national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

Capital Planning Guidelines

Contents

1. INTRODUCTION

In support of the National Development Plan and the New Growth Path objective of continual improvement in service delivery, the National Treasury provides guidance on how infrastructure programmes and project proposals should be planned, appraised and evaluated before significant funds are committed. The guidance encourages a life-cycle analytically robust evaluation process that ensures alignment not only between departmental planning processes (strategic planning, infrastructure planning & budget planning) but also with the Immovable Asset Management Act (GIAMA) and the infrastructure Development Act. Similar to the Capital Planning Guidelines, the Infrastructure Development Act aims to facilitate the coordination of public infrastructure development projects so that there is better planning, approval and implementation of projects as they move through the project life-cycle.

The capital planning guidelines below outline for departments and entities (hereafter institutions) project appraisal techniques and an explanation of the kind of information that needs to be submitted to the National Treasury when an infrastructure capital project is being planned and a bid is being submitted. The guidelines are designed to ensure thorough planning of capital projects and the prioritisation of projects that offer maximum economic and social benefits to society.

The planning, appraisal and evaluation of capital projects is a continuous process which takes place throughout the year. An infrastructure bid submitted to the National Treasury should be closely linked to other planning processes in the institution. The institution's infrastructure Plan or User Asset Management Plan is a rolling plan and it is expected that each year this plan will be updated and re-prioritised on the basis of:

- Targets and priorities set out in the strategic plan
- The anticipated MTEF budget; Priorities set out in the Strategic Infrastructure Projects (SIP)
- The progress of the current projects being implemented.

The Medium Term Expenditure Framework (MTEF) infrastructure bid proposals may contain on-going and new capital projects which may include refurbishments, upgrades or maintenance projects

2. EXTENSION OF EXISTING INFRASTRUCTURE PROJECTS

All submissions for existing capital projects should be based on the need to complete or extend the project. If the completion/extension was contemplated in the original planning documentation, a reference to these documents is sufficient.

However, if the additional bid is due to cost overruns or an increase in the scope of the project which was not part of the original planning documentation, a clear explanation and motivation is necessary as part of the submission.

3. NEW CAPITAL PROJECTS

All new capital projects are required to undergo a systematic and rigorous appraisal as described in these Guidelines. The type and depth of information required will depend on the size and the nature of the project. Resources spent on appraising capital project proposals should be proportional to the likely project cost, keeping in mind its nature and complexity.

The appraisal activities may be outsourced, depending upon the capacity resident in an institution. ***Institutions must provide for project planning within their current MTEF budget baselines, including, as necessary, funding for outsourced capital project appraisals.*** Multiple small projects with the same outputs maybe grouped and motivated as a single infrastructure programme requiring funding.

All projects go through a series of distinct stages from the initial project idea to the time the project is completed and handed over. It is important for institutions to understand these project stages and the analysis to be carried out at each stage. These analyses are integral to a logical approach to project planning that will assist in the appraisal of the project. The analyses will also provide the rationale or justification for government funding for the project. A clear need must be articulated which is in the national interest to address.

4. MINIMUM INFORMATION REQUIRED

The following information must be submitted for each capital project. While every project must address all the elements, the detail and rigor applied at a particular stage will be dependent upon the size and complexity of the project.

1. Preparatory Work

1.1. Needs and demand analysis with output specifications

1.2. Options Analysis

- Demand Analysis
- Technical Engineering Analysis
- Environmental Analysis
- Socio-economic Analysis
- Legal and Regulatory Due Diligence

2. Viability Evaluation

2.1. Financial analysis

2.2. Economic analysis

3. Risk Assessment and Sensitivity Analysis

4. The Preferred Option

5. Implementation Readiness

5.1. Institutional capacity

5.2. Procurement plan

6. Project Concept Note

Appraisal of capital projects is not a straight forward step by step process where the different analyses are independent from each other and can be performed in a perfectly sequential manner. Information will need to flow between the different analyses and constant feed-back mechanisms need to be in place to ensure the coherency of all the documentation.

