

An Integrated Governance and Quality Management Framework for Regional Development Megaprojects in Saudi Arabia under Vision 2030

UMER AKBER
[0009-0000-1285-5741](https://doi.org/10.64388/IREV10I4-1723747)

Abstract- Saudi Arabia's plan for regional development is becoming more dependent on large-scale projects which aim to achieve infrastructure delivery, effective use of space, economic diversification, good environmental performance, and long-term service outcomes. The huge size of these projects leads to problems both in terms of governance and construction: the strategic responsibilities are spread among sponsors, regional authorities, the organisations carrying out the delivery, consultants, contractors, operators, and the communities themselves, while the duties relating to quality are usually handled by systems that are specific to each project and which do not automatically help to maintain regional value. This study presents an integrated framework for governance and quality management in respect of regional development megaprojects within the context of Vision 2030. A systematic review of peer-reviewed literature published between 2020 and 2025 is used to gather evidence on megaproject governance, construction quality in Saudi Arabia, project controls, spatial governance, stakeholder participation, and regional sustainability. The review underscores four recurring gaps: dispersed decision-making powers, quality assurance that takes place too late, a weak ability to turn stakeholder information into binding decisions, and project data that are not connected. To handle these gaps, the proposed framework joins five governance-quality areas—strategic and territorial alignment, accountable decision-making powers, lifecycle quality assurance, digital data and control, and stakeholder-regional value—to seven lifecycle stages, covering the period from strategic need to the realization of benefits. The framework regards quality as a governance capability rather than as a function involving inspection and changes the way in which success is assessed from emphasizing solely on isolated measures of cost, time, and conformance to considering traceable regional benefits. The review offers a context-appropriate structure for coordinating a portfolio of interdependent projects while guaranteeing accountability, learning, and the delivery of measurable public value.

I. INTRODUCTION

The development model being pursued in Saudi Arabia according to Vision 2030 is one in which extensive infrastructure projects, urban transformation, tourism, mobility, industrial initiatives, and environmental efforts are expected to achieve results that go well beyond the individual assets involved. As a result, regional megaprojects are required to function not only as projects and portfolios but also as spatial interventions, mechanisms for institutional reform, and platforms for generating both economic and social value. Although delivery organisations still have to manage scope, cost, schedule, safety, and technical compliance, they also need to coordinate land use, the interfaces between different kinds of infrastructure, local economic participation, environmental obligations, service readiness, and the benefits which might appear many years after construction has been completed. Recent research carried out in Saudi Arabia indicates that the institutional environment is becoming more regionally varied due to the existence of development authorities and local planning arrangements, but significant problems remain regarding coordination, transparency, and participation (Alasiri et al., 2025; Aldegheishem, 2023a). The fundamental problem is not a lack of plans or of good procedures; it is the poor integration between the institutions which authorise development and those which are responsible for guaranteeing the quality of delivery.

Project governance research is a good place to begin since it links projects with strategic-level intent, accountability, sponsorship, and connections with stakeholders. As Musawir et al. (2020) point out, governance plays a central role in turning an organization's strategy into actual project action, and Brunet (2021) shows that the governance of

megaprojects must maintain a balance between legitimacy, accountability, and efficiency instead than focusing on just one objective. Moreover, empirical studies indicate that in the case of government governance arrangements, sponsor support, stakeholder management, relational ties, and contractual functions all have a significant effect on project outcomes (Zhai et al., 2020; Khan et al., 2021; Fareed and Su, 2022; Wang et al., 2021).

All of the systems involved—such as contractor assessment, client satisfaction, change control, project controls, and quality management—rely on leadership, information, process discipline, and feedback instead than just carrying out end-stage inspection (Alshihre et al., 2020; Tuffaha et al., 2020; Trigunarsyah et al., 2023; Alotaibi et al., 2025). Research into change orders and project performance shows that design uncertainty, coordination failures, and delayed decisions lead to a series of problems affecting cost, schedule, rework, and quality (Alzara, 2022; Alsulami, 2025). While governance studies look at authority, relationships, and accountability, quality studies concentrate on standards, processes, contractor performance, and control. In the case of regional megaprojects, however, this division is artificial since governance decisions determine what is meant by quality, which requirements take precedence, when evidence is examined, and whether local or regional benefits can survive the pressures of delivery.

This review seeks to establish an integrated framework of governance and quality management that will show how regional development megaprojects in Saudi Arabia can link their strategic aims to tangible delivery results and to regional outcomes. The analysis is guided by four objectives: first, to draw together the latest evidence concerning the governance and quality factors that are relevant to the delivery of megaprojects; second, to pinpoint the recurring failures at the interfaces between public governance, the project organizations, and the quality systems; third, to relate these mechanisms toward regional development outcomes for example spatial coherence, service quality, sustainability, and stakeholder value; and fourth, to create an operational lifecycle framework that includes decision gates, the evidence needed, accountability arrangements, and learning loops. The contribution that results is both conceptual

and practical in nature since it does not assess any particular project, but instead proposes a transferable framework for coordinating portfolios whose success relies on both the quality of the assets and on institutional coherence.

