ZIMBABWE BLUEPRINT INITIATIVE

Building for Generations:

A Systems Approach to Infrastructure Development in Zimbabwe

PAPER 3 OF THE BLUEPRINT SERIES | INFRASTRUCTURE DEVELOPMENT

ABSTRACT

Zimbabwe's infrastructure deficit is not a collection of separate problems. It is a system failure — and it must be addressed as a system. Power shortages cost the economy 6.1% of GDP annually. Rail freight has collapsed to less than a quarter of its 1990s capacity, pushing logistics costs to 30-40% of total production for exporters. Digital access, while growing in headline terms, remains constrained by the power crisis that prevents connectivity from translating into economic participation. This paper argues that Zimbabwe must build its infrastructure not for today's needs but for the Zimbabwe of 2060 — applying the generational design philosophy that has characterised the most successful infrastructure programmes in East Asia and increasingly in Africa. Climate resilience is not an optional upgrade; it is a design requirement. The paper sets out a three-pillar systems framework covering energy, transport and digital connectivity, a blended financing model that avoids toxic bilateral debt, and a spatial planning framework that links Zimbabwe's highveld economic core to regional ports and corridors.

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EXECUTIVE SUMMARY

Executive Summary

Infrastructure is not the background to Zimbabwe's economic story. It is the plot. Every other reform this blueprint proposes — monetary stability, institutional credibility, agricultural productivity, diaspora re-engagement — depends on infrastructure to deliver its potential. A farmer who cannot get produce to market, a manufacturer paying 30-40% of production costs in logistics, a student who cannot study after dark, a hospital running on generator power: these are not isolated inconveniences. They are the compounding daily cost of a system that has been allowed to deteriorate for thirty years.

The numbers are stark. Zimbabwe's power shortages cost the economy an estimated 6.1% of GDP every year.[1] The National Railways of Zimbabwe, which once hauled 12 million tonnes of freight annually, now manages less than 3 million tonnes — less than a quarter of its capacity — because fewer than a quarter of its locomotives are operational.[2] Rail transport of minerals and agricultural produce is up to 80% cheaper than road haulage, yet companies have no choice but to use trucks, destroying roads in the process and adding cost to every product Zimbabwe produces or exports.[3] Digital connectivity, while growing in headline terms, remains severely constrained in quality and reach — and is directly throttled by the same power crisis that undermines every other productive activity.´

This paper makes three arguments. First, that Zimbabwe's infrastructure challenges must be addressed as a system rather than as a collection of separate sector problems — because energy, transport and digital connectivity are interdependent, and investment in any one pillar multiplies the return on the others. Second, that Zimbabwe must build for the trajectory, not the current state: infrastructure designed for today's demand will be obsolete within a decade in a high-growth economy, and infrastructure built without climate resilience will fail under the increasingly severe Southern African weather events that are already occurring. Third, that the financing for this transformation is available — through a blended model combining public-private partnerships with ring-fenced user fees, development finance institution capital, and infrastructure bonds — but only if the institutional credibility established in Papers 1 and 2 is in place to attract and deploy it.

The governing philosophy throughout is what this paper calls the generational design standard: build what Zimbabwe needs at high-income scale, not what it can afford at current scale. China's infrastructure programme — which has consistently built capacity well ahead of demand, at standards designed to last generations — is the most instructive international example. Africa can learn from both China's successes and its mistakes, leapfrogging directly

into climate-smart, digitally-integrated infrastructure rather than replicating the polluting and fossil-fuel-dependent models of 20th-century development.

SECTION 1

1. The Infrastructure Deficit: What It Is Actually Costing Zimbabwe

Zimbabwe's infrastructure was, at independence, among the best on the African continent. A national electricity grid with regional interconnections, an extensive road network, a functioning rail system that served as a transit hub for the region, and water and sanitation systems that provided genuine coverage — these were the starting point. What followed was a three-decade process of underinvestment, mismanagement, and deterioration that has transformed a regional infrastructure leader into a country where businesses build their own power supplies, freight moves by road because rail is unreliable, and the digital economy is constrained by the power crisis that undermines everything else.

The deficit is not simply an inconvenience. It is a direct and quantifiable tax on economic activity.

1.1 The Energy Crisis: A 6.1% GDP Tax

Zimbabwe's power generation capacity stands at approximately 1,537 MW against peak demand of around 2,200 MW — a structural shortfall that has persisted for years and produces load-shedding that, during crisis periods, has reached 18-20 hours per day.[1] The World Bank's analysis is unambiguous: power shortages cost Zimbabwe 6.1% of GDP annually — 2.3% in generation inefficiencies and network losses, and 3.8% in downstream costs of unreliable energy across businesses, households, and public institutions.µ

The sectoral consequences are severe and interconnected. Mining operations — Zimbabwe's primary source of foreign currency — face reduced margins and constrained expansion because energy-intensive mineral processing requires consistent, high-voltage power that the grid cannot reliably provide. The lithium beneficiation policy Zimbabwe has rightly pursued requires 8-12 MWh of electricity per tonne of lithium carbonate equivalent produced — a standard that the current grid simply cannot sustain at industrial scale.¶ Agricultural irrigation and cold chain infrastructure depend on reliable power; their absence constrains productivity and post-harvest losses simultaneously. And every hour of load-shedding in a school, clinic, or government office is an hour of human capital and service delivery foregone.

The dependency on Kariba is the structural heart of the problem. Zimbabwe's hydroelectric capacity, centred on Kariba, accounts for a large share of generation capacity — but Kariba is both ageing and increasingly vulnerable to Southern Africa's climate-driven drought cycles. The 2024 El Niño event reduced water levels to the point that generation capacity was

severely curtailed, directly worsening the load-shedding crisis. An energy system whose primary generation asset is a single ageing dam in a drought-vulnerable river basin is not a resilient energy system. It is a liability.

1.2 The Rail Collapse: A Logistics Tax on Every Export

The National Railways of Zimbabwe once made Zimbabwe a genuine regional logistics hub. At its 1990s peak, the NRZ hauled 12 million tonnes of freight annually — minerals, agricultural produce, manufactured goods, and transit cargo for landlocked neighbours. Today it manages less than 3 million tonnes, because fewer than a quarter of its locomotives are operational, speed restrictions cover hundreds of kilometres of deteriorated track, and the electrified Gweru-Harare section has been paralysed by vandalism.[2]

The economic consequence is direct and severe. Rail transport of bulk freight — minerals, grain, fertiliser — costs up to 80% less than road haulage.[3] Because rail is unreliable, companies have no choice but to use trucks. The result is that logistics costs account for 30-40% of total production costs for Zimbabwean exporters — among the highest in the region — making Zimbabwean goods uncompetitive at precisely the moment when the global energy transition is creating extraordinary demand for the minerals Zimbabwe produces.· Every tonne of lithium or platinum that travels by road rather than rail adds cost that reduces Zimbabwe's competitive advantage and erodes the fiscal revenues that mineral exports should be generating.

The road network bears the consequences of rail failure. Heavy mining and agricultural trucks, carrying loads that rail should be moving, accelerate road deterioration at rates that maintenance budgets cannot match. The cost is self-reinforcing: rail failure destroys roads, road deterioration raises transport costs further, and the cycle compounds.

Zimbabwe's strategic geography amplifies both the cost of this failure and the opportunity its reversal creates. The country sits at the centre of Southern Africa, with rail links to five regional corridors connecting to ports in Mozambique (Beira, Maputo), South Africa (Durban), and Namibia (Walvis Bay). A functioning NRZ does not just serve Zimbabwe's own logistics needs — it positions the country as a regional transit hub, generating revenue from transit freight and reducing logistics costs for neighbouring landlocked economies simultaneously. That opportunity is currently being surrendered, day by day, to road congestion and rail deterioration.

1.3 The Digital Gap: Connectivity Without Power Is Not Connectivity

Zimbabwe's headline digital statistics present a paradox. POTRAZ reported internet penetration of 81.49% by subscription in Q4 2024, with mobile connections exceeding the total population.¸ But meaningful internet access — the kind that enables economic participation, remote work, e-commerce, and digital public services — tells a different story. Independent analysis by Freedom House and DataReportal estimated that only 38.4% of Zimbabwe's population were genuinely using the internet in 2025, with 61.6% remaining effectively offline.´

The gap between subscription statistics and genuine connectivity has two primary causes. The first is affordability: 1GB of mobile data costs approximately 4.26% of monthly gross national income per capita in Zimbabwe — more than double the threshold at which data costs become prohibitive for broad economic participation.[9] The second, and more fundamental, cause is power. Load-shedding that runs 12-20 hours a day does not just inconvenience people with internet access — it makes that access meaningless. A mobile network tower running on generator power is expensive to operate and unreliable in service. A student with a smartphone cannot access digital education when there is no electricity to charge it. An entrepreneur with broadband connectivity cannot run an online business when the power is off for most of the working day.

This interdependence is the core of the systems argument that runs through this paper. Digital connectivity cannot deliver its economic potential without energy. Energy investment without transport infrastructure leaves mineral and agricultural production unable to reach markets. Transport investment without digital connectivity misses the precision logistics, real-time market access, and financial services that determine whether physical infrastructure translates into productivity growth. The three pillars are not separate infrastructure sectors. They are a system, and they must be planned, financed, and built as one.

1.4 The Deficit at a Glance

Pillar	Current State	Economic Cost	Target by 2040
Energy	~1,537 MW generation vs 2,200 MW peak demand; 12-20hr daily load-shedding in crisis periods	6.1% of GDP annually in power shortage costs	4,000+ MW from diversified solar, hydro, gas mix; near-universal access
Rail	NRZ hauls <3M tonnes vs 12M tonne 1990s peak; <25% of locomotives operational	Logistics costs 30-40% of total production costs for exporters	12M+ tonnes annual freight capacity; 5 strategic corridors fully operational
Roads	Major arterial network deteriorated; heavy truck traffic accelerating road damage	Road damage cost rising as rail failure diverts freight to trucks	Arterial network rehabilitated; road hierarchy matched to traffic function
Digital	38% meaningful internet penetration; quality poor in rural	Digital exclusion limits economic participation for 61% of population	Universal quality broadband; digital public

	areas; power cuts compound access gaps		infrastructure serving all citizens

SECTION 2

2. The Systems Argument: Infrastructure as an Integrated Platform

The most common failure mode in African infrastructure planning is sector-by-sector thinking: an energy ministry plans the power grid, a transport ministry plans the roads, an ICT ministry plans the broadband network — each with its own budget cycle, its own institutional logic, and its own project pipeline. The result is infrastructure that exists in silos, misses interdependencies, and fails to deliver the multiplier effects that make infrastructure investment transformative rather than merely additive.

Zimbabwe cannot afford this failure mode. Its infrastructure deficit is too large, its financing window too constrained by debt arrears, and the opportunity cost of misallocated investment too high. This paper therefore proposes that Zimbabwe's infrastructure programme be planned and governed as an integrated system, in which investment decisions in each pillar are explicitly sequenced to amplify the returns on the others.