5. PREPARATORY WORK

5.1 Needs and Demand Analysis

The needs analysis should demonstrate alignment with the institution's mandate and strategic objectives. The purpose of this analysis is to enable the institution to clearly identify a clear infrastructure need, spell out output specifications and ascertain the extent of current and future demand for the service.

The analysis should describe:

- The problem that has given rise to the need for additional infrastructure, including an analysis of the existing asset capacity;
- The extent and urgency of the need;
- The extent of the need this request is intended to meet;
- Output specifications that describe the service the institution needs to deliver, the required minimum standards of the service output as well as the specific key indicators to measure performance;
- The data, surveys or service-delivery indicators demonstrating the current demand and estimating the future demand growth. The demand analysis cannot simply assume a continuation of a historic trend, but must demonstrate what long-term factors are driving demand, and how those trends may be shifting ;
- The consequences if the services infrastructure need is not addressed;
- How the proposed capital solution to the problem fits into the institution's long term infrastructure delivery programme.

The output from this stage is a statement of the services infrastructure need, a specification of the output requirements and a sound demand analysis.

5.2 Options Analysis

The purpose of an options analysis is to undertake an analysis of all feasible options that can achieve the identified output specifications. This will assist in identifying the preferred solution.

The following principles should guide the options analysis:

- All feasible options should be evaluated;
- The preferred option should achieve value for money;
- The preferred option should be affordable;
- The analysis should consider those options crucial to a project's success; and
- A scenario which sets out the base case (the 'do nothing' scenario) where the current situation is sustained with minimal operating and maintenance investments and basic efficiency improvements.

A first high-level analysis of these options should include a qualitative listing of the advantages and disadvantages as well as preliminary quantification of the costs and benefits of each option relative to the objectives of the project. This comparison should allow for the development of a shortlist of 1 to 2 preferred options which will be assessed in detail.

Each of the shortlisted options will be separately assessed by the processes described in the stages below. The information below needs to be assembled first to enable the undertaking of the Financial and Economic analysis.

5.2.1 Demand Analysis

The first step is to confirm that there is demand for the goods and services that will be produced by the project. This is important because levels of current and forecasted demand should be sufficient to meet the financial and economic feasibility of the project. There is need to ensure that constraints governing the volume of sales or pricing are identified and factored into the demand forecasts.

The outcome of this analysis will give confidence to the following:

- Forecast quantities of sales and prices over the life of the project;
- Constraints such as government regulations (administered prices, ceilings, quotas including arrangements for making future adjustments to prices); and
- Other variables that affect the volume of sales or prices such as technological developments impacting on the product life cycle and subsidies.

5.2.2 Technical Engineering Analysis

This is an important step that determines the scale, the design, location and technology that will be adopted by the proposed project. The input parameters necessary for the construction, operation and maintenance of the project are identified, quantified and the cost approximated

over the life of the project. To be able to do this it is necessary to come up with an implementation schedule that sets the output levels. The most cost effective procurement procedures are also considered at this stage. The outcomes of the analysis include:

- The technology choice for the project including designs and prototypes;
- Project size and location;
- Construction schedule and output targets;
- Input parameters and their prices including labour for the construction and operation and maintenance of the project; and
- Procurement procedures.

For larger and technically more challenging projects, however, the technical assessment is crucial and needs to be accomplished accurately and thoroughly. The technical feasibility will then inform the financial analysis, by providing detailed clarification on the costs of construction, operation and maintenance of the project and identifying potential risks. Different technology choices for the project, including designs and the need for prototyping should be assessed to determine whether they will be viable for delivering the desired project outputs. In addition, potential locations for the project should be assessed to determine their viability, including ownership, geological and heritage aspects.

5.2.3 Environmental Analysis

Every project involving new construction or substantial rehabilitation of an existing structure will involve undertaking an Environmental Impact Assessment (EIA). In those instances where the institution is going to procure, by conventional means, the construction of a facility of its own design, the institution must undertake the EIA and obtain all necessary environmental, zoning and town planning consents. The cost of so doing is one of the costs that must be identified early on and quantified when determining the feasibility of a particular project.