2.1 Governance as a system of multiple levels of control

Megaproject governance deals with how authority is shared and used among organizations that have different resources, responsibilities, risks, and timelines. It covers more than project management. Governance sets out who can make decisions, who needs to be asked, what proof is needed, how problems are raised, and how project decisions stay linked to big-picture goals. Musawir et al. (2020) describe project governance as a way to help put strategy into action. Brunet (2021) points out that administrative frameworks always have to find a middle ground between legitimacy, accountability, and efficiency. In regional development, this fine balance gets harder because the project owner is rarely the only group with valid needs. Regional authorities, municipalities, utilities, regulators, financiers, operators, communities, and nearby projects can each have links that might change the design or the order of work.

Zhai et al. (2020) discovered that governmental governance can have an effect on the performance of megaprojects by means of the way in which authority and institutional support are structured. Khan et al. (2021) do the same thing, linking the various dimensions of governance with stakeholder management in the case of public infrastructure and showing that performance is the result of the interaction between direction and external relationships. Fareed and Su (2022) point out the importance of top-management support, which underlines the practical fact that governance mechanisms need active sponsorship rather than just meeting formal requirements. The findings indicate a difference between governance architecture and governance activation: the former establishes the roles and the forums, while the latter relates to whether those arrangements in fact resolve conflicts, assign resources, and take action when there is evidence of deviation.

Ruijter and others in 2021 indicate that trust in partnerships involved in major infrastructure projects is built up through multiple interactions and not solely as a result of contractual declarations. Wang and co-workers in 2021 discover that both relational and structural links work together with contractual aspects such as control, coordination, and modification to influence the quality of the relationship. These conclusions are important in the case of regional megaprojects since interface risk tends to lie between organisations rather than being contained within a single work package. A technically satisfactory package can still lead to a system-wide failure if the responsibilities at junctions relating to utility, mobility, land, digital, environmental, or operational areas are not clear. Good governance therefore needs a managed interface system in which the cross-organisation dependencies are visible, decisions have clearly identified owners, and any unresolved issues are raised when they reach the agreed thresholds.

2.2 Quality management as evidence of governance

In the case of megaprojects, quality management must be seen as the structured way of building confidence that the requirements will be suitable for their intended purpose, precisely reflected in the design, controlled during the procurement and construction phases, checked at the time of handover, and maintained throughout operation. Trigunarsyah et al. (2023) regard top-management commitment, facilitation, systems at both the company and project levels, evaluation, and correction as the key elements of a construction quality management system. Tuffaha et al. (2020) also find that assessing contractor performance is more effective when using both financial and non-financial indicators than relying on narrow lagging measures, and Alshihre et al. (2020) connect client satisfaction towards financial management, skilled personnel, technology, relationships, time management, monitoring, communication, and leadership.

Alzara in 2022 shows that change orders can result in disputes, additional costs and delays, the need for rework, and a decline in quality. Alsulami in 2025 does the same thing, outlining the domino effects of change orders in public construction projects. Although these problems are often regarded as issues relating to the execution of the work, their origins

could be found in incomplete requirements, decisions by stakeholders made too late, poor design coordination, or unclear approval authorities. The quality issue is therefore not only about whether the work conforms to a specification; it is also about whether the specification itself is a complete and authorized set of requirements at the right time.

Shaawat et al. (2023) suggest a set of performance quality indicators relating to contractor behaviour, and Alfalah et al. (2023) create a thorough framework for evaluating building-construction quality in Saudi Arabia. Aldossari (2025) finds that cost and schedule pressures continue to exist in Saudi construction projects, and Alotaibi et al. (2025) examine project-control effectiveness by looking at the organisational, human, and technology factors. Together, these studies show that reliable delivery is dependent on evidence-based systems which link the leading indicators—design maturity, interface closure, supplier readiness, audit findings, decision latency, and corrective-action completion—to the lagging outcomes. Shen et al. (2025) introduce a clear governance dimension by demonstrating that administrative, industry, and internal project governance can all have an impact on quality-governance performance in EPC situations. The result for regional megaprojects is that quality assurance should be incorporated into the governance gates, rather than being placed downstream as a function that is owned by the contractor.

2.3 Regional development as the boundary of value

It is possible for a single asset to fulfil its contractual obligations even if the wider area suffers from disconnected land uses, duplicated infrastructure, unavailable services, weak community legitimacy, or environmental externalities. Alshuwaikh et al. (2022) advocate for the execution of smart and sustainable city strategies in Riyadh on a lifecycle basis, connecting the strategies with practical means of delivery. Both Bouregh (2022) and Alamoudi et al. (2023) stress the importance of stakeholder and citizen participation in eco-friendly urban planning, although Aldegheishem (2023a) finds that participation can still be restricted when institutional channels fail to turn engagement into successful interaction. Aldegheishem (2023b) does likewise and points out weak

coordination and a lack of clarity in information as obstacles to urban growth management.

The sectors involved — such as transport, utilities, housing, digital systems, environmental resources, logistics, employment, and public spaces — are interdependent and this interdependence goes beyond the limits of individual projects. As Arif and Aldosary (2023) have shown, spatial strategies play an important role in urban development in the GCC, and Islam and Ali (2024) stress the need for intersectoral coordination in achieving sustainability in Saudi Arabia. Abubakar and Dano (2020) make a similar point by linking environmentally sustainable urban planning to integrated strategies that can deal with climate-related pressures. International research into spatial planning also backs this idea: Decoville and Durand (2021) indicate that cooperation may include actor networks, spatial observation, strategy, and concrete outcomes, while Chilla and Lambracht (2023) show how institutional mapping can reveal the connection between cooperation structures and territorial patterns.