2.1 How the Three Pillars Amplify Each Other

The interdependencies run in every direction, and mapping them explicitly changes the investment prioritisation logic.

Energy enables everything else. Reliable power reduces the cost of rail operations, extends the productive hours of digital services, enables precision irrigation in agriculture, powers the mineral processing plants that translate raw extraction into value-added exports, and makes every other economic activity more competitive. The World Bank's estimate that each 10% increase in broadband penetration drives 2-3% GDP growth[10] is contingent on the power that makes broadband usable. The lithium beneficiation opportunity that Zimbabwe has correctly identified as a generational priority is directly contingent on a power grid that can sustain industrial-scale chemical processing 24 hours a day. Energy is therefore the first-order investment — not because it is more important than transport or digital in some abstract hierarchy, but because it is the precondition that unlocks the return on investment in both.

Rail unlocks the value of agricultural and mineral investment. Zimbabwe's highveld plateau, among the most fertile agricultural land in Africa, produces output that reaches markets slowly and expensively because rail does not reliably move it. Zimbabwe's mineral wealth — lithium, platinum, gold, chrome — is extracted at high logistics cost because trucks rather than trains carry it to ports. Restoring NRZ to its 12 million tonne annual capacity and extending rail access to new mineral extraction zones does not just reduce logistics costs — it changes the

economics of every investment in productive sectors. A lithium mine that is marginally viable at current road transport costs becomes strongly viable when rail is available. An agricultural cooperative that loses 20% of produce to spoilage because cold chain is unreliable and transport is slow becomes profitable when rail provides reliable, low-cost, temperature-controlled freight.

Digital connectivity transforms both energy and transport into intelligent systems. A smart power grid with digital monitoring reduces transmission losses, identifies faults in real time, and enables demand management that extends generation capacity without new investment. A digitally-integrated rail network optimises freight scheduling, reduces turnaround times, and enables the kind of real-time logistics visibility that modern supply chains require. Digital financial services — mobile money, e-commerce platforms, digital trade finance — reduce the transaction costs that currently deter small agricultural and manufacturing producers from accessing formal markets. And digital public services — land registry, tax administration, business registration, permitting — reduce the governance friction that raises the cost of doing business and deters investment.

2.2 The Sequencing Logic

Treating infrastructure as a system does not mean building everything simultaneously — that would be both financially impossible and operationally incoherent. It means sequencing investments so that each phase creates the enabling conditions for the next, and so that the system delivers visible economic benefits at each stage rather than requiring citizens and investors to wait a decade for the full programme to materialise.

The sequencing logic proposed in this paper follows three broad phases, consistent with the overall blueprint framework established in Paper 1:

- Phase One (Years 1-5): Stabilisation and Quick Wins. Priority investments that reduce the immediate economic cost of infrastructure failure while establishing the institutional and regulatory framework for larger-scale investment. Solar generation capacity additions, priority rail corridor rehabilitation, mobile broadband quality improvement, and independent energy regulator establishment.
- Phase Two (Years 5-15): Scale-up and Integration. Major capital investment in grid expansion, NRZ full rehabilitation across all five strategic corridors, fibre backbone extension, and the spatial planning infrastructure that connects economic zones to logistics networks.
- Phase Three (Years 15-40): Consolidation and Generational Infrastructure. Long-horizon investments including Batoka Gorge and other major hydro capacity, high-capacity rail corridors built to 2060 freight demand projections, universal digital public

infrastructure, and the green hydrogen and mineral processing energy systems that support Zimbabwe's position in the global energy transition.

2.3 The Infrastructure Systems Map

The following table maps the interdependencies between Zimbabwe's infrastructure system nodes, showing what each enables, what it depends on, and the multiplier effect of getting it right. Reading the table vertically reveals sector investment rationale; reading it horizontally reveals the sequencing logic.

System Node	Enables	Depends On	Multiplier Effect
Energy (Reliable Power)	Rail operations, digital services, mineral processing, irrigation, cold chain	ZESA reform, solar investment, grid modernisation	Every 1% reduction in load-shedding hours directly reduces production costs across all sectors; enables 24/7 beneficiation processing
Rail (NRZ + Corridors)	Export competitiveness, agricultural market access, road preservation, transit revenue	Reliable energy for electrified sections; institutional reform for concession viability	Restoring 12M tonne capacity reduces logistics costs 30-40%; shifts freight off roads reducing road maintenance cost cycle
Digital (DPI Stack)	Smart grid management, logistics optimisation, financial inclusion, tax formalisation, micro-credit	Reliable power; broadband infrastructure; payment rail interoperability	10% broadband penetration increase drives 2-3% GDP growth; DPI stack formalises informal economy unlocking tax base expansion
Agriculture	Food security, export earnings, rural employment, foreign currency via export	Rail for market access, energy for cold chain/irrigation, digital for market price access	Highveld productivity restoration could double agricultural export revenues; climate-smart farming reduces drought vulnerability
Mineral Beneficiation	Value-added export revenues, industrial employment, technology transfer, fiscal revenues	Industrial-grade energy (8-12 MWh/tonne LCE), rail logistics to ports, digital process monitoring	Processing lithium to battery-grade chemicals generates 5-10x revenue premium over raw concentrate export
State Fiscal Capacity	Social protection, institutional quality, further infrastructure investment	Formal economy growth from DPI formalisation; mineral and agricultural revenues; infrastructure-driven GDP growth	Infrastructure investment expanding formal economy by 10% of GDP roughly doubles government tax revenue at current collection rates

SECTION 3

3. Building for Generations: The Design Philosophy

> ***Build what Zimbabwe needs at high-income scale, not what it can afford at current scale.***

The most instructive infrastructure development story of the past half-century is not China's alone — it is the broader East Asian developmental state model that South Korea, Singapore, Vietnam, and China each applied in their own context. What unites them is not a specific financing mechanism but a governing philosophy: infrastructure built consistently ahead of demand, at standards designed to last generations, and integrated across sectors from the beginning rather than retrofitted as an afterthought. South Korea's 1970s-1990s infrastructure investment programme transformed a war-devastated agrarian economy into an industrial powerhouse within thirty years. Singapore built port, airport, and digital infrastructure to world-class standards before it had the economic scale to obviously justify them — and the infrastructure attracted the investment that validated the standard. Vietnam's more recent infrastructure-led industrialisation is drawing manufacturing investment that once flowed only to China. China's domestic programme, the most ambitious in scale, applied the same principle: capacity built for the economy of twenty years hence, not the economy of today.

The contrast with most African infrastructure development is stark. Across the continent, infrastructure has too often been built to minimum current-state specifications: roads designed for today's traffic loads that require rebuilding within a decade as economic growth increases freight volumes; power generation capacity installed to meet current demand rather than projected peak demand under high-growth scenarios; digital networks deployed at technology standards that are already being superseded. The result is infrastructure that is perpetually in deficit relative to development needs, requiring constant catch-up investment that diverts resources from the expansion that growth requires.

Africa can learn from both China's successes and its mistakes. The positive lesson is the generational design philosophy — building transport, energy and digital systems that serve the development trajectory rather than the development starting point, and integrating them from the beginning rather than retrofitting connectivity after the fact. As one analysis of China's African infrastructure engagement notes, Africa can leapfrog directly into climate-smart solutions: adopting long-distance rail transport around major economic centres, greener port infrastructure, and mass transit systems developed before private vehicle ownership becomes dominant — avoiding the costly and polluting path that earlier industrialisers followed.[11]

The mistake to avoid is the debt trap. Chinese bilateral infrastructure financing — through policy lenders like the China Development Bank and the Export-Import Bank of China — has in several African cases created sovereign debt obligations that constrain future policy space, and in some cases (Hambantota port in Sri Lanka being the most cited example) created asset-collateral arrangements that compromised national sovereignty. Zimbabwe, with its existing sovereign debt distress, cannot afford bilateral infrastructure debt that adds to arrears burdens or creates new conditionalities. The financing model proposed in Section 6 of this paper draws on China's generational design philosophy while routing capital through transparent, multilateral, and market-based mechanisms rather than opaque bilateral arrangements.

Strategic Decoupling of the Infrastructure Model: While Zimbabwe must emulate the forward-looking engineering philosophy of East Asian developmental states — building for a future-state capacity that crowds in subsequent industrial development — it must resolutely reject the state-to-state bilateral resource-backed debt financing models that led to sovereign distress elsewhere on the continent. The distinction is critical: China’s domestic infrastructure programme was funded through mechanisms Zimbabwe cannot replicate — local government land monetisation, state-directed banking systems, and captive domestic savings pools. Zimbabwe’s execution of the same engineering vision will replace sovereign-backed bilateral loans with the ring-fenced, non-recourse private project finance structures detailed in Section 6. The philosophy is Chinese. The financing architecture is not.

A third design principle runs through every section of this paper alongside the generational capacity standard and the financing discipline: climate resilience is not an optional upgrade to be added after the core infrastructure is designed. It is a design requirement that must be specified at the first drawing board. Southern Africa is among the world’s most climate-exposed regions, and Zimbabwe’s infrastructure record already shows the cost of ignoring this: Kariba’s drought vulnerability, the Odzi washout on the Harare-Mutare corridor, the flooding that simultaneously closed the Chicualacuala-Maputo line in early 2026. Infrastructure built without climate resilience built in will fail with increasing frequency and at increasing cost. The paper therefore treats climate resilience as a cross-cutting design standard, applied to every pillar, rather than a standalone section appended at the end. Section 5 provides the detailed standards; the reader should understand from the outset that those standards govern everything that precedes it.

3.1 What Generational Design Means in Practice

Applied to Zimbabwe's specific infrastructure programme, the generational design standard means:

- Roads and rail built to load standards that accommodate the freight volumes a high-income, diversified economy will generate — not the depleted volumes of today. The NRZ rehabilitation programme should restore 12 million tonne annual capacity and design new sections for 20 million tonnes, anticipating the mineral and agricultural export growth that institutional reform and the energy transition will enable.
- Power generation capacity planned for 4,000+ MW by 2040, not the 2,200 MW of current peak demand — because a country growing at 7-8% annually for two decades will have fundamentally different energy needs, and generation infrastructure built today must serve that future economy.
- Digital infrastructure designed for universal, high-quality broadband — not just subscription coverage. This means fibre backbone investment that reaches secondary cities and major agricultural regions, not just Harare and Bulawayo; open-access infrastructure models that enable competition and affordability; and digital public infrastructure platforms that serve citizens directly rather than requiring private sector intermediaries.
- Climate resilience built into every project from the design stage — drainage systems sized for the extreme rainfall events Southern Africa is already experiencing; flood-resilient bridge and culvert standards; solar and battery storage integration that reduces dependence on vulnerable hydroelectric capacity; and infrastructure siting that accounts for climate risk projections over the full asset life.
- Regional integration designed in from the beginning — corridors planned not just for Zimbabwe's own logistics needs but for Zimbabwe's role as a transit hub, creating the additional revenue streams that improve project economics and reduce the fiscal burden of infrastructure investment.

