION: INDIA, CHINA, AND STRATEGIC CAPITAL

Sri Lanka sits at the center of an increasingly active competition between India and China for strategic presence in the Indian Ocean region, and energy infrastructure has become one of the key arenas in which this competition plays out. Interviewees did not characterise either country's engagement primarily in terms of least-cost investment or development assistance. Instead, financing from both bilateral partners was consistently described as strategic and spatially targeted, oriented toward securing presence and influence rather than addressing Sri Lanka's core system needs.

Across interviews, respondents mentioned that Indian-backed energy projects, such as Sampur, have remained stalled for extended periods despite formal agreements. Several interviewees argued that these projects function less as genuine investment vehicles and more as mechanisms to secure strategic presence and limit third-party entry, particularly by China. The absence of sustained financial commitment was itself read as a signal of geopolitical intent rather than market failure. Strategic investments in locations such as Trincomalee and Colombo port area reflect this logic, where energy infrastructure and geopolitical positioning are inseparable.

Chinese engagement was described differently, but with similar strategic implications. Interviewees characterised Chinese capital as project-specific and asset-focused, oriented toward large infrastructure rather than grid upgrades, storage, or system integration. While it was acknowledged as comparatively fast-moving and less procedurally constrained than multilateral finance, Chinese investment has not addressed Sri Lanka's core transition financing needs. The geopolitical lease terms and loan repayment structures associated with some Chinese-backed projects have also generated concern about long-term fiscal exposure.

The resource rivalry between India and China, therefore, shapes Sri Lanka's energy investment landscape in neither a straightforwardly enabling nor a simply constraining way. It is strategically selective, filling some gaps while leaving others deliberately open. As Theiventhran (2024) observes, energy in Sri Lanka has increasingly become a geopolitical battleground, with external actors using infrastructure investments to advance strategic objectives that extend well beyond the energy sector itself.

3.2 INTERNATIONAL/MULTILATERAL COMMITMENTS

In contrast to bilateral engagement, multilateral institutions, particularly the IMF, World Bank, and Asian Development Bank (ADB), shape Sri Lanka's energy sector primarily through conditionality on institutional reform rather than through strategic positioning. Ministry officials confirmed that multilaterally financed projects must adhere to layered compliance requirements that span both national procurement guidelines and donor-specific frameworks, adding procedural complexity to an already fragmented governance environment.

The IMF's EFF, approved in March 2023, has made cost-reflective electricity pricing a structural benchmark, directly linking tariff policy to the macroeconomic stabilisation programme (IMF, 2025). The World Bank and ADB have similarly tied financing to reforms such as CEB restructuring, the implementation of national electricity and tariff policies, regulatory strengthening, and tariff restructuring, which carry their own sequencing risks, as discussed in Chapter 2. Several interviewees noted that reforms driven primarily by lending conditionality rather than domestic readiness can generate institutional strain and political resistance, particularly when they outpace the technical and governance capacity required to implement them effectively.

Sri Lanka's international climate commitments add a further layer of obligation. NDC 3.0, submitted to the UNFCCC in September 2025, commits Sri Lanka to a 20.09% reduction in GHG emissions relative to a business-as-usual scenario, with the electricity sector carrying 75% of the total mitigation burden (Ministry of Environment, 2025). These commitments are grounded in the National Energy Policy and Strategies (2019), which envisions carbon neutrality across all energy value chains by 2050, and are operationalised through the Long-Term Generation Expansion Plan 2025-2044, which sets out the technology pathways and investment requirements to achieve a 70% renewable electricity share by 2030. The National Electricity Policy (2025) and its accompanying National Tariff Policy further reinforce these commitments at the sectoral level, linking electricity pricing reform directly to the transition investment framework (Ministry of Energy, 2025).

The result is a situation in which Sri Lanka is bound by multiple overlapping external frameworks, fiscal, developmental, and climate, whose demands do not always align, and whose sequencing requires careful domestic navigation. Across interviews, there was strong convergence on one point: Sri Lanka lacks the financial autonomy to independently fund the infrastructure required for a high-renewables system. This structural dependency on external actors means that energy decisions are rarely made on purely domestic terms.

