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Professional Research Thesis

Titled

**The impact of using risk management techniques on
the performance of infrastructure projects in the
construction sector**

Researcher

Muhammad Muftah Suleiman Al-Zawi

Supervisor signature

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SUMMARY

There is an increasing interest at the leadership and government sector levels in addressing a range of risk management issues, supported by initiatives derived from the Kingdom's Vision 2030, and in response to the associated risks and evolving events at both local and international levels. In light of this, and in an effort by the Ministry of Finance to support this direction, this concise guide has been prepared to meet the need for guidelines on good practices based on sound risk management principles. It aims to clarify the political steps necessary for building a comprehensive risk management framework that aids in achieving strategic objectives and leveraging a range of new opportunities provided by technological, environmental, social, political, and economic changes occurring globally.

This guide generally recommends the early adoption of risk management not merely as a compliance issue but as a best practice aligned with good governance. Its goal is to take all necessary steps through proactive prevention, monitoring operational processes, guiding the behavior of individuals and officials, and their decisions towards desired standards, and integrating risk management into the core activities of the organization to achieve the desired outcomes. The guide summarizes the key recommendations for designing and implementing a risk management framework and its fundamental principles in alignment with public sector entities in the Kingdom. It is important to note that the application of these guidelines varies from one entity to another depending on the nature of its work and the extent of its coverage. Each entity should work on innovating and improving its practices beyond the minimum necessary for risk management to achieve its objectives.

Introduction.

Risks are a fact of life, and preparing for them and developing the capabilities to manage them is a way to gain a competitive advantage. Studies from Cornell University indicate that approximately 35,000 decisions are made by individuals daily involuntarily, including 226 decisions about food alone. These decisions become more complex at the organizational level, considering the factors affecting goal achievement. Economic trends, global events, and changing technologies make organizations more vulnerable to risk than ever before. The collapse of some of the largest private companies over the past decade and the repercussions of global crises have highlighted the crucial importance of risk management as a tool to effectively address and manage significant risks.

Although the field of risk management initially emerged in the private sector, public sector entities have increasingly begun to integrate risk management practices into their activities. Risks today permeate every aspect of business, whether in the private or public sector, and there is a need for a comprehensive approach to risk management. This involves shifting from a reactive and compliance-based response to a proactive and forward-looking perspective, so that risk management becomes a strategic driver for performance and value addition within the organization.

This approach relies on implementing a risk management process and mechanism at the organization level, making it a shared responsibility, and providing a consistent methodology for its implementation to keep pace with external pressures and make informed choices for success and staying ahead. Thus, risk management is considered a fundamental element of

management and accountability within organizations. Since it helps in better preparing for the future and dealing with uncertainties, it cannot be separated from prioritization and strategic planning mechanisms.

Risk management helps reduce unexpected risks, identify opportunities, and sustain business operations through continuous future forecasting and scenario planning for "worst-case scenarios." It is important to note that risks and opportunities are inherently linked despite their different definitions. Effective risk management tools focus on opportunities as much as on risks, as failing to recognize available opportunities to achieve the organization's goals is a risk in itself. It should be emphasized that risk management does not guarantee the identification and addressing of all critical risks but enhances the ability to do so.

The study Problem.

Governance and Leadership:

In terms of governance and leadership within the organization, risk management activities must be an integral part of its operations and should guide and control its activities at all organizational levels. The organization needs to establish appropriate risk management governance that aligns with its business nature, scope, and culture. This includes defining roles and responsibilities for relevant parties, the mechanisms and methodologies for managing key risks, and the frequency of monitoring and reporting on the risk status.

