

Lifecycle-Based Regional Development Strategies for Long-Term Value Creation in Saudi Mega Projects

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Abstract- Saudi Arabia's giga and mega projects are no longer just standalone construction programmes: they are territorial transformation platforms that are expected to generate durable regional value through public investment, private participation, infrastructure systems, tourism assets, housing districts, logistics corridors and cultural destinations. This review develops a lifecycle-based framework for developing regional development strategies in Saudi mega projects. The paper synthesises recent literature and policy evidence from 2020 to 2025, focusing on the creation, protection and renewal of value from project origination to long-term operation. It argues that the alignment of six lifecycle phases is critical for sustainable value creation: strategic selection, regional integration, design and procurement, delivery governance, operational activation and adaptive renewal. A systematic review methodology was applied to screen peer-reviewed and policy sources, extract recurring themes and translate them into a governance model suitable for Vision 2030 projects. The results indicate that Saudi mega projects can produce lasting value if the delivery metrics are broadened to include economic diversification, local capability formation, environmental performance, social inclusion, digital continuity and post-handover asset productivity, in addition to cost, schedule and output completion. The review closes with strategic recommendations for policymakers, developers and regional authorities to enhance whole life governance, reduce fragmentation and turn capital projects into resilient regional ecosystems.

Keywords- *Lifecycle Governance, Regional Development, Saudi Arabia, Giga Projects, Vision 2030, Long-Term Value, Infrastructure Strategy, Sustainable Megaprojects.*

I. INTRODUCTION

Mega projects have been at the core of Saudi Arabia's development agenda and economic diversification, spatial transformation and quality-of-life enhancement. Large-scale developments such as NEOM, The Red Sea, Qiddiya, Diriyah, ROSHN, New Murabba, King Salman Park and several regional infrastructure programmes are set to transform tourism, culture, housing, logistics, entertainment,

energy and urban services under Vision 2030. Official progress reporting presents these projects as tools for a vibrant society, a thriving economy and an ambitious nation, while PIF reporting defines giga projects as investment platforms to build new sectors and generate sustainable returns (Vision 2030, 2025; PIF, 2025). But the scale, length and complexity of these changes means traditional measures of project success are inadequate. A project may deliver a physical asset but not long-term regional value if it is not connected to labour markets, local supply chains, environmental carrying capacity or operational demand.

This review focuses on the issue of the gap between project delivery and regional value creation. The literature on megaprojects has shown repeatedly that large projects are prone to optimism bias, delivery risks, governance fragmentation and benefit-realization challenges (Flyvbjerg, 2021; Locatelli et al., 2022). In Saudi Arabia, these are compounded by rapid programme scale-up, ambitious deadlines, global supply-chain competition, desert and coastal environmental constraints, and the need to localise capabilities while attracting international investors. Saudi giga projects provide an unusual opportunity at the same time: they can create new regional economies if planning, procurement, delivery and operations are governed as an integrated lifecycle, rather than isolated construction packages.

This review accordingly aims at understanding how lifecycle-based regional development strategies can improve long-term value creation in Saudi mega projects. The argument is that value is not created only at completion. It is accumulated, validated and renewed throughout a lifecycle that starts with strategic justification and extends through land acquisition, stakeholder consultation, design, procurement, construction, commissioning, operations, maintenance, reuse and adaptation. This perspective on lifecycle is especially critical in Saudi

Arabia, where many projects are built as anchor ecosystems, rather than single-use assets. Tourism destinations need to promote local entrepreneurship and environmental protection; housing programmes need to ensure affordability and liveability; entertainment districts need to encourage repeat visitation; industrial zones need to bolster supply chains; and heritage projects need to preserve cultural identity and create jobs.

The study aims at developing a review framework based on the lifecycle for long-term regional value creation in Saudi mega projects. The aims are: 1) to synthesize recent evidence on megaproject lifecycle governance, regional development and sustainable value creation; 2) to identify the lifecycle phases through which Saudi mega projects can translate capital expenditure into lasting regional outcomes; 3) to examine barriers that weaken value continuity across planning, delivery and operation; and 4) to propose strategic recommendations to project owners, public agencies and regional authorities. The contribution is in linking megaproject governance to regional development theory and Vision 2030 implementation priorities, offering a structured model for use by policymakers and practitioners alike.

