

The Green Book

Appraisal and Evaluation in Central Government

This presentation is about the Green Book, the Treasury's guide to appraisal and evaluation. A new draft of the Green Book was launched on 24 July 2002, and a consultation exercise finished on 18 October 2002.

The final guidance was launched on 16 January 2003, and will take full effect from 1 April 2003.

This material provides some more information on the Green Book and the issues involved.

Presentation Overview

- What is it and why has it been revised?
When should you use it?
- What are the main features?
How has it changed from the previous edition?
- Issues and implications?

The context of the consultation draft, which was issued in the summer was, of course, the Spending Review, and the significant increase in expenditure proposed on infrastructure improvement.

The Green Book should complement that *general* increase in resources, by ensuring that *specific* policies, programmes, and projects are rigorously assessed before resources are committed.

Note: in this context, a ‘programme’ is simply a group of projects, which are meant to achieve an overall objective.

What is the Green Book?

- Government best practice guide to carrying out appraisal and evaluation of policies and capital projects
- Concentrates on economic appraisal in the form of cost-benefit analysis
- Technical guide but which has real impact
- Used by central government departments
- Sets government discount rate

For many years the Treasury has issued guidance to government departments on how to appraise ex ante all policies, programmes and projects, and how to evaluate them ex post. This guidance is known as the 'Green Book - Appraisal and Evaluation in Central Government'.

The Green Book is binding on government departments and executive agencies. In practice it is also tailored for use in devolved administrations. The Green Book is also used widely in regional agencies and local government, especially for proposals that require funding from central government.

Why has it been revised?

- Last updated in 1997- things have moved on
- To complement programme to modernise infrastructure set out in Spending Review
- Significant changes in macroeconomic conditions including lower interest rates
- Need for greater long-termism in government appraisal
- Need to improve appraisal skills

The Green Book was last revised in 1997, since which time things have moved on. The Office of Government Commerce has been created; PFI and PPP have grown significantly as procurement routes (leading to the establishment of Partnerships UK); and interest rates have fallen and remained low. Most of all, Government now has a central concern to improve delivery of public services. Getting the most out of public spending is of the essence.

Meanwhile, the NAO has criticised project appraisals in the past, particularly for being ‘spuriously accurate’, for instance in presenting decision makers with single point estimates of costs and benefits rather than providing them with, more realistically, a range of likely outcomes. The appraisal methodology has to keep in step with these changes, criticisms and aspirations.

There is therefore a need, and an opportunity here, to improve appraisal skills across government.

When do you need to use it?

- Business Cases
- Regulatory impact assessments
- Potentially any form of appraisal or evaluation
- Departmental guidance

The Green Book is guidance for all new policies, programmes and projects. Whilst it recognises that the level of detail should be commensurate with the scale of the proposal in hand, there is no reason why the basic approach - option appraisal, combined with cost benefit analysis - should not be adopted for all cases.

The Green Book complements OGC guidance on how to write business cases. It also complements guidance on how to carry out regulatory impact assessments, which are required if proposals for regulatory change may affect businesses, the voluntary sector and charities.

The Green Book has been written to help non-specialist managers and commissioners of appraisals and evaluations understand the required approach. Its annexes are designed principally for specialists.

Departments may of course supplement and/or integrate the Green Book approach with their own guidance, as long as it remains consistent.

What are the main features?

- Justify action
- Set objectives
- Set out the options
- Estimate their costs and benefits
- Adjust for distribution, tax and price changes
- Account and adjust for optimism and risk
- Discount to arrive at the NPV or NPC
- Select the best option, considering non-£ issues
- Develop and implement the solution
- Evaluate

1. An overview should be carried out to identify the rationale for intervention, carrying out research on the issues involved and scoping the problem to be addressed.

2. Objectives need to be set, broadly in terms of outcomes desired, and relevant outputs and targets specified to help progress along the way.

3. Options should be created to understand the range of action that could be taken. These options should then be appraised, so that an optimal solution can be developed. This is usually the most substantial part of the analysis. Cost benefit analysis is recommended, by which costs and benefits are valued in monetary terms. These values may need to be adjusted for distributional impacts, differential tax treatment and relative price changes. Risks should also be valued, and inherent optimism redressed through making specific adjustments.

4. The best option should then be selected and refined into an implementable, affordable solution, taking into account non-monetised factors.

