

# **Risk Prevention and Management in Public Investment Projects: A Case of Teturi Road And Bridge Construction Project in the Democratic Republic of Congo**

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## **Abstract**

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Anticipating and knowing how to manage risks spares an organisation or project from disasters and dangers, loss of productivity and increased administrative burdens, and unfortunate legal disputes. The study examined the prevention and risk management of the collapsed 50m-long Teturi bridge construction project on the Mambasa road, an agricultural service road and an economic lifeline in Ituri province, Democratic Republic of Congo. Although the collapse of the Teturi Bridge disappointed many people, fewer were interested in knowing the real causes of the collapse. This work further discusses the consequences of a lack or poor assessment of risks and uncertainties in the design and execution of public investment projects. To obtain the necessary information, those responsible for the execution of the project were interviewed. The study found that the committee responsible for the execution of the project did not take sufficient time to prevent and thoroughly assess the possible risks that confronted the project. There was also no intentionality in coming up with mitigating measures for possible risk. The study also makes relevant recommendations on public investment projects' risk prevention and management.

**Keywords:** Risk, Public Investment, Risk Management, Public Sector, Teturi Road and Bridge, Democratic Republic of Congo (DRC)

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## **Introduction**

Several authors have expressed their points of view on risk prevention and management. M. Hutter B., in his work *Anticipating and Organizing Risk Management*, mentions the importance of expecting and managing risks enables organizations to avoid disasters and



dangers (M. Hutter, 2010, p. 4). Risk management is a process that involves identifying, evaluating, and controlling risks and coming up with a defensive strategy to deal with the unexpected. The basic risk management methods include avoidance, retention, sharing, transfer, and loss prevention and reduction (Yu, 2021, p. 1). One of the essential concepts in this world of risk management is that “any project carried out by governments is exposed to loss or danger, and that the government must take precautions to ensure that the project activities achieve the objectives of interest” (McManus, 2012, p. 1). By risk, we mean “a randomness of a variable that can be reasonably described by an objective probability distribution;” it is “a variability that we find difficult to describe by objective probability distributions” (Friberg, n.d., pp. 6).

There are several types of risk, depending on the nature of the project, the geographical area and even each country’s administrative and organisational level. The following elements threaten the realization of public investment projects: political conflicts or unrest, and inflation, among others. The term “public investment” is used to refer to “the operations of the public administration in the context of spending for the public good by building a public infrastructure of economic interest, such as roads, airports, ports, railways, clean water supply and educational institutions for young people, gaming centers, even hospitals and prisons” (Shakira Mustapha & MCEVOY, 2009, p. 8). Public investments by the government are essential because they address common problems in society using public resources. Risk prevention and management in the case of the construction project of the road and the Teturi bridge consists in avoiding any problem which would prevent the realization of the project for the good of the citizens.

In summary, this study assesses the prevention and management of risks in the construction project of the Teturi Bridge, with respect to recognised standards of a project of the type of construction of the bridge, given that the Teturi Bridge collapsed sometime after its construction. In this study, we look at the importance of identifying risks, understanding how to handle risks, managing risks and uncertainties, installing mitigation strategies and knowing how to analyse risks that a project faces. All these elements will help examine how the contractor and all those responsible for this project handled the process.

The main concerns of this work are summarized in the following two questions:

1. How was the prevention and management of possible risks carried out in the construction project of the Teturi Bridge?
2. What should be done to adequately prevent the severe consequences of risks in public investment projects like the Teturi Bridge?



To obtain the necessary data and information, we interviewed those responsible for the execution of the project as well as the construction engineers who assessed the collapsed bridge, blaming the nature of the construction materials and the quality of the mixture of cement, gravel, sand, and others that the contractor used.

## Literature Review

This section surveys studies on risk prevention and management to shed light on what is involved in public investment projects to avert problems like the case of the collapse Teturi Bridge.

