

2010 MTEF: Budgeting for infrastructure and capital expenditure guidelines

Introduction

The guidelines below provide departments and entities with information to make budget submissions for capital projects and programmes. They are designed to promote efficiency in infrastructure planning and budgeting, supporting a better allocation of resources across government.

In preparing budget submissions for the 2010 medium-term expenditure framework (MTEF), large and mega infrastructure and capital funding requests should be motivated separately for evaluation by the Capital Budgets Committee (CBC)¹. The committee aims to ensure that funding is directed to projects and programmes offering maximum economic and social benefits.

Leading up to the 2010 Budget, departments and public entities are required to carefully assess infrastructure and capital projects to ensure that they will be effective in delivering on priorities and, where possible, to realise savings.

Project proposals, including an economic feasibility analysis and detailed supporting documentation, should be submitted to the National Treasury by 3 July 2009.

The type and depth of information required for appraisal will depend on the size and nature of the project being considered. Resources spent on compiling proposals should be proportionate to the likely cost of a project, keeping in mind its nature and complexity. All infrastructure projects, programmes and major capital acquisitions must be classified according to the broad categories described below.

Classification of capital projects

- **Mega projects or programmes** are estimated to cost more than R300 million per year for a minimum of three years, or a total project cost of at least R900 million. All mega projects require a comprehensive CBC appraisal.
- **Large projects or programmes** are estimated to cost between R50 million and R300 million per year for a minimum of three years – totalling at least R150 million but less than R900 million over the MTEF. Large projects require detailed information and a feasibility study for scrutiny by the CBC.
- **Small projects or programmes** are estimated to cost less than R50 million per year and not more than R150 million over the MTEF. Small projects with the same outputs may be grouped together in a programme for evaluation. Small projects outside of a programme will not be subject to CBC review.

All projects extending beyond the MTEF period, regardless of medium-term funding needs, must outline future funding requirements in the submission. Full project costs, including annual operational costs over the lifetime of the asset, must be reported.

Funding motivation for existing/new projects or programmes

Extension of existing infrastructure projects or programmes

¹ The CBC, a subcommittee of the Medium Term Expenditure Committee, evaluates funding requests for capital projects and programmes of departments and public entities.

Funding should be based on the need to complete or to extend existing projects or programmes. Multiple small projects with the same outputs may be grouped together and motivated as an infrastructure programme requiring extension. Ongoing infrastructure transfers to public entities and other spheres of government that require further support may also be motivated under this category. Departments and entities are required to provide information on service delivery performance of the projects and programmes as part of their capital submissions.

New infrastructure projects or programmes

All new infrastructure projects or programmes require appraisal.

Appraisal for capital projects or programmes

Departments and entities are responsible for the appraisal of projects and programmes that require funding. The CBC will undertake a review of appraisals submitted.

The appraisal guidelines are designed to promote efficient project planning across government by assessing the underlying assumptions, cash flows and calculations to reach the best decision. Project appraisal is necessary to:

- Develop and formulate potential projects precisely and concisely
- Promote value-for-money projects
- Identify and mitigate risks
- Promote transparency.

The sections below set out questions and requirements that departments need to consider in their capital budget submissions. In general, a submission should be laid out as a discussion, with supporting data, graphs and tables where statistical information requires illustration. Separate large and mega projects each require their own submissions.

Needs analysis

It is important to demonstrate a clear need for a particular project and why government should become involved. The underlying rationale is usually found in some form of market failure² or where there is a clear distributional objective of government. The needs analysis should be aligned to the entity's strategic objectives, highlighting how a proposed project or programme helps to achieve these goals. The analysis should describe clearly:

- The problem that has given rise to the need
- The statistical data, baseline information and service-delivery indicators pointing to the need at this time
- The extent and urgency of the need
- The consequences if the need is not met
- The proportion of the need a given request is intended to meet
- How the project fits into the department's long-term strategic delivery plan.

Cost-benefit analysis

All possible solution options need to be identified, and the costs and benefits to government and society quantified. Costs and benefits must be considered from a socioeconomic viewpoint. All assumptions made while valuing costs and benefits

² When the market either undersupplies or cannot supply a particular good or service.

must also be clearly specified and, where benefits cannot be quantified, a detailed description of those benefits is required.