The key lesson for Saudi Arabia's large-scale regional projects is not to imitate the governance structures of other countries but to regard the territory itself as a clear governance object. A regional portfolio should have a common understanding of the interfaces between projects, their cumulative impacts, the dependencies regarding services, and the benefits involved. If this kind of definition is missing, each delivery body can reasonably focus on optimising its own area of responsibility as a result achieving collectively poor regional outcomes. The governance-quality issue thus has three levels which are nested within one another: strategic governance decides on the intended regional value; project and portfolio governance convert that value into coordinated decisions; and quality management provides evidence that the requirements are being maintained throughout delivery and operation. The degree to which these three levels are integrated is at the heart of the proposed framework.

III. REVIEW METHODOLOGY

The study uses a structured integrative review that is aimed at achieving conceptual synthesis not statistical

aggregation. This review approach is based on the stress placed by Paul and Criado (2020) and Sauer and Seuring (2023) on transparently defining the questions, selecting the sources, carrying out the coding, synthesising the information, and reporting the findings. The most recent studies on planning in Saudi Arabia were used as reference points with regard to terminology, the governance structure, and the detection of themes that are important in the local context, and only literature published between 2020 and 2025 was included in the analytical corpus.

The search strategy took into account four categories of concepts: megaprojects or infrastructure governance; construction or project quality management; regional, spatial, or urban development; and those relating to Saudi Arabia or Vision 2030. To combine these terms, the system used strings that were compatible with the database and included words such as governance, accountability, sponsorship, stakeholder, quality assurance, project controls, contractor performance, regional authority, participation, sustainability, and benefits realization. Studies were kept in the selection if they had been peer reviewed, were published in English between 2020 and 2025, directly dealt with at least one of the analytical areas, and carried a resolvable digital object identifier. When it came to contextual mechanisms, evidence from Saudi Arabia was given priority, but international studies on megaprojects and on spatial governance were also included if they contained mechanisms that could be tested analytically in the Saudi context.

The initial deductive codebook was developed with reference to strategic consistency, decision rights, stakeholder interfaces, quality planning, change control, contractor capability, project controls, data traceability, regional coordination, participation, sustainability, and benefits. While going through the material, inductive subcodes were introduced covering decision latency, interface ownership, assurance timing, feedback closure, trust, and territorial spillovers. The evidence was subsequently examined at three analytical levels: the institution and the region, the portfolio and the project, and the delivery process. For instance, a late design change could indicate inadequate contractor coordination, but it might also

be due to delayed stakeholder requirements or an unresolved regional interface.

The numerical effect sizes were not calculated since the studies that were reviewed employ different methods, units of analysis, and outcome measures. Rather, emphasis was placed on mechanisms which are found in various independent areas of the literature and which are plausible at more than one stage of the lifecycle. Conceptual validity was enhanced by looking for evidence that contradicted these points: formal control was examined together with trust and relational governance; centralized direction was considered in parallel with regional and stakeholder

participation; and technical conformance was looked at together with service and territorial outcomes. The final framework was created by converting the recurring mechanisms into decision gates, responsibilities, evidence objects, and response cycles. Before being included, the reference metadata and DOI strings were verified against records from the publisher, the journal, or DOI indexes. The result is a review framework that makes clear its conceptual aim and does not present the synthesised relationships as statistically proven causal effects.

Table 1. Review lens, evidence domain, and analytical questions

Review domain	Key constructs	Analytical question	Representative evidence
Megaproject governance	Strategic alignment; sponsorship; decision rights; accountability; relational and contractual governance	How are authority, escalation, and cross-organizational interfaces governed?	Musawir et al. (2020); Brunet (2021); Wang et al. (2021)
Quality and delivery control	QMS; contractor capability; change control; project controls; conformance; commissioning	How is quality created and evidenced across the lifecycle rather than inspected at completion?	Tuffaha et al. (2020); Trigunarsyah et al. (2023); Alotaibi et al. (2025)
Regional and spatial governance	Regional coordination; spatial strategy; infrastructure interfaces; cumulative effects	How do project choices remain coherent with regional systems and adjacent investments?	Arif and Aldosary (2023); Aldegheishem (2023b)
Stakeholder and public value	Participation; transparency; operator requirements; legitimacy; requirement disposition	How is stakeholder information converted into controlled and traceable project decisions?	Boureggh (2022); Alamoudi et al. (2023); Alasiri et al. (2025)
Sustainability and benefits	Resilience; environmental performance; service outcomes; benefits realization	How are long-term regional outcomes translated into acceptance criteria and post-handover review?	Abubakar and Dano (2020); Alshuwaikhat et al. (2022); Islam and Ali (2024)

4.1. Who has the power to make decisions and the regulation of the interface

The initial finding from the synthesis is that fragmentation causes the most harm when it hides the decision-making duties rather than simply adding more actors. Since regional megaprojects always involve a large number of organizations, the real issue is whether each material interface has a designated owner, a decision-making body, a requirement for

evidence, and a time limit. Governance research has repeatedly demonstrated that strategic synchronisation, sponsorship, accountability, and stakeholder management are performance mechanisms and not administrative overhead (Musawir et al., 2020; Khan et al., 2021; Fareed and Su, 2022). In the case of planning in Saudi Arabia, broader territorial arrangements provide opportunities for local coordination, but empirical studies also point

to continuing conflicts between bureaucratic and central and local levels (Alasiri et al., 2025; Aldegheishem, 2023b).