### I. Types of Risk in the Implementation of Investment Projects

As discussed below, the concept of risk in management control can be approached from at least three aspects: financial, environmental, and organisational.

#### a. Financial Risk

One of the essential tools in the management and execution of the project is finance, “financial risk is a more or less foreseeable inventive danger in the management and use of an organization’s funds, theft, embezzlement, loss of value of currencies in the market for goods and services,...” (Dublet, 2013, p. 30). For Corelli, “financial risk is defined as the possibility of a negative outcome, as a result of the specific choice of how to manage and use funds, in all areas of life” (Corelli, 2015, p. 1). In managing the project, the relevant financial risk could involve handling huge sums of money without using banks for transactions and the lack of transparency during purchases.

#### b. Organizational Risks

Every public or private project is exposed to several organizational risks. That is, “the lack of a clear statement of goals and objectives so that the organization or project can identify potential events affecting their achievements” (D. Grantz & R. Philpott, 2013, p. 63). Problems and drawbacks arising from policies, procedures, work practices and organizational culture are organizational risks. These risks emanate from the lack of effective strategies in the management of skills; they are “threats and negative effects or problems that can occur as a result of an event or action in a business or organization” (*Managing Risk, The Human Resources Contribution*, 2005, p. 61). In the Teturi context, the uncompetitive recruitment of workers brings skill gaps among the workers and eventually realizes the quality of the product. Therefore, establishing the regulations governing the personnel and the activities is a critical project component.



### *c. Environmental Risks*

The environmental risks to implementing a project include pollution, radiation, land use patterns, the working environment and climate change. It is argued that these risks are sometimes “determined by nature and its mismanagement by man, such as energy, industry, agriculture, transport and land use” (Davies, 1996, pp. 5–10). According to Piers Edgell, for a layout design to really come to life, environmental risks are called “the risks of flooding both now and in the future; the instability of the ground although it is sometimes not visible to the naked eye; the ground contaminated by certain natural substances such as radon, lead,...; unexploded munitions and bombs... ” (Edgell, 2020, p. 1). The environmental risk for the present case study involves flooding because of frequent heavy rains, mining risks, and soil erosion. Therefore environmental risk assessment is vital to factor in such possible and inevitable risks.

## **II. Risk Management**

As mentioned above, risk management entails developing a set of precautions to ensure that “project activities achieve the project’s objectives” (Adoko Obicci, 2017, p. 244). It is difficult, if not impossible, to foresee all the risks, which explains the complexity of managing investment projects in the public sector. However, rigorous risk analysis is a sure way to guarantee project success. There are five steps in the risk management process, as described below.

### *a. Identification of the Risks*

The project agents of government projects should identify all risks involved in a given project. It is recommended that a comprehensive risk assessment be conducted at the outset of a project by bringing all stakeholders on board (Adoko Obicci, 2017, p. 217). The risks should be documented, ranked, tracked, and updated throughout the delivery process. It should be noted that risk identification is continuous and new risks can arise in the process (*Guidance on Risk Analysis Tools and Management Practices to Control, Transportation Costs.*, 2010, p. 24). Thus, in the case of the present project, it would be a question of bringing together all the stakeholders (i.e. the workers, the government representatives, the traditional chiefs and the committee coordinating the project) to identify the various possible risks and to acquire as much information as possible.

### *b. Assess and Prioritize the Risks*

Essentially, risks are different to the degree of danger they pose; it is thus critical to evaluate and prioritize risks. Davies gives hindsight, “Risk assessment was first developed to estimate



the probabilities of an accident in a particular type of technology (e.g. a nuclear reactor), risk assessment methodology has been most developed to estimate the carcinogenic effects of chemicals based on laboratory tests on rodents. The general term ‘risk assessment’ is often mistakenly equated with this cancer risk assessment.” He added that Risk assessment is “a set of analytical techniques for answering the following question: How much damage or injury can be expected to occur because of a given event?” (Davies, 1996, p. 6). The assessment looks into the impact of each risk, including vulnerabilities and threats.