3.3 INTERCONNECTIONS: TECHNICAL INTEGRATION AND REGIONAL POSITIONING

The Long-Term Generation Expansion Plan 2025-2044 plans for a 500 MW HVDC undersea transmission link between Sri Lanka and India in the second decade of the planning horizon, framing it as a regional cooperation and energy security instrument rather than an immediate transition requirement (CEB, 2025). Stakeholder evidence and secondary sources indicate that technical feasibility work has advanced significantly, though financial modalities remain under negotiation. This link has been presented as a regional energy security instrument, offering Sri Lanka access to a larger power pool and greater system flexibility. However, interviewees expressed measured views on its actual value from Sri Lanka's domestic perspective. Several experts noted that the interconnection does not directly address Sri Lanka's most immediate system challenges, grid absorption limits, storage deficits, and transmission congestion, which are domestic problems requiring domestic solutions. The broader question of interdependence versus autonomy is therefore central. Deeper regional integration can reduce system costs and improve reliability, but it also increases exposure to a neighbouring country's pricing, policy, and political decisions.

Beyond the HVDC link, discussions around positioning Trincomalee as a regional energy hub, involving oil pipeline connectivity, tank farm development, and Indian partnership, reflect the same underlying dynamic. These are proposals with genuine economic logic, but they also carry implications for Sri Lanka's long-term energy sovereignty that have not yet been fully worked through in public or policy discourse. The National Energy Policy and Strategies (2019) does acknowledge the importance of viable cross-border electricity transmission and regional cooperation, but frames this as a multilateral power pool arrangement rather than a bilateral dependency (Ministry of Power, Energy and Business Development, 2019). The resulting picture is one of fragmentation: ambitious renewable targets coexist with inadequate system flexibility, and technological choices are shaped as much by external financing structures as by domestic system optimisation.

3.4 EFFECTIVE STAKEHOLDER ENGAGEMENT

Running through all three dimensions of the geopolitical landscape is a common challenge — the need for effective stakeholder engagement built on transparency, inclusivity, and reciprocity. Interviews reveal that this pattern, regardless of whether the external partner is India, China, or a multilateral lender, tends to reinforce a project-centric governance approach rather than contributing to a coherent, system-level transition framework. The National Electricity Policy (2025) explicitly calls for competitive and transparent procurement processes as the basis for all new generation and ancillary service agreements, providing a domestic policy foundation from which more structured external engagement can be built (Ministry of Energy, 2025).

Preserving sovereign decision-making in this environment requires external engagement as well as a more structured and transparent approach to it. The goal of optimised regional energy flows that serve Sri Lanka's domestic transition objectives is achievable.

Chapter Conclusion

Sri Lanka's energy transition is deeply embedded in a geopolitical landscape that it cannot control but must actively navigate. Bilateral competition between India and China, multilateral conditionality from international financial institutions, and the emerging architecture of regional interconnection all shape the pace, direction, and cost of the transition in ways that domestic policy alone cannot fully determine. The central finding of this chapter is that external engagement, whether financial, institutional, or technological, has so far tended to reinforce Sri Lanka's structural dependencies rather than resolve them. Translating the genuine potential of regional energy cooperation into tangible transition gains will require Sri Lanka to engage externally from a position of clearer strategic intent, stronger institutional capacity, and greater transparency in managing geopolitical relationships within the energy sector.

4. POLICY AND ACTION RECOMMENDATIONS

The policy recommendations presented in this chapter are based on the report's analytical findings and adhere to key prerequisites for policy formulation. They are grounded in an identification of structural challenges within Sri Lanka's energy sector, including import dependence, grid constraints, institutional fragmentation, fiscal limitations, and geopolitical positioning. Drawing on stakeholder interviews and analysis of policy documents, the recommendations reflect technical feasibility, institutional capacity, political as well as economic considerations, and macroeconomic realities. Each recommendation is therefore designed to be evidence-based, implementable within existing or realistically reformable governance structures, fiscally prudent, and aligned with Sri Lanka's long-term objectives of energy security, sustainability, and strategic autonomy within the region.