SECTION 4

4. The Three Systems Pillars in Action

4.1 Pillar One: Energy — Ending the Productivity Tax

The generation mix transformation

Zimbabwe's path to energy sufficiency runs through solar, and the evidence is already compelling. Average daily electricity generation surged 76.8% in 2025, rising to 1,537 MW from 866 MW in 2024, driven substantially by solar additions.[12] The Zimbabwe Energy Regulatory Authority has approved 295 MW of new utility-scale solar projects. The industrial sector is investing independently in solar to protect its operations from grid unreliability. And the World Bank's analysis identifies utility-scale solar as the fastest route to closing the generation gap in the short-to-medium term — faster to build, cheaper per MW than conventional generation, and naturally suited to Zimbabwe's solar resource.[1]

The blueprint for energy generation transformation has four components working in parallel:

- Utility-scale solar expansion: Zimbabwe's NDC targets 2,100 MW of renewable capacity by 2030, including solar and wind. The pipeline of approved projects represents a start. What is required is an accelerated permitting framework, a standardised power purchase agreement template, and independent energy regulator authority to approve projects without political interference — removing the bottlenecks that have delayed projects already in the pipeline.
- Kariba dependency reduction: Kariba remains a critical asset but cannot remain the system anchor. The Batoka Gorge Project (1,200 MW for Zimbabwe) is projected for completion after 2034 — placing it within Phase Three of this blueprint's sequencing framework (Years 15–40), where long-horizon generational infrastructure matures alongside a high-income economy. It is critical future baseload capacity, not a solution to the near-term generation crisis. In the interim, gas peaking plants provide the dispatchable baseload capacity that solar cannot, complementing rather than replacing renewable generation.
- Distributed solar for rural electrification: grid extension to reach the 47% of the population still without electricity access is prohibitively expensive at scale. Off-grid and mini-grid solar systems, particularly for rural communities and agricultural operations, provide faster, cheaper electrification while reducing the load on a centralised grid that is already strained. The World Bank-supported programme deploying solar systems to rural health facilities is a working model to scale.
- Grid modernisation and loss reduction: Zimbabwe's electricity network suffers significant transmission and distribution losses — a combination of ageing infrastructure, vandalism, and commercial losses from non-payment. Smart grid

technology, metering modernisation, and revenue protection investment address losses that represent generation capacity without requiring new power plants.

ZESA reform: the institutional precondition

None of the generation investment above can be sustained without reforming the Zimbabwe Electricity Supply Authority. ZESA's weak financial performance — driven by tariffs that do not reflect the true cost of generation and distribution — is, as the World Bank identifies, the most significant issue driving Zimbabwe's power supply deficits.[1] Energy tariffs that do not cover costs produce utilities that cannot maintain infrastructure, cannot service debt, and cannot attract private investment. The reform required is straightforward in principle and difficult in practice: cost-reflective tariffs, implemented with targeted protection for the most vulnerable households, combined with operational restructuring that separates generation, transmission, and distribution into commercially accountable entities with independent oversight.

The political economy of tariff reform is real. Electricity pricing is a visible and sensitive issue, and governments that have attempted cost-reflective tariff reform without adequate social protection have faced significant backlash. The social protection framework proposed in Paper 2 — targeted cash transfers and lifeline tariff provisions for the lowest-income households — is the mechanism that makes energy tariff reform politically sustainable. Without it, the reform will face the same fate as previous attempts.

The Politics of Tariff Reform

Tariff reform is economically necessary and politically explosive in equal measure. The straightforward truth that must be communicated clearly to citizens is this: reliable electricity will cost more than unreliable electricity. The electricity system that serves Zimbabwe today is subsidised, financially unsustainable, and precisely because it is subsidised, it cannot invest in the maintenance and expansion that would make it reliable. The subsidy does not make electricity affordable. It makes the electricity system dysfunctional while creating the fiscal conditions for continued dysfunction.

- Commercial users first: industrial and commercial electricity consumers — mining companies, manufacturers, large retailers — should move to cost-reflective pricing before residential consumers. These entities can model the cost and adapt their operations; they also benefit most directly from reliability improvement and have the least justification for subsidy. Implementing commercial tariff reform first builds ZESA’s revenue base before residential tariffs increase.
- Lifeline tariff protection: households consuming below 100 kWh per month — the poorest quintiles — are protected by a lifeline tariff that ensures basic electricity access remains affordable. The cost of this protection is explicit, budgeted, and

publicly reported — not hidden in ZESA's cross-subsidy structure where its true fiscal cost is invisible.

- Visible service-improvement linkage: every tariff increase must be accompanied by a published, audited commitment to specific service improvements — hours of supply, fault response times, new connections completed. Zimbabweans are being asked to pay more; they are owed a transparent account of what that payment will deliver and a mechanism for holding ZESA accountable when it does not.
- ZESA governance reform as prerequisite: tariff increases flowing into an unreformed, opaque utility with a track record of financial mismanagement will generate political backlash rather than service improvement. Governance reform — independent board, published accounts, audited procurement, performance-linked management — must accompany or precede tariff reform to establish the legitimacy that reform requires.

One further dimension of political realism deserves explicit acknowledgement: many Zimbabweans will greet tariff reform with rational scepticism, because their experience of ZESA is not merely one of unreliable power but of an institution that has combined service failure with opaque finances, political appointments, and a track record of expenditure that has not translated into infrastructure improvement. Asking citizens to pay more to an institution they do not trust, for a service improvement they have been promised before, is a legitimate political ask only if the governance reform that makes ZESA trustworthy precedes or accompanies the tariff increase — not follows it. Published accounts, an independent board, audited procurement, and a visible first-year service improvement delivered against a public commitment are the minimum conditions under which citizens should be expected to accept higher bills. Tariff reform without demonstrated governance reform is not a policy. It is a request for trust that has not been earned.

4.2 Pillar Two: Transport — Reclaiming Zimbabwe's Logistics Position

NRZ rehabilitation: from asset to engine

The National Railways of Zimbabwe is Zimbabwe's single most important infrastructure asset — and its most neglected. The $600 million deal being negotiated between China Railway International Group and the NRZ for infrastructure rehabilitation represents a potential turning point, if it is structured to avoid the debt trap that has undermined previous attempts.[2]

It is worth stating plainly what the economic analysis implies: NRZ rehabilitation may represent the single highest-return infrastructure intervention available to Zimbabwe. The arithmetic is compelling. Shifting 9 million additional tonnes of freight annually from road to rail — the difference between current capacity and the 12 million tonne target — at a logistics cost saving of 80% per tonne reduces production costs for exporters by hundreds of millions of dollars

annually. The road maintenance saving from reducing heavy truck traffic is a further fiscal dividend. And the regional transit revenue from positioning Zimbabwe as a corridor hub adds a revenue stream that does not exist at all today. No other single infrastructure investment generates comparable returns across as many economic sectors simultaneously.

An honest caveat is equally necessary. African rail concessions have produced mixed results. Where they have succeeded — Transnet in South Africa, the Kenya-Uganda Railway concession — they have done so because governments maintained the commercial discipline to honour concession terms even when politically inconvenient, and because concessionaires were not burdened with uneconomic obligations that destroyed the business case. Where they have failed — as several West African concessions have — the pattern is consistent: governments imposed social obligations without funding them, interfered with tariff setting, and eventually renegotiated terms in ways that destroyed investor confidence. Zimbabwe's concession framework must be designed with this failure mode explicitly in mind, with social obligations separately funded and commercial operations insulated from political interference.

The rehabilitation programme must address three interlocking deficits: the rolling stock crisis (fewer than 25% of locomotives operational), the track condition crisis (speed restrictions covering hundreds of kilometres, climate-related washouts on key corridors including the critical Harare-Mutare line to Beira[13]), and the institutional crisis (the NRZ as a government-owned parastatal operating without commercial discipline, transparent governance, or private sector partnership).

This blueprint proposes that NRZ rehabilitation be structured as a concession rather than a direct government rehabilitation project. A concession framework — in which a private operator takes responsibility for rehabilitation and operations in exchange for a defined revenue stream from freight tariffs over a specified period — transfers operational risk to a party with genuine incentive to manage it, introduces commercial discipline, and avoids the pattern of government-led rehabilitation projects that absorb capital without delivering operational improvement. The NRZ concession framework detailed in the Technical Annex draws on successful African rail concession models including Transnet in South Africa and the Kenya-Uganda Railway concession.

Infrastructure Security and Asset Protection

Any serious treatment of rail rehabilitation in Zimbabwe must address a dimension that infrastructure plans routinely omit: the organised extraction of infrastructure assets as an economic activity in its own right. Zimbabwe's NRZ deterioration is not explained entirely by underinvestment and management failure. The electrified Gweru-Harare rail section — once a showcase of regional rail technology — was rendered inoperable not by age but by systematic copper cable theft that stripped it of the conductors that make electrified rail

possible. This is not isolated opportunism. It is organised infrastructure extraction, operating with the same economic logic as any other extractive enterprise: harvest the asset, sell the components, and move on. The same pattern affects ZESA's transmission network, telecommunications infrastructure, fuel reserves, and any unguarded capital asset in the public domain.

Infrastructure rehabilitation without asset protection is not investment — it is a delayed transfer to organised thieves. The blueprint therefore requires that asset protection be treated as a core infrastructure governance function, not an afterthought:

- Security engineering by design: infrastructure rebuilt or newly constructed should incorporate anti-theft design features from the outset — composite materials replacing copper where technically feasible, tamper-evident hardware, CCTV coverage at vulnerable nodes, and sensor systems that detect interference in real time.
- Dedicated infrastructure protection units: railway police, grid protection services, and telecommunications asset security operating with clear mandate, adequate resources, and accountability to the IDU rather than to the parastatals whose assets they protect — removing the conflict of interest that has historically allowed asset protection to be deprioritised.
- Supply chain controls for scrap metal: a significant enabler of infrastructure theft is the ease with which stolen copper, aluminium, and steel can be sold through informal scrap metal markets. A licensing and traceability framework for scrap metal dealers — requiring documented provenance for purchases above defined weights — disrupts the monetisation of stolen assets without eliminating legitimate recycling activity.
- Community benefit schemes: in areas where infrastructure theft is most prevalent, direct economic benefit programmes — employment in infrastructure maintenance, community electricity access tied to asset integrity, reward schemes for information leading to theft prevention — shift the local economic incentive from extraction to protection.
- Concession contract security obligations: NRZ and ZESA concession agreements must include explicit asset protection obligations on the concessionaire, with financial penalties for asset losses above defined thresholds and requirements to report all material theft incidents to an independent security registry.

The five strategic corridors

Zimbabwe's rail network connects to five strategic regional corridors, each serving distinct trade flows and providing access to different port options. A functioning NRZ operates all five simultaneously, providing redundancy against disruption on any individual corridor and

enabling Zimbabwe to route freight to whichever port offers the best combination of cost, capacity, and reliability at any given time.