*c. Risks Must be Addressed*

It is not enough to note that different risks are probable; treating them is to seek solutions to eradicate them and mitigate their effects on the objectives. Risk treatment is “the process of planning the risk response, approving the risk response and implementing the risk treatment plan” (Razzac, 2023). Risks must be addressed by implementing counter strategies to deal with these risks. This involves their elimination, their limitation and the revision of the project to circumvent more dangerous risks (Nicolle & Prota, 2017, p. 1).

*i. Eliminate the Risk*

In the risk management process, there comes the stage of risk elimination. That is, taking action to repel the threat by removing the causes of the risk (Heldman & Bacca, 2007, pp. 200–209). It can be done by “using the scope of the project, by adding resources, by modifying the schedule or by using more proven approaches” (Ayers, 2003, p. 106). In the case of the present project, we can mention good recruitment of qualified and competent personnel, good water channelling on both sides of the road and permanently, to fight against the effects of rainwater on the dirt road.

*ii. Limiting the Effects of a Risk*

We have pointed out above that it is difficult to prevent certain risks from occurring, but “it is possible to limit their negative impact on the project and make them more bearable”(Ayers, 2003, p. 106). Limiting the effect of the risk “includes the actions put in place to address issues and the effects of those issues on a project” (Yu, 2021, p. 1). In the present case study, limiting the effects of risks means having the flexibility to repair the sub-structures if they are destroyed and not believing that because the construction work is done, all workers can be demobilized from the project.



#### *d. Monitoring and Controlling Risks*

Risk monitoring and control operations constitute a precaution against disaster in the management of projects of public interest. Nicole and Prota remark, “Risk monitoring must be done throughout the project. As your project progresses, the potential risks change. Some may disappear, others may appear, those considered low may become real threats and vice versa” (Nicolle & Prota, 2017, p. 1). In addition, “Good project management is necessary, but not sufficient, project reviews help sponsors, teams, and other stakeholders understand what is really going on in their projects. Insurance provides this information on the fears, the opportunities we must realize them in an effective way” (Oakes, 2016, p. 17). For the present case study, this means regularly reviewing the risks by updating the list of potential threats while reassessing them and ensuring that the preventive actions are always up to date or adapted. It is important to assign one or more people to this task, to ensure that they have a good working environment and that it is carried out rigorously so that many risks are eliminated or even reduced.

#### *e. Capitalize and Document Risks*

For this last step, Nicolle & Prota advise “ put a lot of consideration in the know-how of the people with whom we have worked to manage and evaluate different cases of risk and who have acquired experience in this field” (Nicolle & Prota, 2017, p. 1). Proper documentation is necessary to support risk control throughout the life of a project. The main elements of this documentation are the risk management plan, risk analyses, risk reports, documentation of the state of risks, risk reviews, risk identification or assessment, as well as lessons learned from risk (Bartlett, 2004, p. 59). These records help facilitate the decision-making process, both within the framework of the project and within that of the company. Significantly, this phase minimizes the waste of time and money and prepares to manage risk effectively without taking a lot of time to analyze and understand it as if it were a new case.

### **III. Challenges Related to the Management of Uncertainties and Risks**

#### *a. Managing Uncertainties*

Risks related to conflict or political unrest, and inflation are sometimes hard to predict, especially in countries prone to conflicts, political unrest, economic crises, significant currency depreciation and widening budget deficits (Peron Nicholls, 2019, p. 15). In DRC, major challenges confront the country and the forecasting of uncertainties. First, regarding the lack of funds for the project, we noted that risk management is the set of strategies and operations that deal with risks, and one of the examples was the fact of hiring a monitoring



team for the permanent maintenance of the road in its dilapidated parts. However, there is no funding to support such teams; thus, managing uncertainty and risk becomes a challenge. A second example is the security situation; the region of Mambasa-Ituri is a place where there are many cases of insecurity, killings, and rebellions; for the record, currently, it happens that rebels attack the population, killing them, and after committing this crime they flee, with this situation, it is a great challenge to manage all these situations.