Outcomes from this analysis include:

- The costs of, and time to obtain an Environmental Impact Analysis (EIA) report;
- Anticipated mitigation or displacement costs; and
- Other necessary approvals and permits.

Identified costs and risks must be taken into account in the viability analysis. Institutions should note that EIA can be very costly and can extend over a protracted period of time hence the need for an EIA should be recognised early so that adequate budgetary provision can be made for such costs.

5.2.4 Socio-economic Analysis

Many services infrastructure projects provide potential economic benefits to BEE and SMME enterprises as well as the community in general. The implementation of a project can result in an increase in land values or in an increase in demand for affordable housing. The use of local labour and materials in a major infrastructure project also provides significant benefits to communities affected by the infrastructure project. There may also be costs not easily realisable such as those resulting from congestion in the city caused by the implementation of the project. All these will need to be translated into economic values.

Outcomes from this analysis include:

- Positive and negative BEE, SMME and local labour and materials economic values; and
- A comparison of these economic costs to their counterpart sectors in a “no project” scenario.

5.2.5 Legal and Regulatory Due Diligence

A legal and regulatory due diligence study should confirm that the project will be able to comply with all regulatory requirements, identify any risks and obligations that could increase costs of or decrease benefits. The cost of compliance must be included in the financial and economic analysis.

Typically the analysis will include an assessment of the following:

- Sector legislation, policies and regulations;
- Tax legislation;
- Labour legislation;
- Environmental legislation;
- Heritage legislation;
- BBBEE legislation and Codes of Good Practice;
- Local procurement requirements;
- Imported goods requirements;
- Foreign exchange requirements;
- Zoning and town planning requirements;
- Building codes;
- License requirements; and
- Site ownership and/or access approvals.

6. VIABILITY EVALUATION

6.1 Financial Analysis

6.1.1 Financial cash flow analysis

The objective of this analysis is to establish the financial viability of the option. The analysis is carried out in accordance with the discounted cash flow method. A financial model projecting the cash flows for the costs and any revenue generated from the project over its lifetime is developed. This analysis needs to be undertaken for each of the preferred options identified. If the institution lacks the capacity for developing such financial models, outsourcing this expertise should be considered. In order to preserve the outsourcing option for future capital expenditure undertakings, the institution should budget for such expenditures.

The financial model must be informed by all the life-cycle costs to deliver the identified outputs. The cash flow profile identifies all the receipts and expenditure over the life of the project. This is based on the operating costs (including working capital requirements) and revenues; investment costs and residual value (in last year of project) and sources of financing (their characteristics and implications). All revenues generated over the lifetime of the project must be projected, bearing in mind, where applicable, the requirements of the Public Finance Management Act (PFMA) requiring such revenues to be deposited into the appropriate national or provincial revenue fund (sections 13 and 22). The result of this analysis is a timeline on which all cash flows over the project's lifetime, both positive (i.e. revenues) and negative (i.e. expenditures) are demonstrated.

By calculating the balances, discounted at an appropriate rate, it is possible to define a financial net present value for the option that will determine its financial viability. The discount rate used in the calculations is within the discretion of the institution but it needs to be justified. However, it's advisable to use the government bond yield as the discount rate over a comparable period as it reflects the actual cost to government of raising funds at any given time.

The financial analysis must also determine the minimum net cash flow requirement over the life of project. This must include life-cycle capital or construction costs as well as the annual operating and maintenance costs. This will demonstrate that the option is financially sustainable and will not require supplementary funding. If the proposed option is not financially viable, it is important to check whether it is viable from an economic and social point of view. If it is then consideration is given to other sources of additional funding.

Since capital projects are long-term in nature, there is uncertainty with regards to some of the assumptions used in the calculation of costs and revenues. Costs should be readjusted to reflect different scenarios based upon variations in key assumptions – e.g. what is the effect of a 10% increase in costs, or what is the effect on the cost of imported inputs if there is 5% devaluation in the exchange rate? This is an essential part of the capital bid as it will assist the project planners to be aware of how costs vary with changes in the underlying assumptions.