Corridor	Route	Primary Function	Priority
North-South	Harare → Beitbridge → Durban (SA)	Mining exports, manufactured imports, regional transit	Highest priority; $600M NRZ-CRIG rehabilitation in progress
East Corridor	Harare → Mutare → Beira (Mozambique)	Ferrochrome, agricultural exports; Indian Ocean access	Critical; climate-resilient upgrading of Odzi washout sections required
West Corridor	Bulawayo → Plumtree → Walvis Bay (Namibia)	Mineral exports to Atlantic; Trans-Kalahari integration	Medium priority; enables SADC western trade diversification
North-West	Victoria Falls → Kazungula → Zambia/DRC	Regional connectivity; DRC mineral transit potential	Strategic; connects Zimbabwe to Central African trade flows
Central Spine	Harare → Bulawayo agricultural belt	Domestic freight; highveld agricultural produce	Foundation corridor; enables food system logistics

Sovereign Gateway: Active Port Ownership Strategy

Building domestic logistics corridors is necessary but not sufficient. A land-linked nation's trade efficiency is structurally bounded by the capacity, efficiency, and governance of its maritime exit nodes. The ports of Beira and Maputo in Mozambique, and Durban in South Africa, are Zimbabwe's primary maritime gateways — yet Zimbabwe currently has no formal stake in their management and is subject to whatever congestion, turnaround times, and red tape those facilities impose. When the Chicualacuala-Maputo line floods and Beira is congested simultaneously, Zimbabwe's export supply chain is hostage to facilities it does not influence.

This blueprint proposes that Zimbabwe pursue a phased transition from passive corridor user to active gateway co-owner — a strategy ambitious enough to transform Zimbabwe's trade logistics position while sequenced realistically against what is achievable at each stage of the reform programme.

- Phase One — Dedicated Customs Lanes and Service Agreements: Negotiate priority processing lanes for Zimbabwean mineral exports at Beira and Maputo, supported by bilateral service level agreements with Mozambique's port authorities. This is achievable within two to three years, requires no capital investment, and immediately reduces turnaround time and customs friction for Zimbabwean exporters.
- Phase Two — Inland Dry Ports and Logistics Concessions: Establish inland dry port facilities where Zimbabwean customs clearance is performed before cargo reaches the port gate, reducing port congestion and enabling faster maritime loading. The Zambia dry port model at Dar es Salaam provides the working precedent. This phase

also includes logistics management concessions covering warehousing, scheduling, and freight handling at dedicated Zimbabwe cargo facilities within regional ports.

- Phase Three — Dedicated Berth Rights and Equity Stakes: Where commercially viable and strategically justified — particularly for mineral exports where volume and frequency make dedicated berth economics attractive — negotiate long-term berth rights or minority equity stakes in port facilities. This is the most ambitious stage and should only be pursued when Zimbabwe's export volumes justify the capital commitment and when institutional credibility supports international commercial agreements of this scale.

Roads: a hierarchy approach

Zimbabwe's road network requires a triage approach rather than comprehensive rehabilitation — the fiscal resources for blanket road investment are not available, and attempting to maintain the full network to the same standard produces a uniformly poor network rather than a stratified one that serves economic priorities. This blueprint proposes a road hierarchy framework:

- Primary arterials: the Beitbridge-Harare-Chirundu corridor and Harare-Mutare-Forbes corridor constitute the nation's economic spine. These receive priority investment and maintenance, built to dual carriageway standard where freight volumes justify it, with climate-resilient construction standards including adequate drainage and bridge ratings for extreme flood events.
- Secondary network: roads connecting secondary cities, major agricultural zones, and mining regions to the primary network. Maintained to a standard that supports reliable freight movement, but not necessarily to dual carriageway specification.
- Rural access roads: the final connectivity between farming communities and the secondary network. Targeted investment in low-cost surface treatments that reduce seasonal inaccessibility, prioritising areas with the highest agricultural productivity potential.

The key strategic decision is that rail investment comes first. As NRZ rehabilitation proceeds and rail once again provides a viable alternative for bulk freight, the pressure on the road network from heavy trucks reduces — reducing road maintenance costs and allowing road investment to focus on the connectivity gaps that rail cannot serve.

4.3 Pillar Three: Digital — From Coverage to Capability

The quality gap, not the coverage gap

Zimbabwe's digital challenge is not primarily about coverage — headline mobile penetration already exceeds 100%. It is about quality, affordability, and the power dependency that limits

both. The policy framework required is therefore different from a standard connectivity expansion programme.

- Fibre backbone investment: mobile broadband built on 3G and 4G infrastructure provides adequate speeds for basic connectivity but cannot support the data-intensive applications — cloud computing, video, real-time logistics, digital health, remote work — that drive economic productivity in a modern economy. A national fibre backbone connecting Harare, Bulawayo, Mutare, Gweru, Masvingo and Marondera, with extension to major agricultural and mining zones, provides the foundation for genuine economic-grade connectivity. Open-access infrastructure models — in which the backbone is available to all licensed operators on equal terms — promote competition that drives down retail prices.
- Rural last-mile: Starlink and other low-Earth orbit satellite services are transforming rural connectivity economics and represent a genuine leapfrog opportunity. By early 2025 Zimbabwe had approximately 20,000 Starlink subscriptions.[1´] Regulatory frameworks that facilitate satellite internet licensing — rather than restricting it — and community access point programmes that share satellite connectivity across multiple households and businesses dramatically extend the reach of quality internet without the capital cost of infrastructure rollout.
- Data affordability: at 4.26% of monthly GNI per capita for 1GB of mobile data, Zimbabwe's internet is among the least affordable in the region. Regulatory intervention in mobile data markets — open access requirements, spectrum allocation that promotes competition, removal of import duties on devices — is the mechanism that drives prices to the 1-2% of GNI threshold at which mass adoption becomes financially accessible.
- Digital public infrastructure: the most transformative digital investment is not in private sector platforms but in the public digital infrastructure that enables government services, financial inclusion, and economic participation. A national digital ID system, open payment infrastructure, digital land registry, electronic business registration, and e-government services reduce the administrative friction that raises the cost of doing business and exclude the informally employed from financial services. Mobile money — EcoCash has already demonstrated the transformative potential — is the foundation on which broader financial inclusion is built.

The National Digital Public Infrastructure (DPI) Stack

True digital transformation for a generation-long vision requires moving beyond broadband access — a 2010s benchmark — to building a foundational public digital stack that serves as the legal and transactional engine of the modern economy. The real macroeconomic multiplier of digital investment in 2026 and beyond resides not in connectivity per se, but in the interoperable public infrastructure that runs on top of it. This blueprint proposes a three-layer

National DPI Stack, built on open-source architecture, encrypted end-to-end, and governed as public infrastructure rather than proprietary commercial platform.

- Layer 1 — Robust Digital Identity: A unified national digital ID system that provides every Zimbabwean citizen with a verifiable, portable digital identity. This is the foundation layer: without it, financial inclusion, tax formalisation, social protection delivery, and e-government services all depend on physical documents that exclude the most marginalised. The system must be interoperable across government agencies and accessible via feature phone USSD for citizens who do not have smartphones, ensuring that the digital divide does not replicate the exclusion that the physical identity system has historically produced.
- Layer 2 — Real-Time, Interoperable Payment Rails: A national payment infrastructure enabling zero-cost peer-to-peer and merchant transactions in real time, modelled on Brazil's Pix system and India's Unified Payments Interface (UPI). Brazil's Pix reached 150 million users within two years of launch and within three years was processing more transactions than Visa in Brazil — driven by zero merchant fees, instant settlement, and interoperability across all banks and payment providers. For Zimbabwe, this layer directly solves the informal sector formalisation challenge identified in Paper 2: when mobile payment rails are free, instant, and universally available, the economic incentive to remain in cash-only informality collapses. Tax administration follows the transaction data. Micro-credit follows the transaction history. Formal economic participation becomes the path of least resistance rather than the path of most friction.
- Layer 3 — Secure Data Exchange: An open, privacy-preserving data exchange layer that enables government agencies, financial institutions, and licensed private sector participants to share verified citizen data with explicit consent. This is the layer that enables a smallholder farmer's mobile payment history to serve as a credit reference for a micro-loan; that enables a worker's digital employment record to generate an automatic pension contribution; and that enables tax authorities to identify taxable activity from formally recorded transactions without the intrusive physical audit processes that currently deter formalisation. Crucially, it is the layer that connects the DPI stack back to the Paper 2 informal sector agenda: formalisation through pull incentives, not coercion.

The DPI stack is not a project. It is sovereign infrastructure — as fundamental to the functioning of a modern economy as roads and power grids, and requiring the same long-horizon investment and governance commitment. Its development should be governed by a dedicated Digital Zimbabwe Authority with a statutory mandate, open-source technology standards, and interoperability requirements that prevent any single commercial provider from controlling access to the national digital foundation.

DPI Governance: Privacy, Security, and Citizen Protections

A national digital identity and payment infrastructure is, by definition, a surveillance-capable system. Its transformative potential for financial inclusion and economic participation is real — and so is the risk that the same infrastructure becomes an instrument of political control, data exploitation, or targeted persecution of political opponents if not governed with rigorous independent safeguards. Zimbabwe's political history makes these concerns not hypothetical but specific and urgent. The DPI stack will only achieve the public trust it requires to function if citizens have credible assurance that their data is protected, their privacy is respected, and their participation in digital systems cannot be weaponised against them.

- Data privacy legislation: a comprehensive data protection law, modelled on the GDPR framework but adapted to Zimbabwe's context, establishing citizen rights over their personal data, consent requirements for data sharing, and remedies for violations. This must be enacted before or simultaneously with DPI stack deployment — not after.
- Cybersecurity standards: end-to-end encryption for all DPI transactions and communications; regular independent security audits; incident notification requirements; and a dedicated national cybersecurity authority with the technical capability to identify and respond to breaches. A national payment rail that is vulnerable to cyberattack is a systemic financial stability risk.
- Independent data governance: the Digital Zimbabwe Authority must be constituted as a genuinely independent institution — not a government ministry with a rebranded name. Its board should include civil society representation, technical experts independent of government, and a parliamentary accountability mandate with published annual reports.
- Citizen redress mechanisms: accessible, independent channels through which citizens can challenge data errors, report privacy violations, and seek remedy for DPI-related harms. The redress system must be free at the point of use and not require legal representation.
- Protection against political surveillance: explicit statutory prohibitions on using DPI infrastructure to monitor political activity, target political opponents, or restrict access to digital services on the basis of political affiliation — with criminal penalties for officials who violate these prohibitions and judicial oversight of any law enforcement access to DPI data.

The critical connection back to energy cannot be overstated. Every digital investment described above is contingent on power. Mobile network towers without reliable power deliver unreliable connectivity. Smartphones without electricity to charge them deliver no connectivity at all. The sequencing priority — energy first — is therefore not a choice between sector priorities but a recognition that energy is the enabling infrastructure for everything that follows.