Another element of risk management challenge in the project is the heavy rains; naturally, it rains a lot in this area and sometimes floods damage the infrastructure. Inflation is also part of the risk management difficulty in the sense that occasionally budgetary forecasts are made for a project operation, and unexpectedly, prices of everything go up exaggeratedly, which often happens in DRC. The other risk management challenge is when you don't have people who are experienced in project management, in which case it won't be easy to manage the project in all its details. According to James, to make decisions during uncertainty and rapid change,

You need to use trend analysis rather than historical data when making decisions and planning and be flexible and adaptable in the approach or way you do it. Ensure you have a clear vision and strategy. Communicate constantly and effectively. Always anticipate problems and challenges; Be open to new ideas and change; Strive to stay ahead of the curve. Be prepared to make quick decisions; Prepare for failure (James, 2023, p. 1).

Material, strategic, and institutional uncertainty make it very difficult for social actors to act in the face of complex societal problems, “Managing uncertainties means studying how to avoid them by collecting information about them (research or involving experts), carrying out top-down measures aimed at simplifying the social context in which the problem is dealt with” (Klijin, 2004, pp. 7–8). Ideally, managing uncertainty in the Teturi Bridge project involves a set of steps by which project coordinators create understanding in situations in which things are unpredictable, unusual, unexpected or unusual occurrence and when it is necessary to determine the appropriate direction; it is not known when heavy rain, erosion can come with severe consequences.

#### *b. Mismeasurement of Known Risks*

Having understood that there are no objectives without risks and uncertainties in any project, we believe that it is always necessary to pursue the project's objectives by trying to control the risks. In other words, by estimating the determinants of their components and their probable impacts in order to take precautions to prevent them. A poor measurement is explained by “the difficulty of taking into account all the risks in a risk measurement system,





or of fearing the cost of risk management and judging not to consider them, and also, being limited in the perfect forecast of events future” (Hardy R & Saunders, 2022, pp. 30). Mismeasurement of known risks are also “mistakes often made by risk managers and project managers in assessing the likelihood or magnitude of losses and disasters” (Stulz, 2008, p. 1). For example, on the Teturi Bridge construction project, it is difficult to imagine all the possible risks, natural disasters, erosions, and technical hazards during construction when there is poor risk assessment and management.

#### **IV. Risk Mitigation Strategies**

As mentioned above, any project in the private and public sectors must expect uncertainties and risks. Hence, we must consider “reducing or how to mitigate the risk that cannot be eliminated” (Moran & Youngdahl, 2008, p. 52). The following part surveys some tried and tested strategies that can help mitigate risks and even anticipate the consequences related to risks. These strategies may be helpful to a project by identifying, evaluating, and monitoring the risks and all the resulting consequences.

Risk mitigation is a process of planning and developing methods and options to reduce threats or risks to project objectives. A project management team can implement risk mitigation strategies to “identify, monitor and assess the risks and their consequences inherent in the realization of the specific project”(5 Key Risk Mitigation Strategies, n.d., p. 1). A case in point for the construction of the Mambasa road by creating a new passage which can be called a secondary passage or emergency passage for these road construction projects. Risk mitigation also includes the actions put in place to deal with issues and the effects of those issues on a project, and the five opportunities for mitigating risk are summarized as follows: Assuming and accepting the risk; Avoiding risks; Controlling the risks; Transferring the risks and monitoring the risks again and again (Kit, 2017, pp. 13–14). Therefore, it is necessary first to identify the potential risks for a project; then, it is essential to plan for the risk by implementing strategies to help reduce or stop the risk.