II. LITERATURE REVIEW AND CONCEPTUAL BACKGROUND

Recent megaproject research has moved beyond a narrow concern with cost overruns to broader issues of governance, legitimacy, stakeholder value and long-term benefit realisation. Research post-2020 has shown that large infrastructure programmes function as socio-technical systems, where finance, institutions, technology, community expectations and environmental pressures change over time in interaction (Brookes et al., 2021; Locatelli et al., 2022). That is important for Saudi Arabia because giga projects are meant to be more than infrastructure capacity. They should result in national and regional diversification, international tourism attraction, local employment, improvement of the public realm, environmental restoration and private sector involvement. The literature therefore supports a whole-life view which assesses whether an asset still creates value after construction.

Lifecycle thinking is prevalent in asset management, circular economy, sustainability assessment, and public infrastructure planning. This implies that decision makers need to consider how early decisions will impact later stages including operation, maintenance, renewal and end-of-life adaptation (ISO, 2024; OECD, 2021). In the built environment lifecycle approaches link to carbon management, total cost of ownership, digital twins, materials passports and resilience planning (Ghaffarianhoseini et al., 2021; UN-Habitat, 2022). For regional mega projects lifecycle thinking also means aligning development stages with population growth, skills pipelines, mobility networks, utilities, governance capacity and local enterprise formation. Without this alignment, the project can generate impressive assets but limited regional embeddedness.

The regional development literature emphasises the importance of agglomeration, connectivity, institutional capacity and endogenous capability building for long-term value. Successful regions depend not only on flagship buildings but on networks of firms, skills, suppliers, services, universities and civic institutions that can absorb and multiply investment (Rodriguez-Pose, 2020; Pike et al., 2023). Saudi giga projects have been designed to spur such mechanisms, but the scale of transformation requires careful sequencing. For instance, a tourism destination cannot generate regional value unless accommodation, airports, utilities, workforce housing, environmental management, visitor services and local SMEs evolve simultaneously. Similarly, no new city can be economically productive until its employment sectors, housing affordability, digital infrastructure, transport and public services develop in step.

This integration is made possible by the policy setting of Vision 2030. The national strategy aims to diversify income, improve living standards, increase the contribution of the private sector, expand tourism, enhance cultural and entertainment offerings and strengthen government effectiveness (Vision 2030, 2025). PIF's investment strategy links giga projects to sector creation, localisation, green finance, tourism, urban development, logistics and industrial ecosystems (PIF, 2025). Project outcomes are also shaped by citizen experience, infrastructure readiness and institutional performance via quality-of-life and

national transformation programmes (NTP, 2025; Quality of Life Programme, 2024). These policy documents confirm the multidimensionality of the value of regional development: economic productivity, social well-being, environmental sustainability and institutional efficiency.

Yet, the literature cautions that megaprojects can have uneven consequences. Large developments can concentrate benefits in central areas, displace existing communities, inflate land values, strain public finance, or be reliant on external contractors (Almatar, 2023; Leber, 2025). Environmental critiques of large-scale desert and coastal development highlight the importance of biodiversity, water stewardship, climate adaptation, and transparent monitoring (Al-Saidi and Saliba, 2022; Sodiq et al., 2021). These concerns do not detract from the potential of Saudi mega projects but they demonstrate the need for lifecycle governance. The sooner social, environmental and operational risks are taken into account, the greater the chance of avoiding costly redesign, reputational damage or under-utilised assets.

Another big theme is digital transformation. The use of building information modelling, geographic information systems, digital twins, AI-enabled project controls, remote sensing and integrated dashboards can preserve data from planning through operation and thus improve lifecycle continuity (Bibri, 2021; Sepasgozar, 2021; OBG, 2025). In Saudi giga projects with assets spread over large territories and many contractors, digital continuity can reduce fragmentation and enable evidence-based decision making. But technology is not enough. To make digital tools into long-term regional intelligence you must have data standards, ownership rules, cybersecurity, operator training and governance routines.

The review therefore theorises long-term value creation as an outcome of the interaction of four value domains across the whole life. Economic value such as investment attraction, sector formation, jobs, productivity and fiscal returns. Social value is about access, inclusivity, public services, cultural identity and community well-being. Environmental value encompasses low-carbon design, resource efficiency, habitat protection, climate resilience and circular

construction. Institutional value: Transparent governance, local capacity, learning, adaptive regulation and interagency coordination. These domains need to be considered throughout the full lifecycle, not just tacked on at the end of construction.