Vertical governance connects national strategy, regional priorities, sponsor objectives, portfolio decisions, and project mandates, while horizontal governance deals with the dependencies between projects, utilities, municipalities, regulators, contractors, operators, and the communities affected. When there are failures in vertical governance, the business cases or requirements of projects move away from the intended benefits; when horizontal governance fails, there are clashes, duplicate work, delayed approvals, and incompatible systems. It therefore follows that each megaproject should have a written regional mandate which specifies not only its sponsor and business objectives as well as the external systems upon which its value relies.

A decision forum may result in quick action even if it ends up choosing a bad option when the evidence put before it is incomplete or limited. Brunet's (2021) observation of the tension between legitimacy, accountability, and competence is relevant in this context since decisions that are taken quickly have to be traceable to the requirements and impacts in question and also have to have clearly identified owners who are accountable. The framework therefore regards decision records as high-quality evidence. When it comes to major decisions, it is necessary to state the requirement or risk being addressed, the alternatives that have been considered, the cross-project impacts, the approving authority, the residual obligations, and the method of verification. In this way, governance shifts from being based on a meeting schedule to becoming an auditable chain of reasoning.

4.2 Quality assurance and control throughout the lifecycle

The other point is that good performance develops step by step, but confidence in it is usually greatest following the most important decisions have already been taken. In studies of construction in Saudi Arabia, performance is consistently linked with leadership, planning, coordination, the capabilities of the contractor, and controls (Alshihre et al., 2020; Tuffaha et al., 2020; Trigunarsyah et al., 2023). Research into change orders shows how costly it is to let unresolved

requirements or design problems move downwards, since rectifying them then becomes both expensive and disruptive (Alzara, 2022; Alsulami, 2025). It follows that a governance-quality framework should move its assurance to the earlier decisions in the lifecycle without reducing the checks carried out on construction.

When it is necessary, attention should be given to the clarity of the benefits, the service standards, the regional interfaces, and the non-negotiable constraints. At the concept and design stage, the focus is on the completeness of the requirements, the maturity of the design, systems integration, constructability, operability, and change governance. At the procurement stage, the issues concern the supplier's capability, quality planning, the obligation regarding traceability, and the alignment of incentives aligned with the outcome requirements. During construction, although inspections and tests remain important, they take place within a wider control environment that includes the approved design, closure of interfaces, the availability of competent resources, audit findings, non-conformance management, and trend analysis. Commissioning then checks the integrated performance rather than simply verifying that the individual packages have been completed, and operations confirm that the system delivered actually produces the intended measures that are lagging in nature, such as final defects, cost variance, and schedule variance, are still necessary but offer only limited scope for preventive action. Research into contractor evaluation, performance quality, building quality, and project controls has helped to build a more extensive body of evidence (Tuffaha et al., 2020; Shaawat et al., 2023; Alfalah et al., 2023; Alotaibi et al., 2025). The framework therefore incorporates both leading indicators—namely requirements volatility, overdue interface decisions, design-review closure, supplier readiness, audit recurrence, unresolved non-conformances, test pass rates, and change ageing—and lagging indicators. The aim is not to increase the number of metrics yet to link each metric to a governance response.

4.3 Stakeholder legitimacy and regional value

Stakeholder legitimacy and regional value

The third finding concerns the conversion of stakeholder information into project requirements. Participation is sometimes treated as a legitimacy

exercise separate from engineering, while technical teams may regard stakeholder input as an external source of scope change. Bouregh (2022), Alamoudi et al. (2023), and Aldegheishem (2023a) show that participation quality depends on mechanisms that enable meaningful interaction, not simply the existence of channels. Alasiri et al. (2025) additionally indicate that regional planning reforms can expand opportunities while still encountering limited influence and transparency issues. With regard to megaproject governance, the key operational issue is what takes place after information has been received. In an established process, stakeholder input is categorised as a requirement, a preference, a risk signal, a constraint, or an issue; its regional and project implications are assessed; the decision is recorded and the outcome is communicated. The process also guards the delivery teams against unauthorised changes to requirements since decisions made by stakeholders exist entered into the same configuration-control system as technical requirements. As a result, public participation, engagement with operators, input from regulators, and coordination with adjacent projects all become part of quality planning and are no longer treated as separate communication activities. AlAlshuwaikhat et al. (2022) and Arif and Aldosary (2023) stress the need for an integrated urban strategy, whereas Islam and Ali (2024) focus on the interrelationships between different policy areas in the context of sustainability transitions. Likewise, Abubakar and Dano (2020) show that integrated planning is important for achieving environmental robustness. At the project level, these considerations become specific, measurable interfaces such as access to transport, the capacity of utilities, water and energy demand, ecological limitations, the loads on local services, the continuity of public space, the effects on labour and the supply chain, and operational emissions. The framework suggested therefore needs regional value criteria to be established before the design freeze and then rechecked at commissioning and during the benefits review. This makes certain that regional aspirations do not remain as mere narrative commitments that are not linked to the acceptance decisions.