##### *a. Assume and Accept the Risk*

The acceptance strategy may involve collaboration among team members to identify possible risks of a project and determine whether the consequences of the identified risks are acceptable. The relevant persons commit to,

Identifying risks and associated consequences, team members can also identify and assume possible vulnerabilities that risks present. This strategy is commonly used to identify and understand the risks that can affect the output of a project, and the purpose of this strategy is to help bring those risks to the





attention of the business so that everyone working on the project has a common understanding of the risks and consequences involved (*5 Key Risk Mitigation Strategies*, n.d., p. 1).

#### *b. Risk Avoidance*

Note that the avoidance strategy presents a project's accepted and assumed risks and consequences and the possibilities of avoiding these accepted risks. One way to implement the avoidance strategy is to plan for the risk and then take action to prevent it. For example, to mitigate the risk of producing a new product, a project team may decide to implement product testing to prevent the risk of product failure before final production approval.

For the context of the Mambasa road project, to prevent traffic from being completely cut off when the bridge is destroyed, the project provides for the acquisition of canoes to help cross the river. In terms of mitigating performance risks, such as insufficient resources to do the work, inadequate design, or poor team dynamics, it can help a project team identify possible ways to avoid these risky situations that can lead to project performance issues. Practically, “a production team can test more durable materials to avoid the risk of failure with less durable materials, which is very important in large infrastructure construction projects. Likewise, if there is a performance risk in the dynamics of the project team, interactive team management can be implemented to avoid problems within the team” (Kit, 2017, pp. 13–14). Avoiding schedule implications can be implemented by identifying issues that may arise that would affect the project schedule. For example, essential milestones, due dates, and final delivery dates can be affected by risks, such as being too optimistic about a project's timeline. The avoidance strategy can help the project team plan ways to avoid schedule conflicts, such as creating a managed schedule that illustrates specific time allocations for planning, design, testing, and new testing and making the necessary changes. Time off could also be scheduled to avoid time management risks. Avoiding cost issues requires another implementation of this strategy. A project management team can outline all expected costs and account for any expenses that may arise to prevent the consequences of going over budget.

#### *c. Control the Risks*

Regarding risk control, team members can also implement a control strategy when mitigating risk for a project. According to Moran and Youngdahl, “This strategy works by considering identified and accepted risks and then taking steps to reduce or eliminate the impacts of those risks.” (Moran & Youngdahl, 2008, p. 52).



Talking about controlling the risks on costs, a project management team can implement control methods to detect possible problems with the project budget. For example, “Risk mitigation controls may include a focus on management, the decision-making process, or finding loopholes in project funding before problems arise” (*5 Key Risk Mitigation Strategies*, n.d., p. 1). It can also give the project management committee insight into how funds are delegated, and if there is a risk of budget overruns, the team can identify it before it happens and act; and come up with measures to control it, such as reducing expenses or eliminating a resource that may prove too costly for the project.

On the planning implications, they can be controlled by diversifying the tasks and the time it takes to accomplish them within the project team; “Control methods could include tracking the time it takes to complete each task and assigning specific tasks to team members based on the time spent on each task” (Moran & Youngdahl, 2008, p. 52). The project team can also consider time management strategies to help control any risk to the project schedule. Implementing performance risk control strategies can include ways to conduct a team’s day-to-day tasks, ways to maintain quality for new products, and steps to take action to control issues that could affect the overall performance of a project.

#### *d. Transfer of Risk*

When risks are identified and addressed, mitigating consequences through transfer can be a viable strategy. It is argued that “The transfer strategy works by transferring the pressure of risk and consequence to another party. However, this can have its own set of drawbacks, and when an organization implements this risk mitigation strategy, it should be done in a way that is acceptable to all parties involved”(5 *Key Risk Mitigation Strategies*, n.d., p. 1).

Risk transfer “occurs when one party pays a second party some cost (e.g. a risk premium) in exchange for coverage for uncertain losses” (Groome & Sook Kim, 2004, pp. 16–22). For construction projects, this is because the project’s owner, the government in the case of public sector investments for the community interest, pays the risk premium to the contractor handling the project’s construction or technical part.