SECTION 5

5. Climate Resilience as a Design Standard

Climate resilience is not an optional feature that can be added to infrastructure projects as a premium upgrade. In Southern Africa, it is a survival requirement — and the evidence is already present in Zimbabwe's infrastructure failure record.

The February 2026 derailment on the Harare-Mutare line — one of Zimbabwe's most strategically critical rail corridors — was triggered by a washout at Odzi caused by heavy rains.[13] The closure disrupted ferrochrome exports to Beira and transit cargo for Botswana and Zambia simultaneously. The NRZ itself has acknowledged that climate-related damage to rail infrastructure is becoming more common. The 2024 El Niño drought reduced Kariba water levels to the point that electricity generation was severely curtailed, directly worsening Zimbabwe's load-shedding crisis at precisely the moment when agricultural failure was also creating food security pressures. These are not future risks. They are current realities.

Southern Africa is one of the regions most exposed to climate change globally. Projections indicate increasing frequency and severity of both drought events — reducing hydroelectric capacity and agricultural productivity — and extreme rainfall events — causing flooding, infrastructure washouts, and crop damage. Infrastructure designed to 20th-century climate parameters will fail with increasing frequency under 21st-century climate conditions. Infrastructure designed for the climate conditions of 2060 will be more expensive to build but dramatically cheaper over its lifetime than infrastructure that requires repeated repair or replacement.

5.1 Climate Resilience Standards for Zimbabwe's Infrastructure

- Hydrology-based design: drainage systems, culverts, bridges, and road foundations designed to accommodate the 1-in-100-year rainfall events that climate projections suggest will become more frequent — not the historical averages that have guided infrastructure design to date. The Odzi washout on the Harare-Mutare line is the model of what happens when infrastructure is designed for historical weather rather than projected conditions.
- Energy system diversification: reducing Kariba dependency is both a capacity strategy and a climate resilience strategy. A generation mix with substantial solar capacity — which is not drought-dependent — provides energy security against the drought cycles that will continue to reduce hydroelectric output. Battery storage systems that capture solar generation for dispatch during peak demand periods reduce the system's vulnerability to any single generation source.

- Flood-resilient corridor design: rail and road corridors in flood-prone areas require elevated foundations, reinforced drainage systems, and redundant bypass routes that allow traffic to continue when a primary section is closed for repair. The cost of building these features into original construction is a fraction of the cost of emergency repair and economic disruption caused by closures.
- Green infrastructure integration: natural infrastructure — wetlands, vegetation cover, watershed management — can complement engineered solutions in managing flood risk and water availability. Land use planning that protects upstream catchment areas and maintains natural drainage reduces the frequency of infrastructure damage events without requiring capital investment in hard infrastructure.
- Climate finance access: Zimbabwe's NDC commitments and the infrastructure investments required to meet them qualify for international climate finance — from the Green Climate Fund, Climate Investment Funds, and bilateral climate donors — that can fund the premium cost of climate-resilient design above standard specifications. Accessing this finance requires credible climate planning frameworks and the institutional capacity to design and manage compliant projects.

Climate resilience is, in the language of the generational design philosophy, the most important expression of building for the trajectory rather than the current state. An infrastructure asset built in 2026 will still be in service in 2076. The climate conditions of 2076 in Southern Africa will be materially different from those of 2026. Designing for those conditions now is not pessimism — it is engineering discipline.

SECTION 6

6. The Financing Framework: Blended Capital with Sequencing Logic

Zimbabwe's infrastructure deficit requires capital at a scale that no single financing mechanism can provide, and that Zimbabwe's government cannot finance alone given its current fiscal constraints and debt distress. The solution is a blended financing model that sequences different capital instruments to the project types and risk profiles they are best suited to finance — with an explicit commitment to avoiding the toxic bilateral debt that has compromised infrastructure programmes across Africa.

6.1 The Blended Financing Stack

Instrument	Revenue/Security Basis	Best Suited For	Phase	Key Condition
PPP Concessions	Toll roads, energy tariffs, port fees as revenue base	Transport, energy distribution, digital backbone	Phase 1–2	Requires bankable project pipeline and PPP law
DFI Project Finance	World Bank, AfDB, Afreximbank concessional loans	Large-scale energy and rail infrastructure	Phase 1–2	Contingent on arrears clearance progress
Blended Finance	DFI first-loss capital + private co-investment	Solar generation, rural electrification, fibre	Phase 1–3	Reduces private sector risk to investable levels
Infrastructure Bonds	Diaspora and domestic capital market bonds	Specific projects with ring-fenced cashflows	Phase 2–3	Requires functioning domestic bond market from Paper 2
Bilateral Grants	Climate finance, green infrastructure funds	Climate-resilient design premium, solar	Phase 1–2	Tied to NDC commitments and climate targets

6.2 Public-Private Partnerships: The Ring-Fenced User Fee Model

PPPs are the primary vehicle for infrastructure financing in this blueprint's Phase One and Phase Two, because they mobilise private capital for infrastructure investment while transferring operational risk to parties with genuine incentive to manage it. The key design principle is ring-fencing: user fee revenues — electricity tariffs, road tolls, rail freight charges, broadband access fees — are legally structured as security for debt service and investor returns, insulating them from government budget pressures and providing the revenue certainty that private investors require.

The World Bank's PPP Resource Centre model is the reference framework: non-recourse project finance in which lenders are paid from project revenues, the project company's

obligations are ring-fenced from those of equity investors, and debt is secured on project cashflows rather than on sovereign balance sheets.[1]µ For Zimbabwe, this structure has three critical advantages: it does not add to sovereign debt; it transfers operational risk to operators with genuine efficiency incentives; and it attracts international institutional capital that cannot invest in Zimbabwean sovereign debt given the arrears situation.

Successful African PPP models provide the precedent. The Nairobi Expressway — a toll road linking Nairobi's central business district to the airport — attracted private capital through a build-operate-transfer structure with ring-fenced toll revenues, cutting travel time from nearly two hours to 20 minutes and demonstrating that African infrastructure PPPs can deliver both financial returns and genuine public value.[1]¶ Senegal's Dakar-Diamniadio Toll Highway, structured similarly, transformed regional connectivity. Both provide working models for Zimbabwe's primary arterial corridor investment.

The essential conditions for PPP success are worth stating plainly, because Zimbabwe has attempted PPPs before without achieving financial close. Political support must be genuine and sustained — including the willingness to allow concessionaires to adjust user fees in line with the contractual framework without political interference. The legal and regulatory framework must be bankable — investors will not commit capital to projects where the contract enforcement environment is uncertain. And the project pipeline must be prepared to international standards — bankable feasibility studies, environmental assessments, financial models — before investors are approached. These are institutional preconditions that connect directly to the governance reforms proposed in Paper 4.

Sovereign Dual-Currency Tariff Framework

PPP project finance raises a specific currency mismatch risk that Zimbabwe’s dual-currency environment makes acute. Private infrastructure investors typically raise project debt in hard currency — USD or euro — because their lenders and equity investors require returns in currencies that preserve value. But infrastructure tariffs are often collected from retail consumers in local currency. When the local currency depreciates sharply — as the ZiG has done, and as Zimbabwe’s previous currencies did before it — the project’s local currency revenues may no longer service its hard currency debt. The options are all bad: government bailout, tariff hikes that trigger political backlash, or project default. This mismatch has derailed infrastructure PPPs across Africa and must be structurally addressed in Zimbabwe’s concession framework from the outset.

This blueprint introduces a Sovereign Dual-Currency Tariff Framework for all major infrastructure concessions, directly aligned with the dual-currency parameters established in Paper 2. The framework operates on a tiered structure: Commercial and industrial off-takers — large-scale mining operations, telecommunications networks, heavy manufacturing plants — are legally billed and settled exclusively in USD. These are entities with natural USD

revenue streams, so USD tariff obligations create a natural hedge that eliminates currency mismatch risk for the project's hard-currency debt service. Retail and domestic consumer tariffs are collected in the sovereign currency but dynamically indexed via a transparent, automated formula pegged to the RBZ interbank market rate, smoothed by a state-backed exchange rate stabilisation liquidity facility that absorbs short-term volatility without requiring tariff adjustments for every exchange rate movement. The formula is public, the adjustments are automatic and rules-based, and the liquidity facility provides the buffer that prevents consumer tariffs from whipsawing with every currency fluctuation.

The institutional link to Paper 2 is explicit: this framework is only credible if the RBZ interbank rate is itself credible — which depends on the monetary reform programme, the elimination of the parallel market premium, and the genuine central bank independence that Paper 2 establishes as a precondition. Infrastructure finance and monetary reform are therefore not sequential programmes. They are mutually reinforcing: monetary stability makes infrastructure investment bankable, and the revenue streams from productive infrastructure support the fiscal consolidation that monetary stability requires.

PPPs Are Not Free Money

The PPP framework in this blueprint is stronger than most African infrastructure discussions because it understands ring-fenced cashflows, project bankability, and non-recourse financing. But intellectual honesty requires naming the risks. Poorly structured PPPs can impose costs on Zimbabwe that are worse than simply not building the infrastructure.

- Hidden contingent liabilities: government guarantees, minimum revenue guarantees, and termination compensation clauses can create fiscal obligations that do not appear on the government balance sheet until a project fails. Full disclosure and independent actuarial assessment of all PPP contingent liabilities is a non-negotiable pre-signing requirement.
- Overoptimistic revenue forecasts: infrastructure PPP financial models routinely overestimate demand. When volumes fall short — as they frequently do — governments face pressure to provide top-up payments, extend concessions, or accept renegotiated terms favouring the concessionaire. Conservative, independently stress-tested forecasts are mandatory.
- Politically frozen tariffs: the most common PPP failure mode in Africa. Governments approve scheduled tariff increases at contract signature, then freeze them when politically convenient, triggering arbitration or project deterioration. The independent regulator and dual-currency tariff framework are specifically designed to remove this lever from political hands.
- Private profit with public downside: PPPs that privatise revenue during profitable periods while pushing maintenance obligations onto government in unprofitable ones

represent a transfer of risk from private to public. Contract design must ensure genuinely symmetric risk sharing.

- Corrupt renegotiations: the post-construction pre-operation window is when PPP contracts are most vulnerable to renegotiation favouring the concessionaire at public expense. Published contracts, parliamentary scrutiny, Auditor-General oversight, and DFI participation as structural monitors are the primary safeguards.
- Foreign exchange reserve risk: this risk deserves particular emphasis given Zimbabwe's current reserve position. Infrastructure PPPs that raise hard-currency debt require hard-currency debt service. When a country faces FX shortages — as Zimbabwe has experienced repeatedly — the consequences cascade: debt service defaults trigger technical project failures; spare-parts imports for power plant maintenance are delayed, causing generation capacity to fall; fuel procurement for rail operations becomes constrained, reducing freight capacity precisely when exporters need it most. The reserve accumulation programme established in Paper 2 is therefore not just a monetary stability measure — it is a direct prerequisite for infrastructure PPP viability. No major hard-currency infrastructure debt should be contracted until Zimbabwe's foreign exchange reserves meet the three-month import cover threshold that signals the reserve base is adequate to weather external shocks without cascading infrastructure failure.