Integration:

Risk management must be integrated into all organizational activities that support decision-making to achieve the organization's strategic objectives. This includes:

- Developing and implementing the organization's strategy and plans.*
- Planning and executing the organization's programs and projects.*
- Setting priorities for resources.*
- Supporting operational activities.*
- Performance management.*
- Managing assets of all types.*

Collaboration and Information Gathering:

The risk management function should have access to the best available information, expertise, and resources. The organization should design a risk management framework that supports a comprehensive view of its risks and decision-making and governance requirements. Risk management procedures should be implemented regularly and collaboratively, relying on the knowledge and opinions of experts and stakeholders.

Risk Management Procedures:

Risk management procedures should include the following:

- ***Risk Identification:*** *The risk identification process aims to provide a comprehensive and holistic view of the risks that the organization may face and that could impact its objectives. This process identifies all risks, whether they are under the organization's direct control or not, including risks that may seem insignificant but could accumulate and interact with other events and conditions to cause negative impacts or create positive opportunities. For example: the risk of relying solely on oil as a source of income and the opportunity to diversify income sources through other investments such as tourism and industry.*
- ***Risk Assessment:*** *The risk assessment process aims to deepen the understanding of the nature of risks, their impact levels, and their likelihood of occurrence both qualitatively and quantitatively. It includes comparing the level of risk with the organization's risk tolerance to determine the additional measures and controls required to manage the risk. The results of the risk assessment*

should be documented and shared with relevant stakeholders for review and approval.

- ***Risk Treatment:*** *The risk treatment process aims to select the most appropriate option or options to change the level of risk while considering the balance between the potential benefits of the proposed actions versus the costs and efforts required for implementation. As part of risk treatment, the organization should determine how to implement the chosen option(s), including understanding the following arrangements from stakeholders:*
 - *The basis for selecting the option(s), including the expected benefits to be gained.*
 - *The actions expected to be implemented.*
 - *The individuals responsible for approving and executing corrective actions.*
 - *The resources required for implementing corrective actions.*
 - *Performance indicators to monitor the effectiveness of the actions taken and progress in implementing corrective actions.*
 - *The expected completion date for addressing the risk.*
- ***Risk Monitoring:*** *The risk monitoring process aims to oversee risks throughout their lifecycle—before, during, and after their treatment. Continuous monitoring supports a comprehensive understanding of all risks and the effectiveness of the organization’s control environment, providing reasonable assurance regarding its risk management within acceptable levels. The organization should integrate monitoring and review results into all performance management, measurement, and reporting activities. Risk monitoring aims to:*

- *Share the results of risk management activities across the organization transparently.*
- *Provide and raise reports and information that contribute to decision-making.*
- *Continuously improve risk management activities.*
- *Engage with stakeholders.*
- ***Risk Reporting:*** *The risk reporting process aims to identify relevant parties and stakeholders in risk management, the purpose of reporting, the classification of required information and reports, the reporting mechanism, and the reporting frequency. Information and reports should support stakeholders and the organization's leadership in evaluating whether decisions are made within acceptable risk tolerance limits to achieve objectives effectively, reviewing the adequacy and effectiveness of internal controls, and determining the need to reassess strategies and objectives, or to review or change policies and/or reallocate resources to improve controls and/or adjust risk tolerance limits.*

Improvement and Development:

The organization should continuously review and update its risk management framework to ensure that risk management activities align with external and internal changes. Additionally, the organization should continuously work on improving the effectiveness and efficiency of its risk management framework. In the context of establishing risk management, the organization should assess the capability of current risk management practices and provide necessary recommendations to develop risk management capabilities and reach advanced maturity stages as outlined in the diagram below.