III. METHODOLOGY

The paper is presented as a review paper and not an empirical survey. This approach is consistent with recent reviewing practices in sustainability and megaproject research combining systematic search logic with interpretive synthesis (Snyder, 2020; Tranfield et al., 2021). Publications and policy documents released between 2020 and 2025 were included in the review, corresponding to the current phase of Saudi Vision 2030 implementation. Sources were obtained from peer-reviewed articles, government official reports, PIF publications, Vision Realisation Programme reports, international development documents and professional infrastructure analyses. The attached Springer article was used as a model for the structure. It shows how to combine a policy-oriented literature review, comparative analytical dimensions, tables and a strategic implementation model in a journal style.

The review consisted of four steps. First, search terms were developed on lifecycle governance, megaproject value, regional development, Saudi Vision 2030, giga projects, sustainable infrastructure, digital project controls and benefit realisation. Second, sources were assessed for their relevance to one or more of four domains: life-cycle project governance, regional development outcomes, Saudi policy context, and long-term sustainability. Third, the selected sources were coded into six lifecycle phases: strategic selection, regional integration, design and procurement, delivery governance, operational activation and adaptive renewal. Fourth, the findings synthesised recurring barriers and enablers into the lifecycle-based regional value framework.

The inclusion criteria focused on sources from the period 2020-2025 that provide conceptual, empirical or policy insight into large-scale project governance, regional strategy or sustainable infrastructure. Exclusion criteria included those sources that were limited to small construction projects, short-term

contractor performance, or irrelevant urban issues. However, being a paper of review, this work does not claim to directly measure the performance of individual Saudi projects. It instead creates a strategic synthesis to help inform how performance should be planned, monitored and evaluated over time. This is appropriate for mega projects where benefits are realised over decades and many assets are under development.

The analytical framework was constructed using thematic coding. For each source we looked for evidence of objectives, lifecycle stage, value mechanism, governance instrument, regional linkage, risk and performance measure. The synthesis was then structured into lifecycle phases to demonstrate where value is added or lost. Strategic selection, for example, determines if a project addresses a real regional opportunity; procurement, if suppliers and local firms can participate; delivery governance, if time, cost, quality and ESG commitments remain aligned; operations, if the delivered asset becomes economically productive. This method supports a practical review paper as it translates literature into decision categories.

The methodology is limited. It relies on secondary sources and cannot capture all confidential project data, internal delivery dashboards or community level perceptions. Official reports may point to progress while outside commentary might point to risks. To prevent bias, the review triangulates policy sources, academic literature and professional analyses and considers both opportunities and constraints as part of the lifecycle. In the future, the framework could be tested through interviews with project owners, regional authorities, contractors, operators, SMEs and residents, or through longitudinal case studies of selected giga projects.

Table 1. Review protocol and analytical extraction framework

Review stage	Purpose	Applied criteria	Output
Search design	Locate current evidence	2020-2025 sources on lifecycle governance, regional development and Saudi mega projects	Initial source pool
Screening	Remove weakly relevant sources	Exclude small-project-only, outdated or unrelated material	Focused evidence base
Coding	Identify value mechanisms	Code by lifecycle phase, value domain, risk and governance tool	Thematic matrix
Synthesis	Build a practical model	Compare repeated patterns across literature and policy documents	Lifecycle regional value framework

Lifecycle route from capital project to regional value



Figure 1. Lifecycle map for converting Saudi mega projects into regional value systems

IV. FINDINGS: LIFECYCLE PHASES OF REGIONAL VALUE CREATION

The first phase of the lifecycle is strategic selection. The genesis of long-term value begins even before a project is announced, when decision-makers identify the regional problem, opportunity and value proposition. Strategic Selection in Saudi mega projects should assess whether the proposed development contributes to national diversification and also aligns with regional assets such as heritage, coastlines, logistics location, renewable resources, labor availability or tourism potential. Projects chosen primarily for Their symbolic visibility may find it challenging to maintain demand, while those grounded in genuine regional strengths are more likely to provide lasting value (Pike et al., 2023; Vision 2030, 2025). Strategic selection needs evidence-based market assessment, regional capability mapping, environmental screening and scenario analysis

The second phase is integration in the regions. Mega projects create value only if they are linked to settlements around them, to systems of mobility, utilities, supply chains, education institutions and labor markets. Integration avoids the development of

enclaves, ie the situation where a project isa high quality zone with weak spillover to its region. This is particularly the case for destinations outside the traditional metropolitan cores in Saudi Arabia. Regional Integration must encompass workforce housing, local procurement channels, SME incubation, skills partnerships, transport accessibility, water and energy coordination, and cultural heritage protection. The goal is to turn the project into an anchor of a larger regional economy, rather than a detached investment island.