6.3 Development Finance Institutions: The Catalytic Layer

The World Bank, African Development Bank, and Afreximbank are not passive lenders — they are active partners in structuring infrastructure programmes, building institutional capacity, and providing the political risk mitigation that unlocks private co-investment. Their engagement in Zimbabwe is currently limited to technical assistance because of debt arrears. The arrears clearance roadmap established in Paper 2 is therefore not just a monetary reform prerequisite — it is the key that unlocks the DFI financing that makes large-scale infrastructure investment possible.

Once DFI engagement is normalised, the available instruments are powerful. Concessional loans at below-market rates reduce the cost of capital for projects where user fee revenues are not sufficient to service commercial debt. First-loss equity tranches from DFIs reduce the risk to private co-investors, enabling private capital to participate in projects it would otherwise find too risky. Technical assistance grants fund the project preparation that creates a bankable pipeline. And the DFI imprimatur — the signal that a credible multilateral institution has assessed and supported a project — reduces the political risk premium that private investors attach to Zimbabwe as a destination.

6.4 What to Avoid: The Bilateral Debt Trap

Zimbabwe's negotiation with China Railway International Group for NRZ rehabilitation deserves a specific caution. Chinese bilateral infrastructure financing has, in several African cases, involved loan terms — interest rates, repayment periods, collateral arrangements — that have created sovereign debt obligations disproportionate to the economic benefit of the infrastructure delivered. The Zambia experience, in which accumulated Chinese bilateral infrastructure debt contributed to a sovereign default, is the cautionary tale Zimbabwe must heed.

This blueprint does not oppose Chinese engagement in Zimbabwe's infrastructure — CRIG has relevant technical capability and the NRZ deal could be genuinely transformative. What it insists on is transparency and structure. Any bilateral financing arrangement should be: publicly disclosed in full; structured with commercial interest rates and terms comparable to those available from multilateral sources; free of collateral arrangements that create asset-security obligations; and subject to parliamentary approval. The standard is simple: if the terms of a bilateral infrastructure deal cannot be publicly defended against comparison with multilateral alternatives, the deal should not be signed.

SECTION 7

7. Spatial Planning: Linking the Highveld to the Ports

Infrastructure investment decisions are also spatial decisions — they determine which economic zones can develop, which agricultural regions can access markets, and where industrial activity will locate. Zimbabwe's spatial planning framework for infrastructure investment should be guided by one overarching principle: maximise the economic multiplier of each investment by connecting productive capacity to markets as efficiently as possible.

7.1 The Highveld Economic Core

Zimbabwe's economic geography has a clear centre of gravity. The highveld plateau — the agricultural heartland stretching from Harare through Bulawayo and encompassing the Midlands — is the country's primary zone of agricultural productivity, the location of most of its mineral processing capacity, and the hub of its manufacturing activity. Infrastructure investment that maximises connectivity within the highveld and between the highveld and export routes delivers the highest economic multiplier.

The central rail spine from Harare to Bulawayo is therefore the foundation investment — not because it is the most spectacular project, but because it serves the densest concentration of economic activity and provides the trunk capacity from which all five strategic corridors branch. Rehabilitating this spine to 12 million tonne annual capacity creates the platform on which the full corridor network operates.

7.2 Beneficiation Zones: Infrastructure as Industrial Policy

Zimbabwe's decision to ban raw lithium concentrate exports and pursue domestic beneficiation — processing spodumene into battery-grade lithium chemicals — is economically sound in principle and potentially transformative in impact. Lithium sector contributions reached $571.6 million in 2025.[1]· But beneficiation at scale requires infrastructure that does not yet exist at the required capacity: industrial-grade power supply, rail connectivity to port corridors, water supply for chemical processing, and digital connectivity for process monitoring and logistics management.

This blueprint proposes that Zimbabwe designate specific beneficiation zones — spatially defined areas adjacent to mining regions where infrastructure investment is concentrated to create the enabling conditions for value-added mineral processing. The model draws on successful special economic zone experience across Asia and Africa: concentrated infrastructure investment in a defined area reduces the per-unit cost of provision, creates

agglomeration economies that attract processing investment, and provides a demonstration effect that builds investor confidence in Zimbabwe's infrastructure delivery capability.

The Hwange region — adjacent to major coal, lithium and chrome deposits, with existing rail connections and the Hwange Power Station — is the natural candidate for the first beneficiation zone. The approved 295 MW of new solar capacity in Hwange directly supports this, providing the energy foundation for processing operations. Rail connectivity to the North-South corridor (Beitbridge-Durban) and the West corridor (Walvis Bay) provides multiple port options. And the concentration of mining activity provides the input supply that processing plants require.

7.3 Agricultural Logistics Corridors

Zimbabwe's agricultural production potential on the highveld is, as Paper 1 established, enormous — constrained not by soil quality or rainfall but by the infrastructure that connects production to markets. The spatial planning framework for agricultural logistics must address three specific gaps:

- Cold chain infrastructure: perishable agricultural produce — vegetables, dairy, horticulture — requires temperature-controlled storage and transport at multiple points between farm and market. Solar-powered cold storage at aggregation points along primary agricultural corridors, integrated with reliable electricity supply and connected to the rail network, transforms the economics of high-value agricultural production.
- Rural road access to rail heads: the final kilometre between farm and the rail network is often the most economically significant constraint. Low-cost surface treatment of rural feeder roads — connecting smallholder farming communities to NRZ loading points — does not require heavy capital investment but dramatically reduces the friction that keeps small agricultural producers in subsistence rather than commercial production.
- Digital market infrastructure: real-time market price information, mobile payment systems that enable farmers to receive payment at point of sale, and digital contract farming platforms that connect producers to buyers before planting — these digital services are the invisible infrastructure that makes physical logistics investment economically productive.

SECTION 8

8. Governance of Infrastructure: Who Builds, Who Owns, Who Oversees

Infrastructure governance is where the best plans most often fail. Zimbabwe has had infrastructure plans, feasibility studies, and financing memoranda for major projects that have sat on shelves for years without reaching financial close or construction. The failure is rarely technical. It is institutional: unclear decision-making authority, inadequate project preparation capacity, political interference in commercial arrangements, and the absence of independent oversight that provides investors with confidence that agreements will be honoured.

8.1 The Infrastructure Delivery Unit

This blueprint proposes the establishment of an Infrastructure Delivery Unit (IDU), created not by executive order but by a dedicated Act of Parliament — a distinction that is the difference between an advisory body and an execution engine. Executive delivery units established by presidential decree are routinely degraded by bureaucratic turf wars: parastatal boards resist oversight, line ministries protect budget control, and without statutory authority the IDU has no legal mechanism to force resolution. A parliamentary Act changes the institutional architecture fundamentally.

The IDU requires three things to be effective: direct access to the President or Prime Minister, enabling it to escalate blockages that ministerial authority cannot resolve; a small, highly capable technical team with project finance and engineering expertise; and a public reporting mandate, publishing quarterly progress reports against the infrastructure programme that creates external accountability for delivery.

The IDU's statutory mandate will provide explicit legal supremacy over designated National Priority Projects — a defined list of infrastructure investments, approved by parliament, for which the IDU has authority that supersedes ministerial delay. Specifically: the power to bypass traditional parastatal procurement bureaucracies on National Priority Projects via specialised transparent fast-track auctions, conducted to international competitive bidding standards; the authority to directly manage international competitive tender processes to guarantee investor transparency and eliminate the intermediary rent-seeking that has delayed previous major infrastructure contracts; and the right to escalate to the President any ministerial or parastatal blockage that has not been resolved within a defined statutory period, with the blockage and the escalation both publicly reported. The last mechanism is the most important: transparency is the enforcement tool. A minister who delays a National Priority Project cannot do so quietly when the IDU is legally required to publish the delay and its cause.

Democratic Safeguards for the IDU

Strong institutional powers require strong democratic accountability. An IDU with statutory supremacy over National Priority Projects must be counterbalanced by mechanisms that prevent those powers from being used to bypass legitimate oversight, advance political favourites' projects, or entrench executive control over major infrastructure spending. The safeguards are not optional additions to the IDU framework — they are the architecture that makes the IDU's powers legitimate rather than authoritarian.

- Parliamentary approval of National Priority Projects: the list of projects designated as National Priority Projects — and therefore subject to IDU fast-track authority — must be approved by a parliamentary resolution, not determined unilaterally by the executive. This ensures that the list reflects genuine national priorities rather than political preferences.
- Published procurement documentation: all procurement processes managed by the IDU must be published in full — tender documents, evaluation criteria, shortlisted bidders, award decisions, and contract terms — on a publicly accessible online registry. Transparency is the primary anti-corruption mechanism.
- Auditor-General oversight: the IDU's expenditure and procurement decisions are subject to audit by the Comptroller and Auditor-General, with findings reported to parliament within 90 days of each financial year end.
- Judicial review protections: decisions of the IDU are subject to judicial review on the standard administrative law grounds — procedural fairness, reasonableness, and legality. No National Priority Project designation or procurement decision is immune from legal challenge by affected parties.
- Public quarterly dashboards: the IDU publishes a public quarterly progress dashboard for each National Priority Project, showing construction milestones, expenditure against budget, delays and their causes, and corrective actions taken. Citizens and civil society can track delivery in real time, creating the public accountability pressure that supplements formal oversight mechanisms.

8.2 Independent Regulators: The Condition for Private Investment

Private infrastructure investment flows to jurisdictions where regulators are genuinely independent — where tariff decisions, licensing approvals, and dispute resolution are made on technical and commercial grounds rather than political ones. Zimbabwe's current regulatory architecture — where energy tariffs require political approval, rail concession terms are negotiated without independent oversight, and telecommunications regulation is subject to government direction — is structurally incompatible with attracting the private capital that the PPP framework requires.

The reform required is the creation of genuinely independent regulators for energy, transport and telecommunications, with fixed-term appointments for commissioners, published decision-making processes, transparent tariff-setting methodologies, and appeal mechanisms that provide commercial certainty. This is not a technical adjustment — it is a political commitment to separating infrastructure regulation from political control, analogous to the central bank independence commitment at the heart of Paper 2.

8.3 Anti-Corruption Safeguards in Procurement

Infrastructure procurement is globally one of the highest-risk areas for corruption, and Zimbabwe's track record — including the failed NRZ-DIDG-Transnet deal that was eventually cancelled after years of delays[1], — demonstrates the specific risks. Large contracts, complex technical specifications, long project timelines, and multiple intermediaries create multiple opportunities for rent-seeking that inflates project costs, reduces infrastructure quality, and deters reputable international investors who cannot operate in environments where non-commercial payments are expected.

The safeguards required are not novel: open, competitive tendering with published evaluation criteria; independent transaction advisers for all major PPP contracts; parliamentary scrutiny of contracts above a defined threshold; and the participation of DFI partners — who bring their own procurement standards — as a structural anti-corruption mechanism. The DFI's due diligence requirements, procurement rules, and environmental and social standards, applied consistently across the infrastructure programme, raise the baseline governance standard of every project they are involved in.