The importance of studying:

The rapid development in the field of risk management and the noticeable expansion in the scope of organizational activities have led to a more complex risk management process. Therefore, this section will outline the key stages for developing risk management procedures in the organization, summarized in the following diagram:

1. Assessing the Current State of Risk Management in the Organization:

- *Evaluate the current state of risk management practices in the organization and identify gaps by comparing the current state with the maturity level matrix to determine the current and desired maturity levels.*
- *Develop an action plan to address the identified gaps and achieve the required maturity levels, and build the organization's risk management capabilities.*

2. Developing the Risk Management Framework and Infrastructure:

- *Understand the organization's internal and external environment by reviewing various elements such as economic, financial, political, legislative, regulatory, social, and technological factors affecting the organization's strategies, policies, and operations.*
- *Develop and design a risk management strategy based on the organization's purpose, values, risk culture, strategic goals, and SMART objectives.*
- *Key elements of the strategy may include:*

- *Methodology for identifying and assessing risks, including defining risk categories that encompass the organization's overall risks and strategic objectives.*
- *Strategic risk pooling reports.*
- *Plans for addressing (or responding to) high risks and mechanisms for necessary reporting, including key risk indicators affecting the achievement of major strategic objectives.*
- *A comprehensive risk monitoring methodology to provide stakeholders with an assessment of the maximum acceptable risk levels.*
- *Decision-making mechanisms based on risk assessments, balancing costs and benefits to enable stakeholders to accept or reject risks.*
- *Define roles and responsibilities for all relevant parties in risk management, including a risk management matrix outlining responsibilities and duties for consultation and reporting for each risk management activity.*
- *Establish a risk management committee from senior management to oversee the implementation of these guidelines and the general risk management framework. This committee will facilitate cooperation, coordination, and management of shared and intersecting risks and contribute to formulating strategies, policies, procedures, and systems for identifying, assessing, measuring, monitoring, and managing risks.*

- *Draft a charter clarifying the principles for forming and operating the committee, its roles, responsibilities, authorities, and working mechanisms.*
- *Create a senior-level, dedicated risk management position linked to the organization's top management, responsible for leading and ensuring the effectiveness and efficiency of the risk management function. This position should be supported by a central risk management team responsible for general assistance in risk management implementation, providing technical support related to risks affecting key organizational activities, maintaining risk records, documenting observations during monitoring processes, updating top management on relevant risks and changes, and preparing periodic reports on the organization's risk management status.*

3. Designing the Organizational Structure and Operational Model for Risk Management:

- *Design the organizational structure and operational model for risk management, including communication mechanisms between relevant parties, job descriptions for all positions within the designed structure, and key performance indicators for the entire organization.*
- *Determine the standards to be followed in risk management processes and activities. There are several international standards for risk management based on best practices. The organization should adopt and develop these standards according to the nature, size, and organizational maturity.*

These standards should serve as references and basic rules for building a risk management framework to achieve advanced maturity stages. Recommended standards include:

- *ISO 31000*
- *COSO ERM Framework*

Developing and Establishing Risk Management Policies and Procedures:

This phase aims to clarify the processes, procedures, and methods of risk management for relevant stakeholders. It includes the following:

1. Developing Risk Management Policies:

- *Create risk management policies that outline the senior management's commitment and approach to risk management. Ensure that these policies are aligned with the risk management strategy and objectives of the organization.*
- *The policies should include elements of the adopted risk management standard (such as ISO 31000:2018 or COSO 2017). Example elements of risk management policies include:*
 - *The purpose and scope of risk management.*
 - *Roles and responsibilities of involved parties.*
 - *All risk management practices followed.*

2. Developing Detailed Risk Management Procedures:

- *Create and develop detailed procedures that clarify the core steps of risk management, including the specific actions to be taken and the responsible parties for implementing these*

actions. These procedures should be consistent with the risk management policies, standards, and operational model.

- *Risk management procedures should include, for example:*
 - *Context determination.*
 - *Assessment of risks related to operational activities.*
 - *Assessment of strategic risks.*
 - *Risk treatment.*
 - *Monitoring, reviewing, communicating, and consulting processes.*

Objectives of the study.

Risk Management:

To build a robust and effective risk management framework, the organization must ensure that it includes the essential elements of risk management that align with the nature of its operations and policies. The key elements that need to be developed are as follows: (governance of risk management, roles and responsibilities, risk management policies, risk management performance indicators, risk categories, risk tolerance and acceptance limits, and risk indicators).