4.4 Electronic evidence, traceability and learning. The fourth point is that digitalization only generates governance value to the extent that information is structured around decisions and evidence; fragmentation arises when such systems

make use of inconsistent identifiers, status rules, or ownership conventions. Alotaibi et al. (2025) identify the organizational, human, and technology-related factors that determine effective project controls, showing that tools cannot make up for poor routines or weak leadership. Similarly, the spatial-governance studies arrive at the same conclusion: although institutional mapping and shared observation can make relationships visible, interpretation and coordination remain governance tasks (Decoville and Durand, 2021; Chilla and Lambracht, 2023).

1; A common evidence architecture should thus be set up at portfolio level by the integrated model. The main types of objects are requirements, interfaces, decisions, risks, changes, quality records, assets, tests, benefits, and lessons. For instance, a change should be linked to the requirement it affects, the design package, the schedule activity, the risk, the cost consequence, the stakeholder decision, and the verification record. With this kind of relational structure, governance forums are able to observe not just the current status but also the provenance and downstream effects of decisions. Digital evidence also has a positive effect on learning within a regional portfolio. By examining recurrent defects, approval delays, supplier weaknesses, interface types, and commissioning failures throughout various projects, it is possible to identify the underlying systemic causes. The extent to which this type of analysis is valuable relies on the use of consistent taxonomies and on there being a psychologically safe environment in which to escalate issues; it is essential that teams can report emerging problems before they turn into contractual claims. As Ruijter et al. (2021) show, trust is developed through repeated interaction, and Wang et al. (2021) demonstrate the complementarity of relational and contractual mechanisms. Hence, the framework merges transparent data with collaborative practices. A dashboard should not take the place of discussion; instead, it should direct the discussion towards verified deviations, choices, and actions.

5. A structure incorporating integrated governance and quality management. The synthesis proposes an integrated architecture consisting of five domains which support one another. The first of these, strategic and territorial alignment, sets out the regional mandate, the benefits rationale, the spatial interfaces, and the portfolio priorities. The second, accountable decision rights, specifies the sponsor's authority, the regional and

project forums, the interface owners, the escalation thresholds, and the decision records. The third, lifecycle quality assurance, incorporates requirements assurance, design reviews, supplier qualification, process audits, inspection, commissioning, and operational acceptance into the governance gates. The fourth, electronic evidence and control, ensures linkage between requirements, interfaces, risks, changes, quality records, and benefits. The fifth, stakeholder and regional value, transforms participation, operator needs, environmental constraints, and the cross-project impacts into controlled requirements and assessable outcomes. Figure 1 shows these domains as part of an integrated governance-quality structure rather than as a hierarchy of departments. Although strategic direction is positioned above the five domains, evidence flows in both directions: the regional objectives influence the requirements for projects, and evidence relating to delivery can lead to a reprioritization of the portfolio or a change in policy. The lowest layer reflects the regional outcomes—service performance, spatial coherence, resilience, sustainability, local value, and public legitimacy—since these are the reasons for having the project portfolio rather than just secondary effects. The seven lifecycle gates depicted in Figure 2 are used to put the framework into action. Gate 1 checks that there is a valid strategic need and that benefits can be achieved. Gate 2 makes certain that there is agreement at the regional and interface levels. Gate 3 gives approval on the basis of design maturity

and the stability of the requirements. Gate 4 examines the readiness for procurement and the supply chain. Gate 5 oversees the delivery process by means of process capability and control based on evidence. Gate 6 confirms the integrated commissioning, the handover, and operational preparedness. Gate 7 looks at the benefits once the service has begun. Each gate has a designated decision-maker, a minimum set of evidence, a tolerance for unresolved issues, and recorded conditions under which approval is given. Since conditional approvals are visible obligations, they are not simply the notes from an ignored meeting. Not forgotten meeting notes.

Table 2 converts the architecture into mechanisms and evidence. The key design principle is coupling: there should be a governance mechanism corresponding to a quality counterpart, and a quality measure should be accompanied by a governance response. For instance, interface ownership is matched with interface-verification evidence; sponsor authority is matched with decision traceability; supplier governance is matched with capability and conformance evidence; stakeholder engagement is matched with disposition records; and benefits governance is matched with post-handover outcome measures. This coupling makes certain that quality does not end up in a specialist silo and that governance does not become disconnected from the realities of delivery.



Figure 1. Integrated governance-quality architecture for regional development megaprojects.