5. After a preset time, the new proposal should be evaluated in terms of the objectives that were set.

What are the main changes?

- Benefits valuation
- Unbundling the discount rate
 - Reflecting the social time preference rate
 - Greater transparency for risk – optimism bias adjustments
- Proposed adjustments for differential tax liabilities
- Recognition of distributional impacts

Cost benefit analysis

- **Definition:** Analysis which quantifies in monetary terms as many of the costs and benefits of a proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value.

Option appraisal is the recommended approach in the Green Book to assessing proposals. The major technique to apply is cost benefit analysis, as defined above.

Costs and benefits should be identified and valued for each option. The differences in the incidence of the timing of those costs and benefits should be taken into account (by a process called discounting, explained later on, deriving a present value), and the net present values or net present costs can then be reviewed.

If there is a net cost, consideration should be given to whether there are other unvalued benefits that make a proposal still worthwhile. But decisions are harder to make without some kind of assessment, in monetary terms, of the value of the benefits described. So cost benefit analysis, whereby valuation is undertaken where feasible, is recommended.

Other, simple techniques, such as assigning weights and scores to benefits, can be used to assess the importance of unvalued benefits.

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The remainder of this presentation concentrates on the main features of the Green Book. In particular, it focuses on:

- (1) How costs should be estimated
- (2) How benefits should be valued
- (3) How to adjust for differential tax liabilities
- (4) How distributional impacts should be taken into account
- (5) What the discount rate is and why it's been changed.
- (6) How optimism should be recognised and accounted for, and risks and uncertainties identified
- (7) How unvalued costs and benefits should be taken into account

But before the technical discussion, it is important to state that appraisal, in particular, is about the work that is undertaken to help inform DECISIONS. Therefore, the results of technical appraisal work must be presented logically, clearly, and in a way that will help the decision maker, who will often not be an expert in the field, nor have the time to check rigorously all the assumptions made. The guidance states the requirement on appraisers to present their results clearly as a fundamental part of the appraisal process.

Main Features – Costing Proposals

- Principle: relevant opportunity cost
- Confidence in data relevant to the decision at hand

We have provided more guidance in this area, discussing the principles of costing so that it is clearer what kind of costs should be included in an appraisal and when, and the distinctions and relations between economic, financial, and opportunity costs.

The main principle is that appraisers should concentrate on looking at the relevant costs, ie those that could be affected by the decision at hand. For strategic projects, many costs could be affected. For smaller ones, fewer costs are relevant.

The other main principle is that the confidence in the data should be commensurate with the stage of the appraisal. Appraisals develop iteratively. At the initial stage it is not always clear what the options are, so there is little point expending significant effort on costing only one option without first appreciating the range of options that may exist. Later on, and particularly before significant funds are committed, the confidence in costs must increase, so that final outcomes and outputs are similar to the decisions made.

Main Features – Benefits Valuation

- Principle: so costs and benefits can be compared
- Greater emphasis
 - How much should we spend?
 - Is this objective worth what we would need to spend?
- Management and realisation of benefits
- Examples

This is perhaps the most significant change. The valuation of benefits has been done poorly in the past and the NAO has criticised many projects for not describing, and managing the realisation of benefits.

The value of long-term benefits needs to be brought into the appraisal process. As a result, we aim to see fewer assessments on the basis of net present cost, and more on the basis of net present value. Even for those NPC assessments, valuation of benefits is still important, and can help to decide between options.

Examples in the Green Book include the cost of environmental impacts (e.g. carbon emissions), and the value of time savings, both leisure and work.

The Green Book provides references to other exercises in government to provide valuations.

Main Features – Tax Adjustment

- Principle: different options may be subject to different tax regimes
- Appraisal aims to estimate net resource cost of generating benefits
- Conventional procedure is to appraise gross of tax, so won't give the right answer if two schemes have different tax liabilities
- This is the case, e.g. in comparing PFI and conventional schemes.

Guidance is that adjustments for tax should be made if they make a material difference to the appraisal.

Conventional procedure is usually right because it can in practice be difficult to work out the net position. And usually options have similar tax structures.

Main Features – Tax Adjustment

- KPMG were asked to:
 - Quantify the size of any tax liabilities which might result from PFI compared to traditional public procurement
 - Provide guidance to appraisers to quantify this differential

KPMG reviewed various taxes – including stamp duty, VAT, employment taxes, business rates – and concluded that only an SPV's additional corporation tax liabilities are relevant when considering differential tax regimes. Other taxes apply equally to the PSC/PFI options. But those interested in this area should review KPMG's report in detail.