4.1 POLICY RECOMMENDATIONS

4.1.1 Development of Fossil Fuel Phase-Out Framework

Despite Sri Lanka's commitment to carbon neutrality by 2050, there is currently no dedicated framework outlining how fossil fuels will be phased out of the energy system. The Long-Term Generation Expansion Plan 2025-2044 addresses the gradual reduction of coal and oil-based generation within its planning scenarios, but this falls short of a formal, binding phase-out strategy. A dedicated framework is needed. Without a clear signal that fossil fuel infrastructure will not be expanded further, the transition remains additive rather than transformative. Renewables are being added while the fossil fuel base stays largely intact. Sri Lanka should commit to maintaining existing fossil fuel capacity only where operationally necessary, refraining from new long-term fossil fuel investments, and accelerating the development of storage and grid infrastructure that makes higher renewable penetration viable. A standalone Fossil Fuel Phase-Out Framework, adopted as a formal policy instrument, would provide the institutional clarity this commitment requires and strengthen Sri Lanka's credibility with international climate finance partners.

4.1.2 Revision of National Energy Policy and Strategies of Sri Lanka, 2019

Since the National Energy Policy and Strategies was gazetted in 2019, Sri Lanka's energy sector has undergone significant structural change. The CEB was restructured into six state-owned successor entities under the Sri Lanka Electricity Act No. 36 of 2024 and its 2025 Amendment, effective in March 2026. The National Electricity Policy and the National Tariff Policy were gazetted simultaneously in 2026. The Ministry of Energy issued a Draft National Policy on Renewable Hydrogen in 2025, and the Ministry of Environment published the National Policy on Climate Change in 2023. Sri Lanka's Third Nationally Determined Contribution was submitted to the UNFCCC in September 2025, committing to a 20.09% reduction in GHG emissions, with the electricity sector carrying 75% of the mitigation burden (Ministry of Environment, 2025). These developments collectively represent a transformation of the institutional, legislative, and international framework within which Sri Lanka's energy sector operates. A revision of the 2019 National Energy Policy is therefore necessary to reflect the new institutional architecture, align with recent legislative reforms, and incorporate the emerging dimensions of hydrogen, climate policy, and NDC commitments. The revised policy should go beyond target-setting and provide a coherent, system-wide strategic framework that integrates electricity generation, transmission, storage, demand management, and the broader energy system within a single forward-looking national strategy.

4.1.3 Development of a National Energy Storage Roadmap

Developing a National Energy Storage Roadmap is essential for Sri Lanka's energy transition. While the country has renewable energy targets and action plans, it lacks a system-wide storage strategy. The CEB's large-scale battery procurement for grid stabilisation and peak management is important but remains largely reactive rather than part of an integrated, forward-looking strategy. At present, storage is treated mainly as a technical response to rooftop solar curtailment rather than as a core component of long-term planning. Although private developers are proposing solar-battery hybrids and pumped-storage has been discussed, these efforts have not yet evolved into a coordinated national framework. A comprehensive roadmap should set clear storage targets, identify priority technologies, align storage with renewable expansion, and integrate planning with transmission and distribution at the CEB.

4.1.4 Establish an independent system intelligence layer for renewable energy integration (AI-enabled platform)

According to the International Renewable Energy Agency (2025), digitalisation of the energy sector is not limited to smart meters or batteries; it requires system-wide, AI-enabled coordination of distributed energy resources. Such a platform would aggregate real-time data on rooftop solar, wind, storage, and demand; apply AI-based forecasting; optimise distributed dispatch; coordinate batteries and flexible loads; enable demand response; and ensure transparent access to grid data. In this study, stakeholders repeatedly stated that "the grid cannot absorb," "base load must be thermal," and "battery is the solution." Yet Sri Lanka lacks predictive renewable forecasting tools, AI-assisted dispatch, etc. Current technical discussions in Sri Lanka's energy sector largely focus on physical infrastructure, storage deployment, grid expansion, the LNG transition, and rooftop solar targets. Policy debates, meanwhile, center on sector restructuring, renewable targets, and emerging areas such as hydrogen. What is missing across both dimensions is a digital intelligence layer that ties these elements together. Sri Lanka should therefore establish an independent, AI-enabled system intelligence platform that aggregates real-time data across generation, storage, and demand, enabling smarter grid management, better integration of variable renewables, and a gradual shift from infrastructure-led expansion toward evidence-based energy governance.