Corruption in infrastructure should not be treated merely as an efficiency risk — a cost that raises project prices but ultimately delivers the infrastructure. In Zimbabwe’s context, and across comparable African infrastructure histories, corruption operates as a parallel system: one that systematically diverts capital from productive investment, selects projects for political rent rather than economic return, and builds relationships between contractors and officials that become self-perpetuating obstacles to competitive procurement. The anti-corruption architecture for Zimbabwe’s infrastructure programme must therefore be structural, not performative.

- E-procurement systems: all infrastructure procurement above a defined threshold conducted through a digital procurement platform that records every step of the process — advertisement, bid submission, evaluation, award decision, contract signing, and payment — in a tamper-evident, publicly searchable database. Digital procurement reduces the discretionary space in which corrupt arrangements are

made and creates an evidence trail that supports prosecution when corruption is detected.

- Open contract publication: full contract documents, including pricing, specifications, payment schedules, and variation orders, published on a public registry within 30 days of signing. Open contracting has demonstrably reduced infrastructure costs and corruption in comparable developing country contexts — Ukraine's ProZorro system saved an estimated $1 billion in its first year by exposing inflated pricing through public competition.
- Beneficial ownership disclosure: all companies bidding for infrastructure contracts above a defined value required to disclose ultimate beneficial ownership in a public registry. Shell companies and complex ownership structures are the primary vehicles through which public officials or their associates extract corrupt rents from infrastructure contracts while maintaining apparent arm's-length relationships.
- Independent project audits: all National Priority Projects subject to independent technical and financial audit at construction completion and at two-year intervals during operation, with findings published publicly and submitted to the Auditor-General and parliamentary committee. Auditors appointed through a merit-based process independent of both the contracting ministry and the IDU.
- Anti-collusion safeguards: procurement design that prevents bid-rigging — including randomised evaluation committee membership, sealed-bid submission with independent verification, and automatic referral to competition authorities when bidding patterns suggest coordination among suppliers.
- Citizen oversight mechanisms: civil society organisations and community representatives provided with formal observer status at major infrastructure project milestones — ground-breaking, construction inspection, completion certification — creating an independent verification layer that supplements formal audit and is harder to capture than government-appointed oversight bodies.

The anti-corruption architecture does not guarantee corruption-free infrastructure delivery — no system does. What it does is raise the cost and risk of corruption to the point where it is no longer the default operating mode, and create the evidence base that enables prosecution when it occurs. The international community, including DFI partners, will be watching: their willingness to provide concessional financing and project preparation support is explicitly conditional on governance standards that a credible anti-corruption architecture demonstrates.

SECTION 9

SECTION 8B

8b. Building Infrastructure State Capacity

The governance architecture described in Section 8 — independent regulators, statutory IDU, PPP framework, anti-corruption systems, DPI governance — is analytically coherent and institutionally sound. It is also demanding. Collectively, these proposals require a quality of state capacity that Zimbabwe does not currently possess in adequate depth: regulatory economists who can set cost-reflective tariff methodologies, procurement lawyers who can draft bankable PPP contracts, project engineers who can supervise large-scale infrastructure construction, infrastructure finance specialists who can structure blended financing arrangements, and IT security professionals who can govern a national digital identity system. Acknowledging this gap is not defeatism — it is the precondition for closing it.

Zimbabwe has one structural advantage in addressing this gap that most comparable countries lack: a diaspora that includes tens of thousands of engineers, economists, lawyers, project managers, and finance professionals who trained and practised in exactly the institutional environments this blueprint is trying to build. The state capacity challenge is therefore not primarily one of building from scratch, but of creating the institutional conditions that make returning and contributing rational for the people who already have the skills.

8b.1 Technical Civil Service Reform

- Merit-based recruitment for infrastructure roles: all technical positions in the IDU, independent regulators, and infrastructure ministries filled through competitive, publicly advertised processes with published selection criteria and independent panel assessment. Political appointment to technical roles is the primary mechanism by which state capacity is degraded; ending it is the primary mechanism by which it is rebuilt.
- Competitive compensation for technical specialists: engineers, economists, and legal specialists with the skills Zimbabwe needs command market salaries that the public sector currently cannot match. A dedicated technical specialists pay framework — separate from the general civil service scale, funded through infrastructure programme budgets and DFI technical assistance grants — enables competitive hiring without distorting the broader public sector compensation structure.
- Engineering retention programme: Zimbabwe trains engineers at its universities who then emigrate because domestic employment offers neither competitive compensation nor career development. A structured engineering cadre within the IDU and sector ministries — with defined career pathways, continuing professional

development, and international exchange placements — creates the retention conditions that keep domestically trained engineers in the public sector.

8b.2 Diaspora Technical Recruitment

The diaspora recruitment programme proposed in Paper 6 of this series has its most immediate application in infrastructure state capacity. A structured Zimbabwe Infrastructure Professionals Programme — offering fixed-term secondments of two to five years in the IDU, independent regulators, and sector ministries to qualified diaspora professionals — can rapidly inject the institutional capacity that domestic recruitment alone cannot quickly build.

- Regulatory economists and tariff specialists: for the energy and transport regulators, where tariff methodology requires both technical expertise and institutional independence from political pressure
- PPP and infrastructure finance lawyers: for the IDU's transaction management function, where contract design and negotiation require specialised skills that Zimbabwe's domestic legal market cannot currently supply
- Project management professionals: for IDU delivery tracking and large-scale construction supervision, where project management experience in comparable infrastructure environments is directly applicable
- IT security and digital governance specialists: for the Digital Zimbabwe Authority, where cybersecurity and data governance expertise is scarce globally and disproportionately represented in Zimbabwe's technology diaspora

8b.3 Institutional Knowledge Systems

State capacity is not only about individual skills. It is about institutional memory, documented processes, and knowledge systems that persist beyond individual tenure. Zimbabwe's infrastructure institutions have suffered repeated knowledge loss as skilled staff leave, are replaced by political appointees, and institutional memory is not captured in documented processes. The IDU and sector regulators must therefore be built from the outset with knowledge management as a core function:

- Digital document management: all project files, procurement records, technical assessments, and institutional decisions stored in a searchable, backed-up digital repository accessible to authorised staff regardless of personnel changes
- Process documentation: standard operating procedures for all core IDU functions — project registration, PPP transaction management, regulatory review, contractor assessment — documented to a standard that enables a competent new hire to perform the function without institutional memory transfer from a predecessor

- DFI technical assistance: the World Bank, African Development Bank, and bilateral development partners provide technical assistance grants for exactly this capacity-building function. Proactively engaging these partners for institutional design support, training, and peer learning from comparable reform programmes accelerates capacity building at lower cost than purely domestic capability development
- Infrastructure law and regulation as academic discipline: partnering with Zimbabwe's universities to develop infrastructure law, regulatory economics, and project finance as taught disciplines creates the domestic professional pipeline that the diaspora recruitment programme supplements in the near term

9. What Success Looks Like: Milestones and the Connection to the Blueprint

Zimbabwe's infrastructure transformation is a 35-year programme, but it must deliver visible improvements at every phase — because reforms that require citizens and investors to wait a decade for results do not sustain the political coalition that reform needs to survive. The milestones below are indicative rather than prescriptive, designed to anchor each phase to measurable outcomes that are observable by ordinary Zimbabweans and credible to international investors.

9.1 Three-Tier Priority Framework

With many competing initiatives across a 35-year programme, clear prioritisation is essential. This framework distinguishes between immediate unlocks — actions that must happen in the first term to create the conditions for everything that follows — growth accelerators that build momentum during Phase Two, and generational ambitions that represent the full realisation of the high-income infrastructure standard in Phase Three.

Tier 1 — Immediate Unlocks (Years 1-5)

These are the non-negotiable prerequisites. Without them, the investment case for everything in Tiers 2 and 3 does not exist.

- Energy reliability: solar capacity additions and ZESA reform to reduce load-shedding below 4 hours daily — the immediate GDP tax relief measure
- NRZ emergency rehabilitation: rolling stock and priority corridor track to restore 6 million tonnes annual freight capacity
- PPP framework legislation: the legal foundation that makes private infrastructure capital accessible

- Independent regulators: energy and transport regulators established with genuine operational independence
- DPI foundation: digital identity system deployed nationally

Tier 2 — Growth Accelerators (Years 5-15)

With Tier 1 foundations in place, these investments deliver the scale-up that drives Zimbabwe toward the 7-8% growth trajectory.

- Hwange beneficiation zone: concentrated infrastructure enabling value-added mineral processing at industrial scale
- Full NRZ rehabilitation across all five strategic corridors
- National fibre backbone and Pix-model payment rail deployment
- Agricultural cold chain and rural rail access programme
- Climate-resilient corridor upgrades across priority rail and road network
- Sovereign gateway dry port concessions at Beira and Maputo

Tier 3 — Generational Ambitions (Years 15-40)

The long-horizon investments that complete Zimbabwe's transformation to a high-income infrastructure standard — built during Phase Three as the institutional and economic conditions mature to support them.

- Batoka Gorge hydroelectric project (post-2034): 1,200 MW baseload capacity for a high-income industrial economy
- Full DPI stack maturation: data exchange layer, 30-year bond market, green hydrogen infrastructure
- Regional logistics dominance: Zimbabwe as the recognised transit hub for Central-Southern African trade flows
- Universal high-quality broadband: infrastructure quality comparable to upper-middle-income regional peers

9.2 The Top 10 Priority Infrastructure Projects

The following table translates the strategic framework into a visible, named investment pipeline. This is the mandate document that finance ministries, DFI partners, and private investors can assess, challenge, and act on.