KPMG performed many sensitivity tests to consider which factors have an impact on the differential corporation tax liabilities of an SPV compared to conventional procurement.

Main Features – Tax Adjustment

- Adjustments to NPV of an equivalent Public Sector Comparator
- Range 2-10% for majority of projects; possibly more for a minority
- Relatively simple flowchart - 4 questions essentially

The results of the KPMG work is a relatively straightforward flowchart which should be used to determine the likely difference in tax between private financing (PFI) and public financing of the same scheme. In simple terms, the four questions that should be answered are:

- (1) What is the likely balance between capital expenditure and facilities management services?
- (2) What is the likely basic tax structure - capital account or revenue account?
- (3) What level of tax relief is likely?
- (4) Is the project sector risky?

On the basis of the answers to these questions, the flowchart produces a recommended adjustment to the net present value of the public sector comparator, likely in most cases to be in the range 2 - 10%.

Supplementary guidance is available on the Green Book homepage.

Main Features – Distributional Impacts

- Principle: to account for the distributional implications of a proposal
- How are the costs and benefits distributed across different groups in society (e.g. according to income)

Proposals might have differential impacts on individuals, amongst other impacts, according to their:

- Income;
- Gender;
- Ethnic Group;
- Age;
- Geographic location; or
- Disability.

Main Features – Distributional Impacts

- Any distributional effects should be explicitly stated and quantified as much as possible
- The monetary costs and benefits of a proposal can be weighted to take account of distributional impacts
- Any Government action must comply with a range of UK discrimination law

At a minimum, appraisers need to identify how the costs and benefits of a proposal accrue to different groups in society. If, for example, the costs of a government action fall largely upon one ethnic group this impact should be detailed in appraisal.

Where it is considered necessary and practical, distributional weights can be used to make an explicit adjustment to the monetary costs and benefits of a proposal. An illustrative example of how to obtain distributional weights is provided in Annex 5 of the Green Book.

Even if adverse differential impacts on a particular group are legally permissible, the action must still be justifiable in policy terms and alternatives investigated. If the intervention is not justifiable, remedial action is necessary.

Main Features – Discount rate

- Principle: people prefer to receive goods and services today rather than in the future
- Discount rate is used to convert future costs and benefits into present values, to enable comparison

Discounting is used to compare costs and benefits that occur in different time periods. It is based on the principle that, generally, people prefer to receive goods and services now rather than later – known as **time preference**.

The discount rate has been ‘unbundled’ and is now set at 3.5% real. The revised rate links the discount rate solely to society’s preference for receiving benefits now rather than later. This is known as the **social time preference rate**.

Following consultation, a schedule of lower rates is set for appraisals over the long term (i.e 30 years).

Other factors, which may implicitly have been bundled up in the old 6% figure, will now be dealt with explicitly and separately. The most important of these is optimism bias.

Main Features – Optimism Bias

- Principle: account for widespread tendency for appraisers to be over optimistic

- What is it?
 - Demonstrated evidence base
 - Affects many elements of appraisals
 - Worldwide phenomenon
 - Public and private sector

- Examples

There is evidence for a widespread tendency for appraisers to be over-optimistic when preparing proposals.

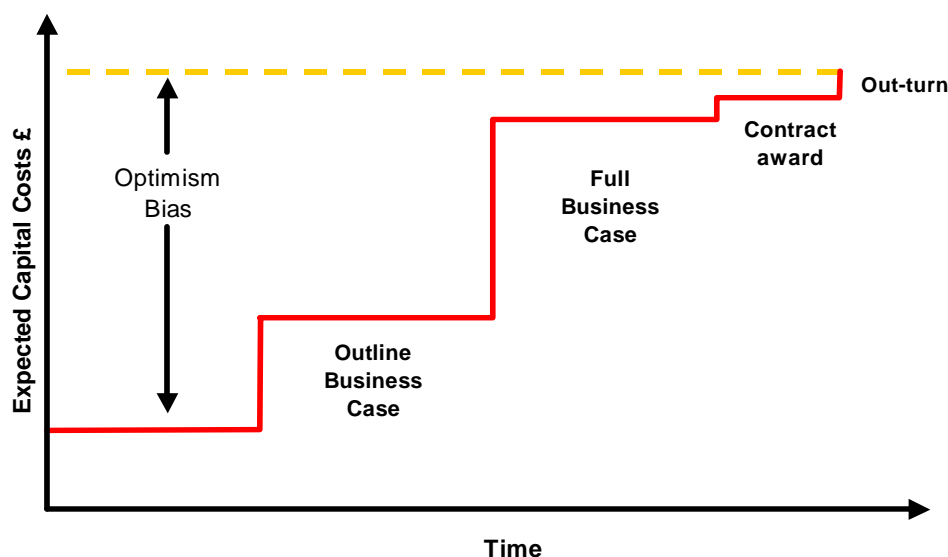
It affects many elements of an appraisal - capital costs, operational costs, project duration, works duration, and benefits shortfall.