6.2 Economic Analysis

An economic analysis is different from a financial analysis in that it analyses the viability of a project based upon economic and social welfare improvements, and not financial bankability. An economic analysis thus takes non-monetary welfare impacts into account, such as improved health, reduced accident risks, congestion and pollution.

All projects will need to undertake either a cost-benefit analysis or a cost-effectiveness analysis for each of the preferred options. Generally, the cost-benefit analysis is more appropriate for economic infrastructure projects, e.g. transport, water, energy and communications sector projects, whereas a cost-effectiveness analysis will be more appropriate for social infrastructure projects, e.g. health, and education.

6.2.1 Cost Benefit Analysis

Different methodologies are available for analysing the economic viability of a project; the most common one is the Cost Benefit Analysis (CBA). A CBA seeks to establish whether a particular investment is the most efficient use of society's resources. It does this by identifying and monetising the costs and the benefits to society to enable comparison.

A CBA identifies and monetises every direct impact and predicts the timing thereof over the same horizon as the asset's economic lifetime. This is best presented as an economic (value) flow on a timeline, quantifying the economic costs and benefits on an annual basis. These values are then discounted back to their present values using a social discount rate[1].

Every preferred option will be subject to this approach. The result will then be a comparison of every option with the base case "do-nothing" scenario and a ranking of the different options in accordance to their net welfare benefit to society.

The result of a CBA is best reported in the form of an Economic Net Present Value (ENPV) which are the costs subtracted from the benefits or in the form of a Benefit-Cost Ratio (BCR) which is the ratio of the benefits over the costs. A project that will benefit the country will have an ENPV larger than zero and a BCR larger than one.

6.2.2 Cost Effectiveness Analysis

Cost-effectiveness studies are appropriate where project options must be compared but assigning a monetary value to the desired outcome would not be appropriate. This usually applies to projects that do not represent an economic activity, such as social, health or human rights projects, and where a needs analysis has been informed by a defined social requirement.

Decision-making in these cases is focused on finding the solution that is the most efficient in realising the desired project outputs, and the results of the studies are therefore expressed as a ratio (cost per 'unit' of benefit).

[1] Social discount rate is the economic opportunity cost of capital required to discount future cash flows and it is used when estimating the economic NPV of capital projects financed by government funds.

The cost-effectiveness analysis analyses the costs of a project in exactly the same manner as a CBA. However, the benefits are described in a very specific non-monetised way such as 'number of HIV tests conducted' or 'number of lives saved per year' or 'number of children vaccinated'. The results are then presented as the cost per 'unit' of benefit (1 HIV test, 1 life saved, or 1 child vaccinated). The project with the best ratio is the one with the optimal scale that uses the resources the most efficiently. In certain occasions however, there is a particular threshold (minimum of 10.000 vaccinations) that needs to be reached before comparing projects on the efficiency ratio.

The cost-effectiveness analysis allows institutions to assess projects without having to monetise social benefits.

6.2.3 Economic Impact Assessment

Once the viability of one or more project options has been demonstrated through cost-benefit analysis or cost-effectiveness analysis, it may be necessary to do further analysis to identify the macro-economic growth effects, spill-over effects, or distributional impacts.

If the proposed project is so large, capital intensive or import reliant that it might influence national or sectorial GDP, the balance of payments or the exchange rate, a macro-economic impact assessment is required.

If the project has the potential to affect a particular social group, a region or a sector, a micro-economic impact assessment is required. The assessment allows for the identification of the losers and the winners from the project and the judgement of whether these distributional impacts are aligned with government priorities. If the potential losers are identified as an already vulnerable group, this might require mitigation actions to be undertaken. The project's scope and financial structure must be aligned towards the findings in the impact assessment.

The results of these impact assessments can assist in prioritising viable projects on the basis of other developmental goals such as impact on rural or regional development, industrial expansion, potential for job creation or losses, or reduction in inequality; or for large projects, and their impact on exchange rates, balance of payments, inflation, and GDP growth.