The third phase is the design and procurement. Early design decisions affect operational costs, carbon intensity, resilience and user experience. Life-cycle procurement should therefore reward whole-life performance and not just lowest capital price; Recent literature on sustainable infrastructure supports procurement models that embed ESG criteria, local content, digital handover, maintenance access, modularity, circular materials and social value targets (OECD, 2021; Ghaffarianhoseini et al., 2021). Procurement can also be an industrial development tool for Saudi mega projects if it supports local manufacturers, construction technology companies, hospitality suppliers and professional service

providers. This requires transparent packaging, supplier development and realistic risk-sharing.

The fourth phase is delivery governance. Construction delivery is often where aggressive strategies meet schedule pressure, cost escalation, interface risks and contractor coordination problems. Large Saudi programmes involve many master developers, ministries, contractors, consultants and operators which increases the need for integrated controls. Delivery governance should include programme management offices, independent assurance, risk registers, digital dashboards, environmental compliance systems and escalation routines. The goal is not only to stop delay, but to protect the value case in change. When scope is revised, the governance question shouldn't be how will this impact construction milestones, but how will this impact regional outcomes?

5. Operational Activation. The underperformance of many megaprojects is because the transition from construction to operation is regarded as a handover event, not a value creating stage. Operational activation includes tenant attraction, visitor programming, service quality, maintenance preparedness, transport operations, energy performance, workforce training, emergency management and customer experience. In tourism and entertainment projects demand generation has to be continuous; in housing projects community management and affordability matter; in industrial projects logistics reliability and supplier services matter. The asset only has value to the extent that users, operators and regional businesses can generate ongoing economic and social activity.

The sixth phase is adaptive renewal. Changing conditions will impact Saudi mega projects: climate risk, shifts in tourism demand, technology upgrades, fiscal cycles, population growth, and social expectations. The ability to learn and adapt is what creates long-term value. Adaptive renewal covers post-occupancy evaluation, environmental monitoring, periodic master plan revision, asset retrofits, digital twin updates, skills renewal, and input from residents and businesses. This stage is often forgotten in the rush to start new projects at the close of construction. But it is adaptive renewal that

transforms a one-off capital project into a resilient regional platform.

Across these phases, the review finds five recurring enablers. first is integrated governance, where national agencies and project companies and regional authorities share objective data. The and The second is digital continuity, where the information produced through design and construction is transferred to operators. third is local capability building, with procurement and training helping Saudi firms and workers. The The fourth is environmental stewardship, with monitoring over time of biodiversity, water, carbon and circularity Fifth is benefit realisation, measuring regional outcomes after opening using KPIs. These enablers are mutually reinforcing: local capability supports operations; digital continuity supports monitoring and integrated governance supports adaptation.

The review also mentions obstacles. Fast delivery targets can reduce time for community engagement or environmental testing. Reliance on global contractors can impede the transfer of local knowledge. The barriers are not unique to Saudi Arabia, but the pace and scale of Vision 2030 make them especially important. So, lifecycle strategy is a tool for creating value, but also for managing risk. Fragmented institutional mandates can delay approvals and dilute accountability. The focus on iconic design can lead to higher prices with no regional benefit. targets can reduce time for community engagement or environmental testing. impede the transfer of local knowledge. Assets that open ahead of demand, staffing or maintenance systems maturity are created by incomplete operating models. Barriers are not unique to Saudi Arabia, but the pace and scale of Vision 2030 make them especially important. tool for creating value, but also for managing risk.