4.1.5 Establish a 'Least System Cost First' energy policy

Interviews revealed that electricity investment decisions in Sri Lanka are evaluated primarily on generation cost alone, creating a structural bias against renewable energy that is deeply felt in practice. Fossil fuels often appear cheaper because comparisons exclude transmission costs, foreign-exchange exposure, and long-term fuel price volatility. What this framing obscure is a fundamental asymmetry. For example, the primary fuel for solar and wind is free. Sunlight and wind carry no import costs, no foreign exchange exposure, and no price volatility. The costs associated with renewables, storage and grid integration are largely one-time capital investments, whereas fossil fuel costs are recurring and subject to global market fluctuations beyond Sri Lanka's control. Adopting a Least System Cost First policy requiring all future electricity investments to be evaluated on total system cost rather than generation cost alone would correct this imbalance, prioritise distributed generation, protect foreign reserves, and provide a more honest basis for investment decisions that serve both Sri Lanka's energy security and its long-term fiscal sustainability.

4.1.6 Develop a 'National Renewable Energy Land Bank and Fast Track Clearance Cell'

The land acquisition for renewable energy projects in Sri Lanka remains slow, fragmented, and politically sensitive. Approvals are dispersed across multiple institutions, including the Forest Department, Mahaweli Authority, Divisional Secretariats, Provincial Councils, and Wildlife authorities, which operate independently, often with limited coordination or data sharing. Although the SLSEA has legal authority to facilitate land, this mandate has not been effectively operationalised. At the same time, tensions between agricultural land use and renewable energy development have generated local resistance, further complicating project implementation. Developers frequently spend years navigating approval processes, which discourage investment and delay renewable deployment. To address these, Sri Lanka should establish a centralised digital and legal Renewable Energy Land Platform that identifies pre-cleared, non-agricultural, non-forest, and low conflict lands suitable for development. This should be supported by a single-window approval system with statutory approval deadlines, pre-approved environmental screening procedures, and mandatory inter-agency coordination to streamline decision-making and reduce institutional fragmentation.

4.2 ACTION RECOMMENDATIONS

The following recommendations address the broader dimensions of Sri Lanka's energy future. They are informed by two complementary sources of evidence: the insights of interviewees who consistently pointed to gaps in the current policy framework, and global developments in emerging energy technologies that are increasingly shaping the long-term trajectories of energy transition in comparable economies. The recommendations are therefore presented not as immediate implementation priorities but as areas requiring structured policy development, research investment, and institutional readiness, so that Sri Lanka is positioned to act decisively when the conditions for deployment mature.

4.2.1 Integrated Planning and Cross-Ministerial Policy Coordination

One of the less visible but structurally significant gaps in Sri Lanka's energy transition is the absence of integrated planning across the ministries and agencies whose decisions collectively shape energy demand and supply. The energy transition is not solely the responsibility of the Ministry of Energy; it cuts across the mandates of the Ministry of

Digital Infrastructure, Ministry of Transport, Ministry of Ports and Aviation, and Ministry of Industries, among others. Transport electrification, industrial energy efficiency, port decarbonisation, digital infrastructure for grid management, and the development of green hydrogen export corridors all require coordinated planning across these institutions. Yet currently, sectoral plans are developed largely in isolation, creating misalignments that add cost, delay investment, and produce policy contradictions, for example, where industrial energy policy continues to incentivise fossil fuel use while energy policy commits to renewable expansion, or where port development planning does not account for the infrastructure requirements of future maritime hydrogen fuel. A formal inter-ministerial coordination mechanism with a clear mandate, defined responsibilities, and regular reporting to Cabinet, is essential to ensure that Sri Lanka's energy transition is planned and governed as a whole-of-economy undertaking rather than a sector-specific exercise. Without this, even the best-designed energy policies risk being undermined by decisions made in adjacent ministries that were never aligned with transition objectives in the first place.