1. Governance of Risk Management:

The governance of risk management includes both internal and external stakeholders, such as suppliers and customers, regulatory bodies, government agencies, senior executives, board members, governance committees, and all employees. To ensure a robust and effective governance model, it is important to avoid conflicts of interest in roles and responsibilities, and to directly link roles and responsibilities with authorities. It is advisable to adopt the Three Lines of Defense model as established by the Institute of Internal Auditors (IIA), where internal controls and executive management represent the first line of defense, risk management, compliance, and legal functions represent the second line of defense, and internal audit represents the third line of defense. All these lines have interrelated and direct reference to the organization's top management. The organization should develop appropriate risk management governance, considering the importance of the separation and independence of the second line of defense, the interrelationship with

senior management and the committee, as well as the direct reference to the top management. It should ensure that risk management recommendations are communicated to the risk management head, who then reports to a committee that includes as many independent members as possible, chaired by the organization's top management.

2. Roles and Responsibilities:

The organization should define and assign the roles responsible for risk management and ensure they are clearly designated as follows:

- ***The Top Executive:***
 - *Approve the risk management policy and any amendments.*
 - *Ensure the effectiveness of measures taken to ensure the proper implementation of risk management policies.*
 - *Approve risk tolerance limits, risk management strategies, risk assessment methodologies, measurement techniques, and loss assessment mechanisms.*
- ***The Risk Management Oversight Committee:***
 - *Approve the risk management framework and any amendments.*
 - *Review risk tolerance levels, risk management policies, related policies, risk assessment methodologies, measurement techniques, and loss assessment mechanisms, and approve the necessary procedures for policy implementation.*
 - *Oversee the implementation of the main risk management methodology in the organization and ensure the effective measurement of key risk indicators according to approved risk tolerance levels.*

- *Ensure that operational and financial strategies align with risk tolerance levels.*
- *Inform the committee of any issues that may affect the organization's ability to achieve its strategic, financial, and operational plans, as well as any factors impacting the organization's reputation.*
- *Provide recommendations to the committee on risk handling procedures.*
- *Allocate necessary resources to implement the risk management policy.*
- *Work with risk management to develop appropriate monitoring and action plans to mitigate the impacts of risks.*
- *Monitor the effective implementation of policies and approve subsidiary policies derived from the main risk management policy.*
- *Provide recommendations and advice on risk management strategies, methodologies, measurement techniques, and loss assessment mechanisms.*
- ***Risk Management Department:***
 - *Propose risk management strategies, prepare and propose risk tolerance limits, policies, and procedures, and the overall risk handling framework, including risk assessment methodologies, measurement techniques, and loss assessment mechanisms, and submit these to the committee.*
 - *Develop procedures necessary for implementing the risk management policy.*
 - *Oversee the implementation of the risk management policy and evaluate and monitor its application, ensuring the*

department has access to necessary information to perform its duties according to its authority and responsibility.

- *Supervise the training and awareness programs for employees to ensure adherence to the risk management policy.*
- *Monitor the application of risk tolerance limits, risk management strategies, related policies, risk assessment methodologies, measurement techniques, and loss assessment mechanisms, and report to the committee or top management, ensuring the escalation of risks according to risk levels.*
- *Ensure comprehensive evaluation of any significant new initiatives or changes in services or systems.*
- *Prepare necessary reports and submit them to relevant parties in the organization to support decision-making processes.*

3. Risk Management Policy:

The Risk Management Policy outlines the organization's ongoing commitment from its leadership to risk management. This policy includes, for example: the purpose of the organization in managing its risks, the objectives of risk management and its scope, the stakeholders involved in risk management, their roles and responsibilities, and the general provisions to be followed in risk management activities and procedures.