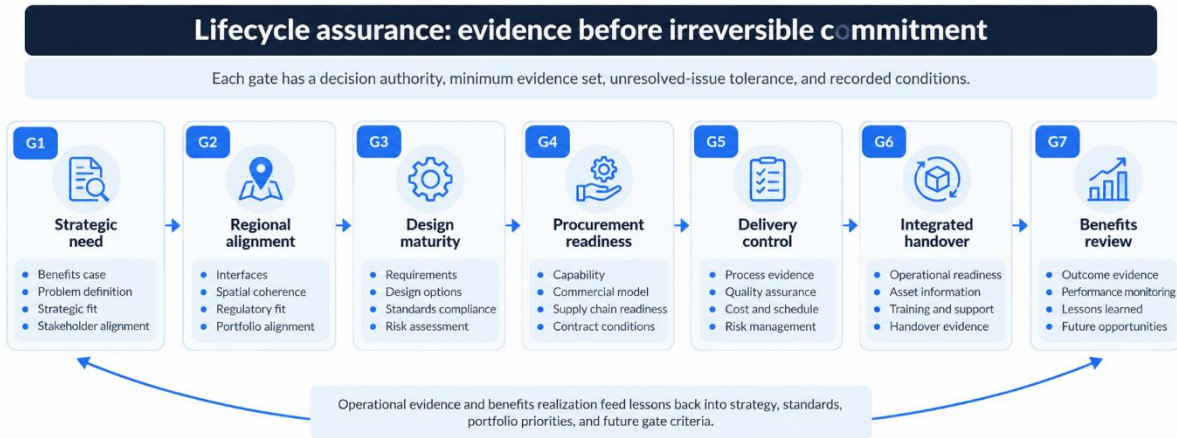


Figure 2. Lifecycle assurance and feedback model linking seven decision gates to evidence and benefits realization.

Table 2. Operational governance-quality framework for regional megaprojects

Framework domain	Governance mechanism	Quality mechanism	Core evidence / indicators	Regional contribution
Strategic & territorial alignment	Regional mandate; portfolio prioritization; interface map	Requirements baseline; benefit acceptance criteria	Mandate stability; unresolved strategic interfaces; benefit-risk trend	Spatial coherence and strategic fit

Framework domain	Governance mechanism	Quality mechanism	Core evidence / indicators	Regional contribution
Accountable decision rights	Sponsor authority; decision forums; escalation thresholds	Decision traceability; approval conditions; change authorization	Decision latency; overdue conditions; change aging	Faster accountable resolution without hidden obligations
Lifecycle quality assurance	Gate reviews; supplier governance; commissioning authority	Design assurance; audits; ITPs; NCR closure; integrated testing	Design maturity; audit recurrence; test pass rate; open NCRs	Reliable assets and operational readiness
Digital evidence & control	Common evidence architecture; portfolio exception reporting	Linked records for requirements, risks, changes, tests, assets and lessons	Traceability completeness; data aging; control exceptions	Cross-project learning and auditability
Stakeholder & regional value	Structured participation; operator and regulator integration	Requirement classification; disposition records; cumulative-impact checks	Unresolved stakeholder requirements; service-readiness indicators	Legitimacy, service quality, sustainability and local value

IV. DISCUSSION

The framework puts forward a shift in the unit of analysis from a single project to a multi-layered regional system. This is important because the Vision 2030 development programmes are characterised by interdependence: the value of a destination, a transport asset, an industrial cluster, a housing programme, or a public space depends on external networks and on other complementary investments. A form of governance that zeroes in on individual projects might be able to declare itself a success even if it passes on the unresolved risks to another project or to the operations. Regional governance must therefore pay attention to the interfaces between the various parts of the system and to the overall results without jeopardizing the accountability of individual projects. The synthesis also points out the clash between central direction and local responsiveness. Although strong sponsorship can accelerate decision-making and guarantee strategic consistency, research into regional planning has demonstrated that local coordination, well-defined institutional arrangements, and real participation have an impact on the quality of implementation (Alasiri et al., 2025; Aldegheishem, 2023a; Alamoudi et al., 2023). The framework does not resolve this conflict through advocating for the

maximum possible decentralisation. Instead, it separates the different types of decisions: bodies at the national or sponsor level are in charge of decisions relating regarding strategic outcomes, funding distribution, major standards, or cross-regional priorities; regional bodies take responsibility for coordinating spatial, infrastructure, service, and stakeholder interfaces; and the project organisations handle the delivery within the agreed limits. Escalation occurs when a decision goes beyond these boundaries. This approach sees subsidiarity as a purposeful distribution of decision making rather than as a general tendency towards centralisation or decentralisation.

A further consequence is concerned with the idea of quality. Even though traditional quality systems are necessary they are not sufficient when the main failure mode involves a well-constructed asset that fails to integrate, operate, or deliver the intended benefits. Quality must therefore include requirement quality, decision quality, link quality and evidence quality. Shen et al. (2025) present empirical support for the link between governance arrangements and quality performance, and studies of the construction sector in Saudi Arabia indicate that leadership, systems, control and contractor capability are still important at the

delivery stage. The integrated framework unites all these different levels by asking the same question at each gate: is there sufficient, traceable evidence to justify the next irreversible commitment?

In the end, transparency is seen by the framework as a way of exercising operational control. Regional dashboards are useful since they show decision latency, unresolved interfaces, recurring defects, changes, and benefit risks relating to a number of projects, but they are less useful when they present performance in the form of high-level ratings which conceal the underlying causes. The kind of model that is therefore favoured is drill-down traceability: senior governance personnel are shown only a small number of exception indicators, but each exception can be traced back to the responsible owners and to the first evidence. This enables executives to stay focused while at the same time making certain that the system is auditable.