#### *e. Monitors and Monitoring Risks*

Monitoring the risks and consequences of projects involves monitoring and identifying any changes that may affect the impact of the risk, noting that changes are always permanent. Work teams can use this strategy in a standard project review plan. Monitoring project planning risks involves “considering the risk management plan, risk register, approved changes, and performance reports to monitor project progress. These include risk-based



audits, technical performance measures and variance and trend analysis” (Willey, 2011, p. 282).

For cost monitoring, a finance team or budget committee can assess and monitor cost risks by creating a reporting routine to describe every expense the company has. This policy allows teams to evaluate the budget continuously and modify cost plans accordingly. As for the Monitoring Schedule, “Improved risk monitoring and management brings significant benefits to project stakeholders by monitoring the implementation of agreed risk response plans, tracking identified risks, identifying and analyzing new risks and evaluating the effectiveness of the risk management process throughout the project” (Mauro & Joly, n.d., p. 33). The team can then reassess and follow up on any issues that could cause the project to be delayed. In addition, computer software, such as calendars and project management tools, can help monitor and assess project time management and scheduling.

## **V. Risk Identification Techniques**

Project implementers need to be skilled in risk identification techniques to discover the threats and opportunities that may impact a project, determine whether a situation may cause damage, and prevent the achievement of the project objectives.

### *a. Use of Checklists*

To allow the interveners to talk about everything they consider a risk, they must be brought together and asked to list everything; this allows no one to say that they were prevented from doing so on the day a risk may appear. A checklist is designed “to reflect key issues that impact their environment. They are a useful way of capturing lessons learned from the experiences of past events and contingencies and can be incorporated into self-assessment processes” (Bartlett, 2004, p. 94). Listing techniques can be likened to self-assessment processes or serve as a safety net for exams. This is why checklists should be used in conjunction with other tools. Note that there are other techniques. Notably, “The list technique has a weakness, which is that it can become too project-specific to be useful. Lists need to be managed in a way to ensure that they bring together lessons learned from previous projects and that they are useful for current and future projects” (Bartlett, 2004, pp. 94–96). For the project under study, such a list is the essential tool to go back and list many cases of threats and other old problems experienced in the region.

### *b. Guest or Suggestion Lists*

A suggestion list is another form of a sheet for risk identification, but it uses headings, usually related to common sources of risk. The purpose of a list is for “prompt, proactive and



collateral thinking. Prompt lists are, therefore, a resource that can be used to support other techniques, such as brainstorming. They can also be incorporated into plans or procedures to designate the scope of issues addressed by risk economics” (Bartlett, 2004, pp. 94–96). Prompt lists can be structured like a generic risk decomposition structure.

### *c. Brainstorming Technique*

This technique helps identify risks as quickly as possible and builds team enthusiasm for risk management. For Sivastrav, “brainstorming can be an effective tool for generating creative and innovative ideas, and it can help foster collaboration and teamwork among project team members” (Srivastav, 2023, p. 1). It can also be used for project stakeholders in the process of designating risks an independent facilitator to ensure that the session is sufficiently well structured and that it runs at a good pace,

The result of a brainstorming session is a list of risks, each described by a password, list of risks, each being described by an expression or a sentence indicating the source of the risk so a simple exercise and very interesting and because of the promotion of the equality of the participants. Although widely used in projects, brainstorming sessions have certain limitations and shortcomings (Bartlett, 2004, pp. 94–96).

Risk identification should be a step forward; project managers may find it difficult to identify risks if this is not recognised. The results of a brainstorming session can dominate the risk inventory to the detriment of new risks.