Methodological tools for analysing these impacts are Social Accounting Matrices (SAMs), Input Output tables (I/O), Computable General Equilibrium models (CGE) and simple surveys and public consultation.

6.3 Risk assessment and sensitivity analysis

The outcomes of both the financial and economic analysis are based on certain modelling assumptions and risk predictions. These assumptions need to be scrutinised and tested to ensure that the project remains viable even in an environment which differs significantly from that assumed in the various analyses conducted.

Large projects with significant technical, financial and economic risk are required to undergo a qualitative as well as quantitative risk assessment. Smaller projects with limited technical or

contextual risk, must attempt to draw up a risk matrix where all the potential risks are listed and the likelihood and impact of the identified risk on the project is qualitatively described and controls or mitigating actions identified.

A risk assessment looks at all risks related to a project and assesses the impact of these risks and if mitigating actions are possible. For certain projects where uncertainty is significant and involves large financial risks, presenting a risk-adjusted costing model is crucial. Costing for risks is then undertaken by identifying all the risks, approximating the financial impact they will have on project costs and revenues and estimating the probability of occurrence of the risk event.

A sensitivity analysis tests the impact of changes in various modelling assumptions on the viability of the project. After the financial model has been finalised, sensitivity analyses need to be undertaken in order to determine the resilience of the cash flows to changes in assumptions over the project's life-cycle. Adjusting each variable individually by a given percentage and then stress-testing project viability will highlight which assumptions are the most vulnerable. The impact of changes in these assumptions on the FNPV and ENPV should be determined.

7 THE PREFERRED OPTION

Having identified and thoroughly evaluated the options that may provide a solution to the identified need, it is important to now quantify the cost of the shortlisted options that will most nearly provide a complete solution, in order to select a preferred option for funding. The aim is to identify the best solution that will meet the criteria given any constraints the institution may be facing. The result is a clear reasoning as to why and how the preferred option was chosen. The preferred option is the option that meets the project objectives most economically.

8 IMPLEMENTATION READINESS

8.1 Institutional Capacity

Sufficient capacity to deliver the project on time, on budget and to specifications should be demonstrated clearly. An institutional arrangement that is conducive to effective delivery is critical. Analysis to ensure that the institutions responsible for implementation, including project management, and operational responsibility will be appropriate to the task, should demonstrate that:

- Institutions have an appropriate mandate;
- Suitable incentives or penalties are in place to ensure delivery;
- Accountability, transparency and appropriate risk allocation are guaranteed;
- There are no governance issues that may affect implementation; and
- The relevant institutions have, or can access, the required capacity.

If necessary, a plan for institutional capacity building should be included in this analysis. This includes sufficient planning, procurement and skills transfer of the required technical expertise.

Options for enhancing implementation potential include in-house training as well as various forms of partnering with the private sector.

8.2 Procurement Plan

A procurement plan must be submitted. The plan needs to demonstrate that the proposed procurement method is the most appropriate for the project and will result in achievement of the targeted outcomes. This includes indicating the procurement methodology that will be employed and how it will be managed.

The plan will include a description of the bidding and bid evaluation process, a high-level project plan, key milestones and timelines as well as the envisaged institutional and financial arrangements.

9 PROJECT CONCEPT NOTE

All institutions submitting bids should complete the Project Concept Note below. The completed Note, which provides a summary of the bid, should serve as the front cover for the submission.

PROJECT CONCEPT NOTE

Name of department/public entity	

Project name		**Name and contact details of the project officer**	
Project objective			

Project description

Project Outputs

Project Location		**Project Stage**		**Project Size**	

Expected construction start date		**Estimated construction duration (months)**	
Estimated project costs before tender (R million)		**Project useful life (years)**	
Implementing agent			
Contracting agent			

Sources of funding

Expected socio-economic and environmental benefits

NPV – Cost Benefit analysis		**CER – Cost Effective Analysis**	