4. Risk Management Performance Indicators:

The organization should monitor and evaluate the effectiveness and efficiency of its risk management performance by defining key performance indicators. These indicators provide the leadership with regular

information about the performance and effectiveness of the adopted risk management activities and practices within the organization. The aim of defining and monitoring risk management performance indicators is to continuously improve and develop risk management and to understand the organization's ability to avoid negative impacts of risks and to exploit the positive effects resulting from events and changes, which are known as opportunities.

5. Risk Classification:

The organization should classify risks into categories according to the nature of its work and activities, taking into account internal and external factors. Risk classification helps identify sources of risk that could impact the organization's operations, allowing the development of contingency plans to mitigate their effects or reduce their occurrence. Below are some examples of risk categories:

6. Risk Tolerance and Acceptance Limits:

Risk tolerance and acceptance limits should be clearly defined to help the organization make sound decisions that align with its strategic objectives. These limits serve as a tool to assess strategic decisions and help identify the risks associated with new opportunities for the organization. Risk tolerance and acceptance limits can be defined based on major global standards and practices.

7. Risk Indicators Limits:

The organization should develop Key Risk Indicators (KRIs) to measure the most significant and highest risks it faces. These indicators act as an

early warning system, triggering when the organization's exposure to risks exceeds acceptable levels. This helps risk management, executive management, and the committee monitor these risks and take early actions to prevent or mitigate crises. KRIs should be measurable, with established thresholds for each indicator. If these thresholds are exceeded, relevant parties within the organization should be notified. It is important to note that indicators should not cover all the risks faced by the organization but should focus on the most critical risk management indicators. These indicators vary from one organization to another, aligning with the organization's goals and priorities. A risk that is critical to one activity may not be as significant to another, and a risk that was a major concern in the past may not be as critical currently.

Study hypotheses and questions.

Assumptions and Considerations for Successful Risk Management:

- ***Independence of Risk Management from Executive Management:*** Risk management should operate independently from executive management, which serves as the first line of defense.
- ***Linking Risk Management Performance with Organizational Performance:*** Risk management performance should be connected with the overall performance of the organization and its employees and executive management.
- ***Support, Participation, and Commitment from Leadership:*** There must be support, participation, and commitment from the responsible leaders within the organization to implement the risk management strategy and framework.
- ***Establishment of an Official Risk Management Committee:*** Create an official committee consisting of a leadership team dedicated to risk management. This committee should highlight the formal approach and support the coordination of all parts of the organization for this purpose.
- ***Comprehensive Understanding of Objectives and Activities:*** Obtain a comprehensive understanding of the organization's objectives and activities, and the associated risks and mitigation mechanisms.
- ***Understanding and Managing Internal and External Risks:*** Work to understand, analyze, assess, and proactively manage both internal and external risks, mitigating threats that could impede goal achievement and business continuity.

- ***Identification and Management of Interconnected Risks:*** Identify and manage interconnected risks involving various internal and external parties in a comprehensive and systematic manner.
- ***Gradual Implementation of the Risk Management Framework:*** Follow a phased approach in implementing the risk management framework, starting with a simplified approach that can be developed based on gained experience and knowledge.
- ***Integration of Risk Management into Core Administrative Processes:*** Integrate risk management within the core administrative processes of the organization, including strategic planning, goal setting and achievement, and project implementation.
- ***Focus on Risk Identification, Analysis, and Assessment Methodology:*** Emphasize the methodology for identifying, analyzing, and assessing risks rather than solely focusing on current challenges faced by various agencies and departments.
- ***Provision of Adequate Resources:*** Ensure adequate resources are available for establishing risk management functions, developing appropriate capabilities, and maintaining continuity.
- ***Continuous Efforts to Enhance Organizational Culture:*** Continuously work to enhance the organization's culture and raise awareness among employees and executive management through training workshops and disseminating awareness messages on risk management elements.

The limits of the study:

Spatial boundaries: Arab Republic of Egypt.

Time limits: 2021-2024

Study plan.