Costs and benefits should be extended to cover the useful lifetime of a project under consideration. Based on the net result of economic benefits minus economic costs, the CBC will determine whether a particular investment is worthwhile, keeping in mind that benefits need to be maximised for society.

Measuring costs

Departments must take account of the extent to which projects incur costs over a period of years. Costs should reflect the value of resources used (i.e. opportunity cost³ to society) as a result of the project. Departments must identify and calculate lifecycle costs associated with the planned investment. These should include:

- Capital or construction costs (e.g. land, buildings, equipment, labour costs, consultancy fees, contractors and any pre-production expenses)
- Annual operating costs (e.g. purchases of additional equipment, personnel costs, loan repayments and associated interest)
- Annual maintenance costs
- A description of non-quantifiable costs and benefits.

When gathering data on input costs local contractors should be consulted; imports should only be used when local inputs are not available. Inflationary and exchange rate factors should also be accounted for as costs escalate over time.

Measuring benefits

All direct social and economic benefits resulting from the project should be measured, usually in the form of revenue earned, cost savings and direct employment created. All non-quantifiable benefits should be described in detail.

Externalities and “spillover effects”

Externalities are costs and benefits to society that arise from a project, but which are not experienced directly by either the project owner or project beneficiaries. They can include environmental, economic and social impacts, and can be either positive or negative. Negative externalities should be included as economic costs and positive externalities should be included as economic benefits. Only externalities that result in a significant effect should be included.

An example of a negative externality is environmental pollution or degradation as a result of the project. Displacement effects – the extent to which a project takes market share, labour, land or other resources from existing local firms – can also be seen as a negative effect (and should be included as a cost).

Positive externalities can be both social and economic. An example of an economic positive externality is the additional value generated from direct effects, which result in additional effects known as indirect effects and induced effects:

- Indirect effects occur when local businesses benefit from increased purchases of production materials and services due to the project.
- Induced effects arise when those households that benefit from an increase in direct or indirect expenditure spend a larger portion of their income locally.

³ The value of a resource in its next best alternative use. For example, suppose a department wants to use a piece of land for a park. In calculating the cost of the park, the department should include the value of the land in its next best use.

Indirect and induced effects expand direct spending by a multiple. The *multiplier* measures the extent to which initial expenditure on a project or programme leads to additional expenditures in the local economy. The multiplier is calculated by dividing the total change in economic activity by the change in initial direct spending. They must be discounted by an appropriate rate.

Discounting

The economic desirability of a project is determined by the net present value (NPV) of its incremental net economic benefits. Costs and benefits occurring at different times must be discounted. Departments and entities are required to provide any assumptions and calculations in the determination of the discount rate used in calculating the NPV.

Calculating NPV

The NPV of a future stream of net benefits, $(B_0 - C_0)$, $(B_1 - C_1)$, $(B_2 - C_2)$, ... $(B_n - C_n)$ can be expressed as follows:

$$NPV^0 = \frac{B_0 - C_0}{(1+r)^0} + \frac{B_1 - C_1}{(1+r)^1} + \dots + \frac{B_n - C_n}{(1+r)^n}$$
$$= \sum_{t=0}^n \frac{(B_t - C_t)}{(1+r)^t}$$

where B represents benefits, C represents costs and r is the discount rate.

Options analysis

All realistic ways of meeting a need should be identified and examined critically when considering project options. This list must cover the range of viable options for providing the outputs anticipated from the capital project. Alternatives must be described in a way that makes clear the essential differences between the options. Be aware that solutions may arise from other levels of government. Among the options considered, the list must include an option where government takes the minimum amount of action necessary, or does nothing at all.

When assessing alternatives, take the following into account for each option:

- Potential commercial viability (Can it generate its own revenue stream? Has a public-private partnership been considered?).
- Potential benefits, costs and risks to government and society.
- Constraints⁴ associated with reaching the desired objective.
- Possible funding streams for each option.

Where all lifecycle costs and benefits can be measured in monetary terms, the optimal solution will be the one with the highest NPV.