It appears to be a worldwide phenomenon, not just in the public sector but in the private sector as well.

It is a well known feature of procurement and we can all think of examples in the public sector where it has occurred. For instance...

	Initial cost estimate	Final Cost	Slippage
Jubilee line	£2.1bn	£3.5bn	2 years
Guy's hospital	£36m	£160m	3 years
Trident Faslane	£100m	£314m	2.5 years

Optimism bias and developing the business case



This slide shows the relationship between expected costs and the development of the business case.

The OGC recommends the iterative development of business cases from high level outlines to in depth full business cases.

As business cases are developed, expected costs tend to increase - usually as the scope of the project increases. Also, work should be undertaken to identify risks specific to the project in hand.

The level of optimism bias thereafter should reduce accordingly.

The aim of the new Green Book is to ensure that at the Outline Business Case stage, a better estimate is made of the capital costs that will eventually be incurred. Similarly, for benefits realised, and the duration of works.

Main Features - Optimism Bias

- What can be done about it?
- Apply evidence-based uplifts to estimates of capital costs and works duration (sector specific)
- Sensitivity on benefits shortfall, and operating costs
- In absence of robust data use recommended ranges given in Mott MacDonald study

To mitigate optimism, the Green Book recommends that, for capital costs, uplifts to estimates should be applied, based on the best available evidence, so that earlier on in the appraisal process, managers and decision makers have a more realistic idea of the likely cost of their projects. A similar approach should be used in estimating the time that it will take to complete the capital works.

Sensitivity testing should be used to assess by how much operating costs can be allowed to increase, or benefits to fall short, before a proposal becomes unviable.

HMT commissioned Mott Macdonald to review optimism bias in government procurement in a wide range of sectors.

Motts reviewed 50 projects over the last 20 years and found high levels of optimism bias. On average, for traditionally procured projects, the overruns recorded were 47% for capital expenditure (NPV), and 17% for works duration.

Supplementary guidance is available on the Green Book homepage on how to make adjustments in practice.

Main Features – Optimism Bias

Project type	Historical average % at Outline Business Case	
	Capital Expenditure	Works Duration
Standard buildings	24	4
Non-standard buildings	51	39
Standard civil engineering	44	20
Non-standard civil engineering	66	25
Outsourcing*	41	N/a
*opex rather than capex		

Mott MacDonald found these levels of optimism bias in their sample, and we have to take account of them in appraisal.

Similarities were found between sectors, on the basis of the type of project. For instance, a standard building could be a school or prison or green-field hospital.

But of course not all these buildings will be standard. Non-standard buildings are characterised by special design considerations, space constraints, complicated site characteristics, or involving innovative specialist buildings, e.g. brownfield hospital sites, such as Guy's Hospital.

Examples of non standard civil engineering include the Jubilee Line extension.

Note that Motts were not able to provide ranges of optimism bias for operational costs and shortfalls in benefits.

Issues and implications

- RAB cost of capital charge
- Transition
- Monitoring

RAB cost of capital charge. The cost of capital charge will change, with respect to 2003/04 accounts onwards. In practice, this is a categorisation change, moving allocations from DELs to AME.

Transition. There will be a transition period until 1 April 2003, and a cut off rule applied. The advice given by OGC is that projects that have reached the Invitation to Tender stage by 1 April 2003 should not fall under the new guidance. Projects that have NOT reached this stage should fall under the new guidance.

Monitoring. Individual departments, the OGC and the Treasury will share responsibility for monitoring the implementation of the changes.

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