The study plan will be organized as follows:

Chapter One: Theoretical Framework and Scientific Concepts

Section One: Risk Management and Its Importance

- 1. Definitions of Risk Management*
- 2. Importance of Risk Management*
- 3. Objectives and Processes of Risk Management*

Section Two: Internal Control and Risk Management for Public Integrity in the Middle East and North Africa

- 1. Internal Control Systems in the Middle East and North Africa*
- 2. The Need for Improving Legal Arrangements and Governance in the Economies of the Middle East and North Africa*
- 3. Challenges Facing the Economies of the Middle East and North Africa in Enhancing Internal Control and Risk Management*

Section Three: Environmental Issues Related to Infrastructure Development

- 1. Introduction*
- 2. The Seven Stages of Infrastructure Development*

Chapter One: Environmental Impacts and Sustainability Effects Arising from Infrastructure Development Projects

Section One: Identified Impacts Classified into the Following Categories

- 1. Land*
- 2. The Relationship Between Living Organisms and Their Environment (Ecological Study)*
- 3. Water Materials and Aquatic Environment, Energy and Thermal Emissions from Greenhouses and Other Airborne Emissions, Human Environment*

Section Two: Stages of Infrastructure Development

- 1. Defining Environmental Policy Requirements and How to Meet Them*

2. *Infrastructure Construction*
3. *Decommissioning Infrastructure/Removing It from Actual Service*

Chapter Two: Approaches to Governance of Environmental Impacts of Infrastructure

Section One: How Can Oversight Bodies Review Environmental Impacts and Sustainability Effects of Infrastructure Projects

1. *Review of Planning Work for Infrastructure Projects According to the National Approach*
2. *Review of Measures Taken to Address Environmental Impacts of Infrastructure*
3. *Review of the Contribution of Infrastructure Projects to Achieving Environmental Goals*

Section Two: Sustainable Development, Decent Work, and Green Jobs

1. *Sustainable Development and Decent Work*
2. *Environmental Challenges - Their Economic and Social Costs*
3. *Social Challenges and Economic Disruptions: Environmental Connections*

Section Three: Global Industry Standard for Waste Management

1. *Affected Communities and Integrated Knowledge Base*
2. *Design, Construction, Operation, and Monitoring of Waste Facilities*
3. *Management and Governance*

Conclusion.

What is the Use of Risk Management in Infrastructure?

The study aimed to understand the practices and processes of risk management, including risk analysis, risk assessment, decision-making, risk response, continuous monitoring, and knowledge management of risks, and their role in developing business management within organizations. The study sample consisted of managers, deputy managers, and senior administrators in organizations. The study utilized a questionnaire as a data collection tool and employed a descriptive methodology and the Delphi method. The Delphi rounds involved experts, and the study reached the following conclusions:

1. Regarding Risk Analysis:

- *There is a weakness in the management's ability to classify risks according to their positive impact, with a percentage of (74.1%). The institution's management relies on specialists in risk analysis only (77.8%), and there is a weak classification of risks based on their impact on institutional operations, with a percentage of (85.2%).*

2. Regarding Risk Assessment:

- *The strategic management lacks the capability to confront potential risks with a percentage of (69.4%). There is a scarcity of risk detection and prediction by the institution's management, with a percentage of (72.2%). Additionally, there is limited reliance on experts in risk management and assessing its impact on business management within the institution, with a percentage of (70.4%).*

3. Regarding Decision-Making and Risk Response:

- *The institution's management lacks proposed alternatives to avoid the risks facing the institution's business, with a percentage of (80.7%). There is a deficiency in setting decisions as institutional objectives to address risks and working to achieve them, with a percentage of (91.7%). Furthermore, there is weakness in evaluating decisions made and comparing them to choose the least costly and risky option for managing the institution's business, with a percentage of (82.6%).*