### *d. Use of Interviews*

Interviews are often used to identify risks when it is impossible to set up a team in a single meeting, “The risk identification interview involves sitting down with key project stakeholders and asking them what they perceive to be risks to the project. It is likely to expose the risks on the whole project than a simple discussion of the areas of concern” (Hillson, 2004, p. 86). Interviews have many positives over brainstorming and require a similar semi-structured approach, “with the moderator taking on the role of facilitator. Some positives are that the process takes longer for the facilitator and the opportunities for cross-fertilization of ideas are more limited” (Bartlett, 2004, pp. 94–96). However, some people feel comfortable expressing themselves openly in a one-on-one situation, especially if the interviewer is perceived as independent. Interviews can also be used for risk assessment and risk response management. The interviews used for these purposes will be more structured. When interviews are used regularly, it can be useful to use them to encompass all the key



elements of the risk management cycle. This makes it possible to identify new risks gradually.

## VI. Project Risk Analysis and Management Guide

We use the so-called risk analysis and management guide to analyze the risks that threaten the project in public investments; it is also difficult to name a risk without first analyzing it. The analysis guide shows how to build a good risk analysis step by step by listing the probable attributes based on a specific context, depending on the case or the project. They are discussed below.

### *a. Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis*

It is helpful to practice and identify the analysis of the strengths, weaknesses, opportunities, and threats of a given project or public investment project. This tool helps the project management team design a strategic plan and keep a step ahead in preventing dangers. Analysis of strengths, weaknesses, opportunities, and threats (SWOT),

It is a particular risk event, the SWOT technique makes it possible to examine the project in an orderly manner to evaluate the strengths, weaknesses, and opportunities of a project according to each of the four perspectives, which increases the scope of the risks considered, details of risk events identified during the identification phase are added to the original event data originally entered in the project risk register (Richardson, 2015, p. 314).

Moreover, “the SWOT analysis consists of breaking down the strengths and weaknesses inherent in the circumstances of a project that give rise to opportunities and threats, that is, which expose it to risks. SWOT analysis can also be useful as part of risk planning” (Bartlett, 2004, p. 96). As indicated by the researchers we have quoted, SWOT analysis allows for the identification of the strengths, weaknesses, opportunities, and threats of the project, which is very important to assess the risks and help our teams involved in the project to design a strategic plan to assess and manage risks and uncertainties.

### *b. Stakeholder Analysis*

The stakeholder analysis focuses on the appropriateness of the objectives and critical characteristics of the project as they are perceived by each stakeholder in the project. A register of relevant stakeholders should be maintained (Ewy, 2008, pp. 7–8). It is worth noting that “Stakeholders is a methodology that offers a flexible approach to understanding and managing relationships within and around the business. It also supports the concept of the dynamic nature of the stakeholder community. The methodology is based on the idea that an activity can only exist with the informed consent of its community of stakeholders and that



managing the relationship between this community and the activity will increase the chances of success” (Bourne, 2016, p. 43). An important advantage of stakeholder analysis is that it can be applied to projects in their early stages. It can therefore be used to integrate risk management with project management processes that produce requirements statements.

#### *c. Project Monitoring*

In this case, the project committee can use different means to monitor the project’s progress. Risk monitoring can be summarized as monitoring agreed-on risk response plans; monitoring identified risks; identifying and analyzing new risks; and assessing the effectiveness of the risk management process (Hall, 2023, p. 1). The objective of risk monitoring and control is “to respond to risks as they occur, to monitor and control identified risks, to evaluate the effectiveness of risk response plans, to identify new risks and to ensure that appropriate risk management procedures are followed as defined in the risk management plan” (Heldman, 2010, p. 8). In the present context, project monitoring consists of keeping a close eye on the different stages of the project’s implementation, from its conception to the end of the activities and beyond, to reassure all stakeholders that the project’s activities are on the right track because the success of a project depends on a clearly defined structure.