V. THE PRACTICAL AND RESEARCH IMPLICATIONS

In order to carry out their work, the regional development authorities, the sponsors, and the organizations in charge of delivery should first agree on a common charter relating to governance quality before entering into major commitments regarding procurement. This charter should define the portfolio objectives, the taxonomy of the interfaces, the gate authorities, the minimum evidence required, the change thresholds, the digital identifiers, the escalation times, and the issue of benefit ownership following handover. Project management offices will then be in a position to function as integrators of evidence rather than simply as consolidators of reports, thus making sure that decisions, risks, requirements, and quality records remain connected among different organisations. It is essential when selecting contractors and consultants that their arrangements should be compatible with this evidence model so that the information can survive beyond the limits of individual organizations.

For researchers the framework delivers verifiable hypotheses; future research might examine whether the early closure of the interface is associated with less change downstream, whether the time taken to reach a

decision has an effect on quality as well as causes delays in the schedule, whether the inclusion of integrated assurance checkpoints reduces the number of defects detected during commissioning, and whether the ability to trace stakeholder opinions increases the sense of legitimacy. Comparative research carried out among the different regions of Saudi Arabia could also explore how governance arrangements interact with project type, institutional maturity, and regional capacity. Such empirical research would move the debate away from general comments on coordination towards specific and measurable mechanisms.

VI. LIMITS AND FUTURE SAFEGUARDS

There are three limitations to this review. The first is that since it draws together a variety of different kinds of evidence, it can only indicate possible mechanisms rather than provide estimates of the causal effect sizes. The second point is that peer-reviewed research in Saudi Arabia concerning the governance of integrated regional megaprojects is less advanced than the separate bodies of work on construction performance, urban planning, and individual governance mechanisms. The third limitation is that the time period from 2020 to 2025 focuses on the present institutional situation and does not include the older foundational theory. These limits have been intentionally set since the aim is to create a modern and context-appropriate framework. For future validation, it will be necessary to combine portfolio data, interviews, document analysis, and longitudinal project evidence, with special attention being given to whether formal governance arrangements are consistently put into practice.

VII. CONCLUSION

The kinds of regional development initiatives described in Vision 2030 require an assurance model which can connect strategic objectives, territorial co-ordination, decisions about projects, the quality of delivery and the long-range benefits. As is shown in the literature looked at in this case, governance and quality management deal with different aspects of the same problem. Governance is in charge of establishing authority, accountability, relationships and priorities; quality management establishes disciplined processes

and provides evidence. When they work separately, regional interfaces will never be taken on board, stakeholder information will not become controlled requirements, and assurance will only be available after costly commitments have already been made.

In order to close this gap the integrated framework uses five domains and seven lifecycle gates. Its basic concept is simple because every significant governance decision must be based on solid evidence and every important quality indicator must result in a governance response. When this principle is applied at the level of the regional portfolio, it makes certain that there is a traceable link from the Vision 2030 objectives all the way through to the requirements, the interfaces, the delivery records, operational acceptance and the benefits. The framework does not aim to eliminate complexity; rather it provides a formal approach by means of which complexity can be made visible, distributed, tested and from which lessons can be learned, thereby increasing the chances that megaproject investment will lead to coherent and durable regional value.

REFERENCES

- [1] Abubakar, I. R., & Dano, U. L. (2020). Sustainable urban planning strategies for mitigating climate change in Saudi Arabia. *Environment, Development and Sustainability*, 22(6), 5129–5152. [Springer](#)
- [2] Alamoudi, A. K., Abidoeye, R. B., & Lam, T. Y. M. (2023). Implementing smart sustainable cities in Saudi Arabia: A framework for citizens' participation towards Saudi Vision 2030. *Sustainability*, 15(8), 6648. [MDPI](#)
- [3] Aldegheishem, A. (2023a). Community participation in urban planning process in Saudi Arabia: An empirical assessment. *Journal of Urban Management*, 12(3), 221–230.
- [4] Aldegheishem, A. (2023b). Urban growth management in Riyadh, Saudi Arabia: An assessment of technical policy instruments and institutional practices. *Sustainability*, 15(13), 10616. [MDPI](#)
- [5] Aldossari, K. M. (2025). Cost and schedule performance in higher education construction projects in Saudi Arabia. *Advances in Civil Engineering*, 2025, 7448384. [Wiley](#)
- [6] Alfalah, G., Alasaibia, A., Alshamrani, O., & Al-Sakkaf, A. (2023). A holistic framework for assessing the quality of building construction in Saudi Arabia. *Buildings*, 13(7), 1666. [MDPI](#)
- [7] Alasiri, F., Dąbrowski, M., Rocco, R., & Forgaci, C. (2025). The impact of recent policies on the transformation of local participatory urban planning in Saudi Arabia. *Urban Science*, 9(3), 69. [MDPI](#)
- [8] Alotaibi, R., Sohail, M., & Soetanto, R. (2025). Modelling project control system effectiveness in Saudi Arabian construction project delivery. *Buildings*, 15(18), 3426. [MDPI](#)
- [9] Alshihre, F., Chinyio, E., Nzekwe-Excel, C., & Daniel, E. I. (2020). Improving clients' satisfaction in construction projects: The case of Saudi Arabia. *Built Environment Project and Asset Management*, 10(5), 709–723. [Emerald](#)
- [10] Alshuwaikhat, H. M., Adenle, Y. A., & Almuhaideb, T. (2022). A lifecycle-based smart sustainable city strategic framework for realizing smart and sustainability initiatives in Riyadh City. *Sustainability*, 14(14), 8240. [MDPI](#)
- [11] Alsulami, B. T. (2025). Change orders and their domino effect: Insights from public construction projects in the Kingdom of Saudi Arabia. *Buildings*, 15(1), 87. [MDPI](#)
- [12] Alzara, M. (2022). Exploring the impacts of change orders on performance of construction projects in Saudi Arabia. *Advances in Civil Engineering*, 2022, 5775926. [Wiley](#)
- [13] Arif, M., & Aldosary, A. S. (2023). Urban spatial strategies of the Gulf Cooperation Council: A comparative analysis and lessons learned. *Sustainability*, 15(18), 13344. [MDPI](#)
- [14] Boureggh, A. S. (2022). A conceptual framework of public participation utilization for sustainable urban planning in the Kingdom of Saudi Arabia. *Sustainability*, 14(18), 11470. [MDPI](#)
- [15] Brunet, M. (2021). Making sense of a governance framework for megaprojects: The challenge of finding equilibrium. *International Journal of Project Management*, 39(4), 406–416. [ScienceDirect](#)