V. DISCUSSION: LIFECYCLE-BASED REGIONAL DEVELOPMENT FRAMEWORK

The findings support a framework for managing Saudi mega projects as the regional value systems. monitoring, periodic master plan review, asset retrofits, digital twin updates, skills renewal, and input from residents and businesses. stage is often forgotten

in the rush to start new projects at the close of construction. is adaptive renewal that transforms a one-off capital project into a resilient regional platform. phases, the review finds five recurring enablers. first is integrated governance, where national agencies and project companies and regional authorities share objective data. second is digital continuity, where the information produced through design and construction is transferred to operators. third is local capability building, with procurement and training helping Saudi firms and workers. Fourth is environmental stewardship, with monitoring over time of biodiversity, water, carbon and circularity benefit realization, measuring regional outcomes after opening using KPIs. Enablers are mutually reinforcing: local capability supports operations, digital continuity supports monitoring and Barriers are not unique to Saudi Arabia, but the pace and scale of Vision 2030 make them especially important. tool for creating value, but also for managing risk. Framework extends past the conventional project triangle of cost, time and scope and incorporates five whole-life outcomes: regional productivity, social inclusion, environmental resilience, institutional learning, and asset adaptability. means that each lifecycle phase should have explicit value gates. project addresses a regional opportunity. design gate assesses whole-life affordability and environmental performance. A procurement gate to test local capability and risk allocation. Operations gate is a test for recurring value creation by users and regional firms. The most important implication for Saudi Arabia is that giga projects should not be judged in isolation. From a portfolio perspective, decision makers can sequence investment in housing, tourism, transportation, utilities, education, health services and the public realm in a way that generates benefits that reinforce each other. For instance, a heritage destination needs visitor transportation, conservation skills, local craft enterprises and hospitality training. A coastal tourism project needs marine protection, water systems, airport access and workforce accommodation. Delivery gate shows the business case is still valid. test for recurring value creation by users and regional firms.

most important implication for Saudi Arabia is that giga projects should not be judged in isolation. have to be judged on what they contribute to the regional portfolios. portfolio perspective, decision makers can

sequence investment in housing, tourism, transport, utilities, education, health services and the public realm in a way that generates benefits that reinforce each other. instance, a heritage destination needs visitor transportation, conservation skills, local craft enterprises and hospitality training. tourism project needs marine protection, water systems, airport access and workforce accommodation. events, public transportation, retail integration and safety management.” the regional portfolios.

framework also demonstrates why benefit realization must continue after the project opening. early occupancy rates are not the same as long term value. Indicators should include local job creation, visitor return rates, SME contracts, resident satisfaction, energy intensity, water reuse, public transport share, cultural participation, private investment leverage, maintenance backlog and operator profitability. project companies and regional authorities should jointly review these indicators. project may meet developer targets without a joint review, but not the surrounding region.

other implication is about fiscal resilience. models that incorporate operating costs, maintenance reserves, demand ramp-up and environmental obligations. global experience with megaprojects shows that early underestimation of lifecycle costs can destroy public value (Flyvbjerg, 2021; OECD, 2021). means that long-term value requires realistic phasing, disciplined scope control and clear prioritization of assets that can generate near-term revenue or infrastructure for later stages.

Degradation may reduce destination attractiveness, increase operational cost or create reputational risk, which negatively affects regional value. Important is the question of environmental worth. affected by heat, water scarcity, sensitive coastal ecosystems and carbon transition pressures. include climate-responsive design and low-carbon materials, renewable energy integration, circular construction, habitat conservation, wastewater reuse and long-term ecological monitoring. Sea and desert destinations (Al-Saidi and Saliba, 2022; Sodiq et al., 2021) demonstrate the importance of treating natural capital as a core asset instead of a constraint.

value needs similar attention. Projects can improve quality of life by increasing housing, jobs, leisure, culture and public space, but only if access, affordability and community participation are designed into the lifecycle. Development should include skills programs, local hiring, SME access, cultural continuity and mechanisms for residents to give feedback. is in line with the quality-of-life policy objectives and the international expectations of inclusive infrastructure (Quality of Life Programme, 2024; UN-Habitat, 2022). value is not a communication issue to be considered; it is a condition for legitimacy and long-term use.

proposed framework does not advocate a slower pace of transformation. more a call to transform sequence intelligently. Increase credibility by providing usable assets early, while preserving future optionality. be demand driven, infrastructure enabled, environmentally capable, financially feasible and operator ready. complete isolated landmark assets until the supporting systems are ready, in practical terms. be centres that work, pump out data and attract investment. learning platform for the next phase.

framework can be implemented in digital systems. cost performance, procurement localization, carbon,

water, biodiversity, safety, workforce training, visitor demand and maintenance readiness. The dashboard shouldn't end with construction reporting; it needs to keep on after handover. If data Standards are established early, digital twins and asset information models can support predictive maintenance, energy optimization and scenario planning (Bibri, 2021; Sepasgozar, 2021). In this way digital continuity becomes institutional memory for the region.