#### *d. Nominal Group Technique (NGT)*

Another risk analysis and management technique that a project is exposed to is the Nominal Group Technique, a group process involving problem identification, solution generation, and decision making; this nominal group technique (NGT), it is in fact, “a variant of brainstorming, a method of idea generation that was developed to try to overcome some of the perceived failures of brainstorming. In NGT, each group member records several risks presented to the group for discussion. During the presentation, group members individually rate each risk and rank the scores. The scores are then mathematically aggregated to arrive at a group decision” (Merna & Al-Thani, 2005, p. 79). In this way, everyone must contribute, and the potential for intimidation is reduced; “The technique can also lead to the risk assessment process if, after developing a list of risks, group members are then invited to participate in the risk assessment” (Bartlett, 2004, p. 96).

## **Summary and Conclusion**

This work was structured around two main questions. First, how was the prevention and management of possible risks carried out in the Teturi Bridge construction project? Second,



what needs to be done to adequately prevent the severe consequences of risks in public investment projects such as the Teturi Bridge?

In order to obtain the necessary data and information, an observation was made of the materials used in the construction. It is also worth noting that an interview was conducted with those responsible for the execution of the project. By questioning the members of the committee appointed to organize and manage this project, it appeared that they had not taken sufficient time to thoroughly assess the risks to which this project was exposed in order to consider the precautions to be taken in the event of the occurrence of a risk, which allowed us to affirm that the principles of prevention and risk management had not been adhered to. The literature review shows that risk prevention and management in a project is the fight against any risk predisposition from its source by considering all risk factors. Considering the context of our case study, we find that the risk identification technique by “checklist” is a critical step in preventing and managing risks in public investment projects.

The following are some of the issues that could lead to the assessment of risks for their prevention and management :

1. This road and this bridge will be used by heavy trucks, so the bridge’s structure must be solidified according to the standard norms to avoid its destruction in a short time.
2. As it rains a lot in the region, it is necessary to organize a permanent maintenance service because it is a dirt road, allowing the traffic to remain maintained despite the heavy rains.
3. As it is a remote area, the police should be designated to ensure the safety of people and their property on this road to avoid insecurity cases.
4. Anticipating risk also means considering possible solutions to manage it if it arises during or after the execution of the project. For example, in the case of the Mambasa road and bridge construction project, it was also necessary to consider solutions in case the bridge collapsed one day. Here the solution would be to acquire canoes which could intervene by facilitating either can cross from the river in case of an event of the current accidental situation where the bridge is already destroyed.

Once all the possible threats have been listed, move on to a systematic analysis of each to estimate their impact on the project’s deadlines, costs, and technical specifications. At this stage, we can separate the unfounded risks from the real risks that could affect the project.

The probability of occurrence of each listed risk and their severity in terms of impact, damage and consequences on the project objectives must be assessed. Based on this assessment, “the risks are ranked in order of importance. The objective of this step is to focus





on the most significant and likely risks” (Bartlett, 2004, p. 94). Then, act cost-effectively to prevent the risks from occurring and prioritize actions to control them. In addition, the risk assessment must determine how the project will be implemented so that the consequences of the risks do not prevent the achievement of the government’s project objectives. Implementing public sector projects without considering the risk and uncertainty assessment stage in a mandatory way may not achieve the objectives pursued by the project. The capacity to identify risks through specific tactics, such as the evaluation of project documentation, information gathering, analysis of likely causes and underlying risks, and analysis of the project’s strengths and weaknesses, takes time and skill. This study has highlighted that “risk management takes time and the ability to identify them through certain strategies such as the review of project documents, the collection of information, the analysis of probable causes and underlying risks and analysis of the strengths and weaknesses of the project”(Adoko Obicci, 2017, p. 244).

In this reflection, we examined the prevention and management of risks in the construction project of the Teturi Bridge, 50m long on the Mambasa road, an agricultural and economic road in the Democratic Republic of Congo in the Ituri province. The study gave us an idea of the risks to which this project is exposed and a good idea of the risk identification and mitigation strategy. All these elements have allowed us to judge how the project managers have proceeded with preventing and managing risks as insufficient. Therefore, it is vital that before any implementation of a public interest project, comprehensive analysis and prevention of risks should be taken into account to avoid serious consequences that could prevent the project from achieving its objectives.

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