Project	Sector	Tier	Est. Cost	Financing Model	Lead Institution	Key Dependency	Economic Rationale	Success Metric

Solar Generation Expansion (295MW+ ZERA pipeline)	Energy	Tier 1	$800M	DFI + PPP IPP model	ZERA / Private IPPs	ZESA tariff reform; grid integration capacity	Fastest route to closing 663MW gap; 6.1% GDP tax relief	Load-shedding below 4hrs/day
NRZ Corridor Rehabilitation (North-South + East)	Transport	Tier 1	$600M	PPP Concession	NRZ / IDU	Concession governance; asset protection regime	Highest-return intervention; 9M tonnes capacity restored	Freight volume above 8M tonnes/year
PPP Framework Legislation + Independent Regulators	Institutional	Tier 1	$20M	Government + TA grant	Ministry of Finance / IDU	Political will; legislative drafting capacity	Unlocks all other PPP investment	Two PPPs at financial close by Year 3
National DPI Stack (Digital ID + payment rails)	Digital	Tier 1	$300M	Public investment + DFI grant	Digital Zimbabwe Authority	Power supply; data privacy legislation enacted first	Formalises informal economy; unlocks tax base expansion	80% digital ID adoption; 50M+ monthly payment transactions
ZESA Reform + Grid Modernisation	Energy	Tier 1	$400M	DFI loan + tariff revenue	ZESA / Energy Regulator	Governance reform must precede tariff increases	Prerequisite for all energy investment; 15%+ loss reduction	ZESA financially self-sustaining
Hwange Beneficiation Zone	Industrial	Tier 2	$1.2B	Blended + PPP + royalties	IDU / Mining sector	24/7 industrial power supply; rail link to North-South corridor	5-10x revenue premium on lithium and PGM vs raw export	Two processing plants at scale by Year 8
National Fibre Backbone	Digital	Tier 2	$200M	PPP open-access concession	POTRAZ / IDU	Open-access regulatory enforcement	Enables economic-grade connectivity nationally	All secondary towns on fibre by Year 8
Harare-Mutare Climate-Resilient Corridor Upgrade	Transport	Tier 2	$150M	DFI + climate finance	NRZ / Roads Authority	Climate finance access; construction during live operation	Secures Beira export route; model for network-wide standards	Zero corridor closures exceeding 48hrs
Sovereign Gateway: Beira/Maputo Dry Port Concessions	Transport	Tier 2	$80M	Joint venture + DFI	IDU / Exporter associations	NRZ rehabilitation providing adequate freight volumes first	40%+ reduction in port turnaround time for exporters	Transit time reduction above 30%
Agricultural Cold Chain + Rural Rail Access	Agriculture	Tier 2	$300M	Blended + climate finance	Agric. Ministry / NRZ	NRZ rehabilitation; reliable rural power supply	Connects smallholders to formal markets; reduces spoilage losses	Post-harvest losses below 15%

Note on budget-to-target alignment: the project costs in this table represent Tier 1 and Tier 2 first-mover investments, not the full capital requirement to reach Section 1.4 capacity targets. The World Bank estimates $4.4 billion for full grid expansion to 2030; the $1.2 billion across solar and ZESA reform projects above represents the priority Phase One and Two tranche that unlocks the institutional and commercial conditions for subsequent investment rounds. The 4,000+ MW energy target and 12 million tonne rail target are Phase Three outcomes, reached through compounding investment rounds as institutional credibility matures — not from the projects listed here alone.

9.3 What Zimbabwe Should Not Build

One of the most powerful contributions a credible infrastructure framework can make is to name clearly what it excludes. In Zimbabwe's history, as across Africa, infrastructure investment has repeatedly been diverted from high-return productive projects to low-return or

negative-return prestige, political, or commercially opaque projects. This blueprint is explicit: the following categories of infrastructure spending represent the misallocation of scarce capital that Zimbabwe cannot afford.

- Prestige airports without demonstrated traffic demand: airport capacity should be built in response to documented passenger and freight volumes, not as statements of national ambition. Zimbabwe's existing airport infrastructure is underutilised; expanding it before traffic justifies expansion is a misallocation that diverts capital from energy and rail investment with immediate economic returns.
- Politically allocated roads with low economic return: roads should be prioritised by traffic volumes, agricultural productivity potential, and connectivity to the economic network — not by political constituency considerations. An independent road prioritisation framework, published and audited, is the safeguard against roads built to serve political rather than economic logic.
- Uneconomic stadiums and conference centres: large public event facilities have consistently failed to generate returns that justify their capital and maintenance costs across Africa. Where existing facilities can be maintained and upgraded, new construction should require a rigorous demand assessment and financial sustainability plan before approval.
- Resource-backed opaque megaprojects: infrastructure financed through resource-backed bilateral loans — where mineral rights or concessions serve as collateral for infrastructure debt — has produced debt traps, sovereignty compromises, and governance failures across the continent. No resource-backed financing arrangement should be entered into without full parliamentary disclosure and independent assessment against multilateral alternatives.
- Duplicative power projects without grid integration: solar and generation projects that cannot connect to the national grid, or that are built without assessment of grid integration capacity, add nameplate capacity without reducing load-shedding. Every generation project must have a grid integration plan approved by the independent energy regulator before construction.
- ICT systems locked to single vendors: technology procurement that creates long-term dependence on a single commercial vendor — through proprietary standards, closed data formats, or exclusive service agreements — transfers economic rent to the vendor and removes government's ability to adapt, upgrade, or renegotiate. Open standards and interoperability requirements must be mandatory in all government technology procurement.
- Roads where rail is economically superior: the decision between road and rail investment for bulk freight routes should be made on economic grounds, not on the basis that road construction is faster or politically simpler. For mineral and agricultural bulk freight corridors where volumes justify it, rail investment delivers lower long-run costs and should be prioritised over parallel road investment.

9.4 Phase One Milestones (Years 1-5): Stabilisation

- Load-shedding reduced to below 4 hours daily average nationally through solar additions and demand management
- NRZ freight volumes restored to 6 million tonnes annually through rolling stock rehabilitation and priority corridor track repair
- Parallel market exchange rate premium below 15% (connecting to Paper 2 monetary milestones)
- Independent energy regulator established with gazetted tariff-setting methodology
- PPP framework law enacted and at least two infrastructure PPPs reaching financial close
- Internet data costs reduced to below 2% of monthly GNI per capita through regulatory intervention
- Harare-Mutare corridor climate resilience upgrade completed with flood-resistant drainage and bridge standards

9.5 Phase Two Milestones (Years 5-15): Growth Acceleration

- Electricity generation capacity above 3,000 MW from diversified mix; load-shedding eliminated as a structural feature
- NRZ freight volumes at 10 million tonnes annually; all five strategic corridors operational
- First beneficiation zone (Hwange) operational with at least two processing plants at scale
- Universal quality broadband in all cities and secondary towns; 75% rural coverage through combination of mobile and satellite
- Zimbabwe recognised as regional logistics hub with transit freight revenues exceeding $200 million annually
- Infrastructure investment as percentage of GDP above 8% annually, predominantly from private and DFI sources

9.6 Phase Three Milestones (Years 15-40): Generational Infrastructure

- Batoka Gorge and complementary generation assets bringing total capacity above 4,500 MW
- NRZ operating at 15+ million tonnes annually with new corridor extensions to emerging mining zones
- Zimbabwe's logistics cost as percentage of production costs below 10% — regional best practice

- Universal digital access with infrastructure quality comparable to upper-middle-income regional peers
- Climate-resilient infrastructure standard applied across all major assets; no repeat of infrastructure failure events comparable to 2024-2026 climate damage

> ***Infrastructure is not the background to Zimbabwe's story. Build it to the scale of the story Zimbabwe intends to tell.***

TECHNICAL ANNEX

Technical Annex: Implementation Mechanics

This annex provides additional technical detail for specialist readers on the key implementation mechanisms discussed in the main paper.

A. NRZ Concession Framework Design

A rail concession transfers operational responsibility — and operational risk — from the government to a private operator for a defined period, typically 25-30 years. The operator invests in rehabilitation and rolling stock, operates the network commercially, and earns returns from freight tariffs. At the end of the concession period, the network reverts to government ownership, improved by the operator's investment.

For Zimbabwe, the concession design must address several specific requirements:

- Ring-fenced revenue: freight tariffs collected by the concessionaire must be legally protected from government appropriation or diversion — a critical credibility requirement given Zimbabwe's history of parastatal revenue capture
- Performance standards: minimum freight volume targets, maximum speed restriction lengths, track condition standards, and locomotive availability requirements, with financial penalties for non-compliance and step-in rights for the government if performance falls below defined thresholds
- Social obligations: passenger services, which are loss-making but politically and socially important, require a separate public service obligation payment from government to the concessionaire — funded explicitly and transparently rather than cross-subsidised from freight revenues
- Local content requirements: the concession agreement should specify minimum requirements for Zimbabwean employment, supplier development, and skills transfer — ensuring that the economic benefits of rail rehabilitation flow to the domestic economy
- Climate standards: all track rehabilitation and new construction to meet the enhanced drainage and flood-resilience standards described in Section 5, with the concessionaire bearing operational risk for climate-related infrastructure failure above a defined threshold

B. PPP Framework: Legal and Institutional Requirements

Zimbabwe's existing PPP framework — established under the Public Finance Management Act — has not successfully attracted private infrastructure investment at scale, primarily because the legal and institutional environment does not provide the bankability that international investors require. The reforms needed are:

1. Standalone PPP Act: a dedicated legal instrument establishing the PPP framework, contract standards, dispute resolution mechanisms, and government payment obligations — providing the legal certainty that the existing regulatory framework does not
2. Independent PPP Unit: a central unit in the Ministry of Finance with dedicated project preparation, transaction advisory, and monitoring capability — replacing the fragmented sector-by-sector approach that has produced an inconsistent and poorly prepared project pipeline
3. Fiscal commitment framework: a legally binding framework for government PPP payment obligations — availability payments, viability gap funding, and minimum revenue guarantees — with parliamentary appropriation and independent audit, providing investors with confidence that commitments will be honoured
4. Dispute resolution: access to international arbitration for PPP contract disputes, removing the requirement for dispute resolution through Zimbabwe's domestic court system, which investors perceive as insufficiently independent

C. Energy Tariff Reform: The Sequencing

Cost-reflective electricity tariffs are the financial foundation of ZESA reform — but implemented without adequate social protection, they generate political backlash that reverses the reform. The sequencing proposed is:

- Year 1: Establish the independent energy regulator with published tariff-setting methodology; baseline cost audit of ZESA generation, transmission and distribution costs
- Year 1-2: Introduce lifeline tariff for households consuming below 100 kWh per month — protecting the most vulnerable from tariff increases; implement targeted cash transfer programme for lowest-income households as buffer
- Year 2-3: Phase in cost-reflective tariff for commercial and industrial users — who have the capacity to absorb increases and, critically, benefit most from the reliability improvement that tariff reform enables by financing infrastructure maintenance
- Year 3-5: Progressive tariff adjustment for residential consumers above the lifeline threshold, phased to allow household budget adjustment; transparent quarterly reporting on tariff-investment linkage showing what each tariff increase is financing

D. Climate Finance Access: Green Climate Fund and Beyond

Zimbabwe's Nationally Determined Contribution under the Paris Agreement commits to significant renewable energy expansion and climate adaptation investment. These commitments create eligibility for international climate finance that can fund the premium cost of climate-resilient infrastructure design:

- Green Climate Fund: Zimbabwe's National Designated Authority (Ministry of Finance) can accredit implementing entities and access GCF resources for adaptation and mitigation investment — including climate-resilient infrastructure, renewable energy, and disaster risk reduction
- Climate Investment Funds: the Scaling Up Renewable Energy Programme and Climate Resilience Pilot Programme for Vulnerable Countries both have Zimbabwe-eligible instruments that can fund solar expansion and climate adaptation infrastructure
- Bilateral climate donors: the UK's International Climate Finance, the EU's Global Gateway green infrastructure programme, and similar bilateral instruments provide grant financing for the climate-resilience premium on infrastructure projects that meet defined standards
- Carbon markets: well-structured renewable energy projects can generate carbon credits under Article 6 of the Paris Agreement, providing additional revenue streams that improve project economics — relevant for solar generation and avoided deforestation projects

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