4.2.2 Addressing Household Biomass Dependency

Despite biomass and waste accounting for 86.3% of Sri Lanka's domestic energy production and approximately 48% of its total energy consumption (IEA, 2023), the heavy reliance on firewood for cooking in rural and some urban households is often overlooked. To achieve a genuine energy transition, improving access to clean cooking energy is just as critical as expanding renewable electricity. While the National Energy Policy and Strategies (2019) committed to commercialising biomass-based fuel products for household and industrial use, progress remains difficult to trace. Addressing this gap requires a structured programme featuring clear milestones, defined institutional accountability, and targeted financial support for low-income households.

4.2.3 Renewable Hydrogen: Feasibility Studies

While Sri Lanka has taken commendable initial steps - such as drafting the National Policy on Renewable Hydrogen (2025) and opening Board of Investment (BOI) channels for project proposals - global experience suggests proceeding cautiously from policy formulation to structured feasibility assessments, rather than to immediate, large-scale implementation. Even advanced economies struggle to commercialise green hydrogen due to high production costs, specialised infrastructure requirements for storage and transport, and significant safety risks (IRENA, 2025). Since comprehensive national studies assessing Sri Lanka's specific technical, financial, and safety readiness remain limited, the immediate priority must be to commission a rigorous, independent feasibility study before committing public or private capital to large-scale infrastructure investment.

Image Disclaimer: Some illustrative images included in this report were generated using AI tools to support the visual representation of the concepts discussed and do not constitute empirical evidence or documentary records

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ANNEXURE 1

Framework	Core Constraints	Key Findings	Recommendations
Technological	• Grid-centered system inflexibility limits renewable integration • Delayed deployment of battery energy storage systems and pumped storage • Absence of smart grid and digitalisation infrastructure • Baseload-centric planning inertia favouring fossil fuel retention • Land acquisition and siting constraints for ground-mounted projects	• Renewable generation has expanded faster than the grid's absorptive capacity • Connection refusals, curtailment, and reverse power flow challenges • Storage treated as reactive fix rather than core planning element • No predictive forecasting tools or AI-assisted dispatch in operation • Floating and lagoon-based solar are adopted as costly workarounds	• Prioritise grid reinforcement and transmission upgrades ahead of generation growth • Develop a National Energy Storage Roadmap with clear targets and technology pathways • Establish an AI-enabled system intelligence platform for data-driven grid management • Shift from hardware-led expansion to intelligence-driven energy governance
Institutional	• Fragmented governance and overlapping mandates across CEB, SLSEA, and PUCSL • CEB dominance over grid access, PPAs, and system planning • SLSEA lacks effective statutory authority in practice • Absence of a binding fossil fuel phase-out and plant retirement strategy • Community resistance and social license failures delaying projects • Political interference and frequent legal amendments create instability	• Project approvals require sequential engagement with multiple institutions without end-to-end accountability • CEB exercises informal veto power beyond its formal mandate • SLSEA decisions remain contingent on CEB concurrence at the PPA stage • No structured coal retirement mechanism despite carbon neutrality commitments • Sampur Coal Plant and Mannar Wind Project illustrate social license failures • Reforms alter formal structures without shifting effective institutional control	• Revise the National Energy Policy and Strategies 2019 to reflect 2025 legislative reforms • Develop a formal Fossil Fuel Phase-Out Framework to prevent long-term carbon lock-in • Establish a single-window Fast Track Clearance Cell for renewable energy approvals • Strengthening SLSEA's statutory mandate and operational independence • Prioritise bottom-up public consultation to build social license for renewable projects