The framework also encourages improved collaboration between public and private actors. Private Investors have to be convinced that the infrastructure, regulation and demand will develop as promised. Public authorities need to be reassured that private development is contributing to the delivery of national and regional goals. Transparent value metrics, concession agreements, development controls, performance-linked incentives and public-private delivery boards can help align these interests through lifecycle-based governance. This is especially significant given Saudi Arabia's efforts to increase the share of the private sector and foreign investment, while retaining strategic control of national transformation (PIF, 2025; Vision 2030, 2025).

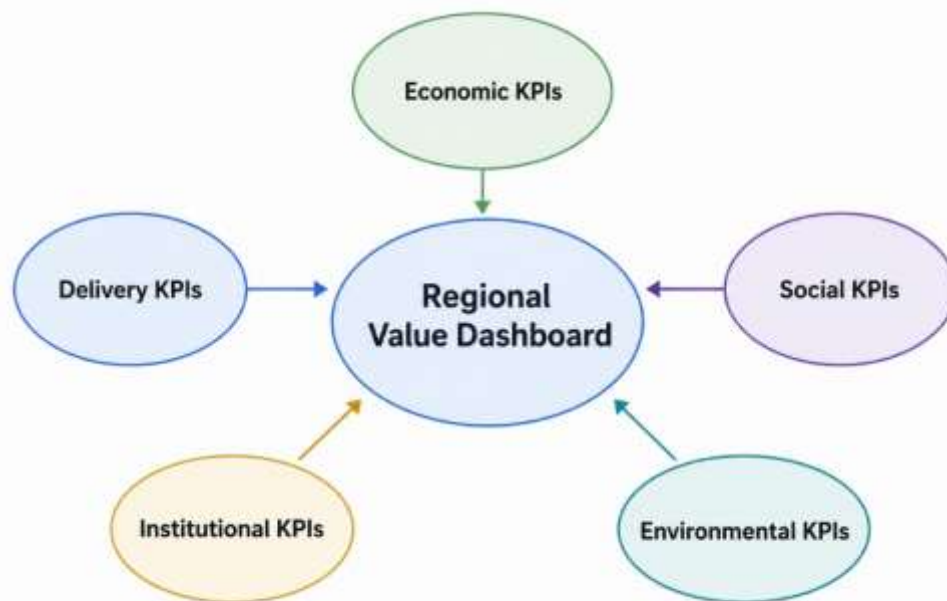


Figure 2. Integrated lifecycle dashboard for long-term regional value monitoring

Table 2. Lifecycle strategies for long-term value creation in Saudi mega projects

Lifecycle phase	Strategic focus	Core value metric	Main risk	Governance response
Strategic selection	Match projects to regional assets	Regional opportunity fit	Symbolic projects with weak demand	Evidence-based approval gate
Regional integration	Connect assets to surrounding systems	Local supply-chain and accessibility index	Enclave development	Joint master planning board
Design and procurement	Optimize whole-life performance	Lifecycle cost, carbon and local content	Lowest-price contracting	Value-based tender scoring
Delivery governance	Protect the value case during change	Integrated schedule, cost, ESG and readiness performance	Fragmented controls	Independent assurance and escalation
Operational activation	Create recurring use and revenue	User satisfaction, occupancy, visitation and operator readiness	Assets opening before ecosystem maturity	Pre-opening operational readiness reviews
Adaptive renewal	Update assets and strategies over time	Post-occupancy benefits and resilience indicators	Strategic drift after handover	Five-year regional value reviews

VI. STRATEGIC RECOMMENDATIONS

First, Saudi mega projects should adopt lifecycle value charters as early as the approval stage. means that each lifecycle phase should have explicit value gates. project addresses a regional opportunity. design gate assesses whole-life affordability and environmental performance. test local capability and risk allocation. delivery gate shows the business case is still valid. test for recurring value creation by users and regional firms. most important implication for Saudi Arabia is that giga projects should not be judged in isolation. have to be judged on what they contribute to the regional portfolios. portfolio perspective, decision makers can sequence investment in housing, tourism, transport, utilities, education, health services and the public realm in a way that generates benefits that reinforce each other. instance, a heritage destination needs visitor transportation, conservation skills, local craft enterprises and hospitality Development should include skills programs, local hiring, SME access, cultural continuity and mechanisms for residents to give feedback. is in line with the quality-of-life policy objectives and the international expectations of

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regional problem, target beneficiaries, expected economic clusters, social outcomes, environmental limits, operating model and long-term asset responsibilities. charter needs to be updated at each lifecycle gate so that the original value case is not lost during design changes or construction acceleration.