4. Regarding Continuous Monitoring:

- *The management's implementation of risk management procedures is weak, with a percentage of (92.6%). There is a weakness in the management's role in monitoring to achieve goals in risk response, with a percentage of (95.4%). Additionally, the management lacks an executive role in handling the most severe crises for the institution first and then the less severe ones, with a percentage of (96.3%).*

5. Regarding Knowledge Management of Risks:

- *There is limited use of cognitive technology by the management to identify potential risks, with a percentage of (88.9%). The management lacks a knowledge database specific to risks faced by the institution in the past to address and mitigate them, with a percentage of (88.0%). Furthermore, there is weakness in the management's role in recording annual and seasonal risks faced by the institution and methods to address them for future reference, with a percentage of (82.3%).*

Results:

- *Risk Management and Its Importance: Objectives and Processes of Risk Management*
- *Internal Control and Risk Management for Public Integrity in the Middle East and North Africa*
- *Environmental Issues Associated with Infrastructure Development*
- *Infrastructure Development*
- *Governance Approaches to Managing Environmental Impacts of Infrastructure*
- *High-Level Oversight Bodies Reviewing Environmental Impacts and Sustainability Effects of Infrastructure Projects*
- *Sustainable Development, Decent Work, and Green Jobs*
- *Global Industry Standards for Waste Management*

Recommendations.

Students' Use of Internet for Research

Undergraduate students at the university conduct research on the internet to find the information they need to complete assigned projects or term papers. Graduate students working on research projects may view research as the collection or analysis of data relevant to their research. Business managers and consultants may research institutional problems such as supply chain issues or identifying customer purchasing patterns.

Science refers to the systematic and institutionalized body of knowledge in any field of inquiry, which is acquired using scientific methods (the scientific methods will be described later).

Project Summary

A detailed project definition provides the official basis for assessing whether the proposal is feasible and achievable. It outlines the infrastructure objectives within a general framework and includes user requirements, technical, administrative, and other relevant information. It should contain enough details about any decision to proceed with or abandon the project. It is likely to include:

- Background on the need for infrastructure.*
- The preferred option.*
- Key stakeholders, especially service users.*
- Expected benefits and how they will be measured.*

- *Impacts of the development and how they will be avoided or mitigated.*
- *Estimate of the overall effort required and who will carry it out.*
- *Preliminary campaign on the required activities.*
- *Key factors, including critical stages.*

It examines various aspects of the infrastructure project in sufficient detail to reach a final decision on whether to proceed or not. A feasibility study assesses whether the infrastructure is technically viable, confirms its expected costs, and outlines the methods to be used for design and construction.

- ***Budget and Project Scope:*** *Will the proposed project be completed within the required budget?*
- ***Site Analysis:*** *Is the chosen site suitable?*
- ***Best Strategy:*** *What is the best strategy for implementing the project at a specific site?*
- ***Cost, Planning, and Design Constraints:*** *What are the cost, planning, and design constraints faced by the project?*

Business Case

A business case provides an evaluation of the return on investment, cost, risks of alternative options, and sound reasoning to determine the best course of action. It may include the valuation of costs and environmental benefits identified during the feasibility study.

Delivery Model

The delivery model determines the best way to achieve the political goals set from the outset and includes potential options for governments such as: direct delivery by central government management, delegation to public sector bodies such as special agencies or local authorities, contracting to the private sector through partnerships with external contractors, or public-private partnerships. The use of incentivized mechanisms to encourage or stimulate private investment in the project or incentives for it.

Choosing a delivery model has lasting implications for the mechanisms available to the government to influence the design, construction, and operation stages. If the government considers that the infrastructure should be publicly funded, it also affects the value for money of the project. For example, users might have limited means to influence the infrastructure specifications, or the government may decide to undertake the infrastructure projects itself to maintain control over the design and operational phases and manage key risks, including environmental risks. Alternatively, the government may consider achieving its goals through outsourcing infrastructure development.

The reviewer:

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