Framework	Core Constraints	Key Findings	Recommendations
Financial	• Limited fiscal space constraining public investment in grid and storage infrastructure • Weak bankability driven by regulatory uncertainty and currency risk • Removal of dollar-indexed tariffs increases financial exposure for foreign investors • Market predictability deficits undermining private sector confidence • Cost-reflective pricing reform without adequate social safety nets • Asymmetric cost accounting that understates the true cost of fossil fuel generation	• Debt limits restrict sovereign borrowing for grid upgrades and storage • Currency risk is fully transferred to developers, increasing the cost of capital • Renewables are labelled expensive when storage costs are added, while fossil fuel infrastructure costs are excluded • Curtailment risks and unclear PPA protocols deter investment • Vulnerable households and small industries are exposed to tariff increases without protection • Institutional fragmentation weakens financial coordination across system-wide investments	• Adopt a Least System Cost First policy accounting for full infrastructure and foreign exchange impacts • Restore and stabilise dollar-indexed tariff mechanisms to improve bankability • Establish clear cost-recovery mechanisms for storage and grid modernisation • Introduce standardised, transparent, and competitive bidding processes • Align cost-reflective pricing with targeted safety nets for vulnerable consumers

ANNEXURE 2

Cross-cutting themes from stakeholder interviews

Trend Area	Description
1. Aggressive Scale-up of Variable Renewable Energy	Sri Lanka is shifting from small-scale "Feed-in Tariff" projects to large-scale, competitive-bid renewable energy parks. • **Solar Expansion**: Utility-scale projects like the 100 MW Siyambalanduwa Solar Park and the Sampur Solar Power Project are flagship initiatives. Rooftop solar has seen exponential growth, exceeding 1,850 MW by 2025. • **Wind Potential:** While onshore wind (e.g., Mannar – Pooneryn wind belt) continues to develop, there is a strategic pivot toward offshore wind, with an estimated potential of fixed-bottom and floating.
2. Accelerated Market Liberalisation and Structural Reform	The sector is undergoing a legal and operational transformation driven by the Sri Lanka Electricity Act, No. 36 of 2024, and its 2025 Amendments. • **Restructuring of the CEB:** The trend is moving toward segregating the CEB assets, liabilities, duties, functions and activities into independent corporate entities for generation, transmission, and distribution to attract private capital. • **Competitive Electricity Market:** By 2026, the "Single Buyer" model is being phased out in favour of a National Electricity Market.
3. Strategic Liquefied Natural Gas (LNG) Transition	To bridge the gap between retiring coal- and oil-fired plants and the 2030 renewable targets, Sri Lanka is prioritising LNG infrastructure. • **Operational Shifts:** The 350 MW Sobadhanavi Power Plant began operations (initially on oil) with a plan to switch to LNG. • **Infrastructure Revival:** the government has revived plans for an LNG import terminal and Floating Storage Regasification Unit (FSRU) near Colombo.
4. Regional Grid Integration and Energy Diplomacy	Sri Lanka is moving from an isolated grid to a regionally integrated one, primarily through collaboration with India. • **HVDC Interconnection:** Technical details for the 500 MW undersea transmission line were finalised by early 2026, with current focus on financial modalities. • **Energy Hub Ambitions:** Discussions are ongoing to position Trincomalee as a regional energy hub, involving oil pipeline connectivity and tank farm development with Indian partnership.

5. Digitalisation and Grid Resilience	As variable renewable energy (wind/solar) penetration increases, the grid is being modernised to handle intermittency. • **Smart Infrastructure:** There is a trend toward digitalisation, including smart metering and automated dispatch systems. • **Energy Storage:** To stabilise the grid, the Long-Term Generation Expansion Plan 2025-2044 includes a trend toward deploying Battery Energy Storage Systems (BESS) and exploring pumped hydro storage to manage the target of 70% renewable energy by 2030.
6. Economic Decoupling of Electricity Prices	Reflecting the IMF-backed reforms, there is a trend toward cost-reflective pricing. Tariff adjustments in 2025 and projections for 2026 focus on reducing the state's fiscal burden by aligning consumer prices with the actual cost of generation, which is expected to decline as more low-cost renewables enter the mix.

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