Secondly, regional Integration should be a mandatory planning criterion. Approvals for projects should show how the development links with transport, utilities, housing, labour markets, education, health services, SMEs and environmental systems. This would reduce enclave risk and incentivize regional authorities to coordinate enabling investments with project developers

be reconfigured around whole life value. consider lifecycle cost, maintainability, local content, digital handover, carbon performance, circular materials and supplier development. Contractors should be incentivized for solutions that mitigate operating risk and build Saudi capability, not just the lowest initial price.

include independent assurance and transparent escalation of risk. Program boards should monitor changes in scope, time and cost to see if they affect the regional value case. cover environmental compliance, safety, community impacts, readiness for operations and data quality. add more strategic elements to project controls.

Fifth, plans for operational activation should be developed before major construction is complete. The plans shall identify the operators, staffing, maintenance regimes, standards of service, marketing, tenant strategies, emergency procedures and user feedback systems. No asset is considered complete until its operating ecosystem is ready to deliver value.

Sixth, adaptive renewal should be institutionalized through post-occupancy evaluation and five-year reviews of regional value. These reviews are to compare expected benefits to current performance, identify corrective actions and update master plans. The review process would help Saudi projects remain responsive to economic, environmental and social change.

VII. CONCLUSION

This review has developed a lifecycle-based approach to regional development strategies for long-term value creation in Saudi megaprojects. The key takeaway is that Saudi giga and mega projects should be judged not only on the basis of construction completion, but also on their ability to build sustainable regional economies, including communities, resilient environments and adaptive institutions. A stream of linked decisions generates long-term value: choosing projects that match regional strengths, integrating them into surrounding systems, designing and procuring for whole-life performance, governing delivery without losing the value case, activating operations and renewing assets over time.

The review provides a six-phase framework and set of strategic recommendations aligned with the Vision 2030 priorities. It shows that lifecycle governance can help to convert capital investment into regional productivity by combining project management with economic diversification, social value, sustainability and institutional learning. The framework gives policymakers a means of assessing if mega projects are generating public value beyond their physical assets. It gives developers a practical framework for managing risks and benefits throughout the life of the project. For regional authorities it underlines the importance of coordination, local capability and feedback following opening.

The larger lesson is that the quality of Saudi Arabia's systems is as important as the scale of its projects. Giga projects can become engines of long-term value when governed as living regional ecosystems. If lifecycle strategies are Integrated from the outset, Saudi mega projects can evolve from ambitious construction programs to resilient platforms for diversified growth, cultural identity, environmental stewardship, and enhanced quality of life.

Implementation learning note

Lifecycle value also requires a pragmatic culture of learning across agencies, developers, contractors and operators. Lessons from one district, package or operating season should be documented, compared and transferred to the next phase so that the program becomes progressively more efficient and locally responsive. This learning loop is particularly important in Saudi Arabia where many developments are first-of-kind destinations and early operational data can enhance later investment decisions. Program owners should establish formal knowledge registers to cover design assumptions, procurement issues, schedule interfaces, environmental observations, safety learning, citizen feedback, operator comments and supplier performance. These registers must be reviewed before each new package tendered in order to avoid avoidable rework and to repeat successful solutions in later phases. Learning also helps Saudization by providing local teams with the accumulated project intelligence, rather than leaving that to foreign consultants. The project portfolio can grow into a national academy of regional development practice, in which evidence from construction and operation informs policy, training and investment prioritisation. This ability to learn is a strategic asset that improves confidence in delivery and makes future projects more context sensitive, financially disciplined, environmentally careful and socially accepted by regional communities. Creates a common language for comparing coastal, desert, heritage, housing, logistics and entertainment projects without forcing every region into one model. Makers can then evaluate the transferability of patterns, need for localization, and those to avoid because they undermine the value case or overtax regional systems. This improves strategic discipline, and sustains regional development associated with lived experience and delivered over time in practice not headline announcements, symbolic architecture or short-term delivery pressure alone.

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