- [16] Chilla, T., & Lambracht, M. (2023). Institutional mapping of cross-border cooperation: INTERREG programme analyses with KEEP data. *European Planning Studies*, 31(4), 700–718. [Taylor & Francis](#)
- [17] Decoville, A., & Durand, F. (2021). An empirical approach to cross-border spatial planning initiatives in Europe. *Regional Studies*, 55(8), 1417–1428. [Taylor & Francis](#)
- [18] Fareed, M. Z., & Su, Q. (2022). Project governance and project performance: The moderating role of top management support. *Sustainability*, 14(5), 2516. [MDPI](#)
- [19] Islam, M. T., & Ali, A. (2024). Sustainable green energy transition in Saudi Arabia: Characterizing policy framework, interrelations and future research directions. *Next Energy*, 5, 100161. [ScienceDirect](#)
- [20] Khan, A., Waris, M., Panigrahi, S., Sajid, M. R., & Rana, F. (2021). Improving the performance of public sector infrastructure projects: Role of project governance and stakeholder management. *Journal of Management in Engineering*, 37(2), 04020112. [ASCE](#)
- [21] Musawir, A. ul, Abd-Karim, S. B., & Mohd-Danuri, M. S. (2020). Project governance and its role in enabling organizational strategy implementation: A systematic literature review. *International Journal of Project Management*, 38(1), 1–16. [ScienceDirect](#)
- [22] Paul, J., & Criado, A. R. (2020). The art of writing literature review: What do we know and what do we need to know? *International Business Review*, 29(4), 101717. [ScienceDirect](#)
- [23] Ruijter, H., van Marrewijk, A., Veenswijk, M., & Merkus, S. (2021). ‘Filling the mattress’: Trust development in the governance of infrastructure megaprojects. *International Journal of Project Management*, 39(4), 351–364. [ScienceDirect](#)
- [24] Sauer, P. C., & Seuring, S. (2023). How to conduct systematic literature reviews in management research: A guide in 6 steps and 14 decisions. *Review of Managerial Science*, 17, 1899–1933. [Springer](#)
- [25] Shaawat, M. E., Alqahtani, S. M. S., Qasem, A., Jamil, R., Almohassen, A. S., & Bongwirnsu, U. M. (2023). A performance quality index to assess professional conduct of contractors at sustainable construction projects in Saudi Arabia. *Sustainability*, 15(9), 7500. [MDPI](#)
- [26] Shen, Z., Wei, X., Siraj, A., Taneja, S., Fang, L., & Li, Z. (2025). Relationship between quality governance model and performance in EPC projects. *International Journal of Productivity and Performance Management*, 74(6), 2183–2210. [Emerald](#)
- [27] Trigunaryah, B., Moohialdin, A., & Islam, M. S. (2023). Quality management system framework for construction companies in the Kingdom of Saudi Arabia. *International Journal of Productivity and Quality Management*, 39(3), 302–329. [Inderscience](#)
- [28] Tuffaha, F. M., Assaf, S., Zaben, Y. Z., & Hadidi, L. A. (2020). A framework for the performance assessment of construction contractors in Saudi Arabia. *Built Environment Project and Asset Management*, 11(2), 195–213. [Emerald](#)
- [29] Wang, G., Zhou, K., Wang, D., Wu, G., & Xie, J. (2021). Tensions in governing megaprojects: How different types of ties shape project relationship quality? *International Journal of Project Management*, 39(7), 799–814. [ScienceDirect](#)
- [30] Zhai, Z., Shan, M., & Le, Y. (2020). Investigating the impact of governmental governance on megaproject performance: Evidence from China. *Technological and Economic Development of Economy*, 26(2), 449–478. [Technological and Economic Development of Economy](#)