Possible **constraints**¹ which should typically be considered include:

- Cost constraints
- Regulatory constraints
- Technological constraints
- Environmental factors
- Administrative or managerial constraints

Cost-effectiveness analysis

⁴ Constraints may include cost, regulatory, technical, environmental and administrative factors.

Cost-effectiveness analysis (CEA)⁵ can help to ensure efficient use of resources in sectors where benefits are difficult to value in monetary terms. It is used for the selection of alternative projects with the same objective (quantified in physical terms), and has been commonly used to evaluate health and education projects.

When conducting a CEA the following steps need to be undertaken:

- Identify and quantify the expected result/benefit of the project in physical terms (e.g. number of road accidents avoided or patients' lives saved).
- Identify and rank the programme outputs.
- Determine the total cost of the project, or the cost-effectiveness ratio (CER).

$$CER = \frac{Costs}{Effective\ Benefit}$$

Examples: determining cost-effectiveness

Cost-effectiveness of three independent programmes

1. Health sector

| Programme | Cost (R thousands) | Health effect (life-years gained) | CER |
|-----------|--------------------|-----------------------------------|-------|
| A | 150 000 | 1850 | 81.08 |
| B | 100 000 | 1200 | 83.33 |
| C | 120 000 | 1350 | 88.89 |

Whilst programme A is the most cost effective, it has the highest benefits and is also the most expensive.

2. Road maintenance projects

| Programme | Cost (Rand per km) | Increase in expected life (years) | CER |
|-----------|--------------------|-----------------------------------|--------|
| A | 210 000 | 8 | 26 250 |
| B | 140 000 | 6 | 23 333 |
| C | 250 000 | 10 | 25 000 |

Project B is the most cost-effective. It is also the cheapest programme and provides the lowest benefits.

After determining which options are feasible, a department must select its preferred option based on the cost-benefit analysis and CEA.

Scenario analysis

For large and mega projects, costs should be adjusted to reflect different scenarios based upon variations in key assumptions. For example, what would be the effect of a 10 per cent increase in costs? Or the effect on the cost of imported inputs given a 5 per cent devaluation in the exchange rate? This is an essential part of the capital submissions.

Example of a scenario analysis for variations in inflation

| Risk variable | Cost variations | | |
|---------------|---------------------------|----------------------|--------------------------|
| | Pessimistic scenario (6%) | Baseline case (4.7%) | Optimistic scenario (4%) |
| Inflation | R102 000 | R100 000 | R98 000 |

Risks and contingencies

⁵ CEA can identify the alternative that, for a given output level, minimises the actual value of costs or, alternatively, maximises the output level for a given cost.

Departments must identify and assess the main areas of risk that might prevent a project from delivering anticipated results/outputs. Plans to reduce risks must also be outlined in detail. Examples of risks can include:

- Cost overruns, including those resulting from inflation or forex fluctuations
- Difficulties in securing statutory consent
- Delays in project implementation.

Recognising risks will better equip planners with the information needed to manage them. These can also relate to the operational phase of a project – for example, training needs. Risk mitigation costs should also be assessed.

Implementation readiness

Departments and entities are required to outline their readiness and capacity to implement the project/programme. This should include construction start and end dates. Timelines for environmental impact assessments, land acquisition, development and intergovernmental approvals should be outlined in the supporting documentation. Cognisance should be taken of industry interests and the availability of materials in outlining the department/entity's readiness.

Monitoring and evaluation

The progress of projects appraised and evaluated, whether funded within the baseline or above baseline, will be monitored on a quarterly basis in a separate format prescribed by the National Treasury.

PROJECT CONCEPT NOTE

Name of department/public entity

Project name

Name and contact details of
project officer

New project or extension of existing project

Project goal/objective

Project description

Delivery outputs (included in the expected delivery outputs, provide an indication of whether the other approvals have taken place, e.g. EIA approval, municipal approvals and council resolutions and state whether the project forms part of another infrastructure project) ¹

Project location

Project stage

Project size

Expected construction start date

Estimated construction duration (months)

Estimated project cost before tender (R million)

Project useful life (years)

Implementing agent ¹

Contracting parties

Sources of funding

Expected socio-economic and environmental benefits

NPV - Cost Benefit Analysis

CER - Cost Effective Analysis

¹ Supporting documents should be attached to the bid.