THE GREEN BOOK
CENTRAL GOVERNMENT GUIDANCE ON APPRAISAL AND EVALUATION

2018
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Foreword

For nearly half a century the Treasury’s Green Book has provided guidance to help officials develop transparent, objective, evidence-based appraisal and evaluation of proposals to inform decision making.

This Green Book is an update of the 2003 edition. It builds on the lessons learned using the 2003 edition and previous editions dating back over 40 years.

Many of the changes in this edition reflect important advances in appraisal and evaluation that government departments and agencies have made since 2003. This is especially notable in environmental appraisal, where scientific advances have transformed our understanding of environmental impacts and improved our ability to understand and value them. Greater emphasis is also placed on building monitoring and evaluation into policy development before, during and after implementation.

The policy landscape has changed since 2003, but there is a continued need to make the best use of resources. Treasury Business Case Guidance for spending proposals has been strengthened, emphasising the importance of assessing proposals on the robustness of their delivery plans alongside more traditional cost benefit analysis. The impact of regulation on business has also been brought into sharper focus with the introduction of business impact targets. Both these developments are reflected in this edition of the Green Book.

The guidance has benefited from discussions across government and with colleagues from academia and the practitioner community. Thanks are due to all that have given their time to supporting this update.

Tom Scholar

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March 2018
Introduction

1.1 The Green Book is guidance issued by HM Treasury on how to appraise policies, programmes and projects. It also provides guidance on the design and use of monitoring and evaluation before, during and after implementation.

1.2 The Green Book should be used alongside other HM Treasury guidance:

- Managing Public Money which provides guidance on the responsible use of public resources
- the Aqua Book which sets out standards for analytical modelling and assurance
- the Magenta Book which provides detailed guidance on evaluation methods

1.3 Green Book guidance applies to all proposals that concern public spending, taxation, changes to regulations, and changes to the use of existing public assets and resources – see Box 1 below.

Box 1. Scope of Green Book Guidance

Green Book guidance covers:
- policy and programme development
- all proposals concerning public spending
- legislative or regulatory proposals
- sale or use of existing government assets – including financial assets
- appraisal of a portfolio of programmes and projects
- structural changes in government organisations
- taxation and benefit proposals
- significant public procurement proposals
- major projects
- changes to the use of existing public assets and resources

1.4 The role of appraisal and evaluation is to provide objective analysis to support decision making. Decision making processes include the scrutiny of business cases by government departments, Treasury Approval Processes and the Regulatory Impact Assessment process. The principles of the Green Book should also support options appraisal when formal decision making processes are not required. The relationship between Green Book guidance and government decision making processes is shown in Figure 1.

1.5 The Green Book is not a mechanical decision making device. Rather, it provides approved guidance and methods, recommended tools for developing options and standard values for use across government. It helps officials develop transparent, objective and evidence-based advice for decision making that is consistent across government.
1.6 This guidance should be applied proportionately. The resources and effort employed should be related to the scale of the proposals under consideration.

1.7 Monitoring and evaluation of all proposals should be planned, costed and provided for as an integral part of a proposed intervention under consideration.

**Figure 1. The Green Book and Appraisal in Context**

1.8 This guidance has been designed to be accessible to a variety of users – from policy officials to analysts. Accordingly, it follows a tiered structure where:

- a high-level overview is provided in chapters 1 – 3
- detailed information for practitioners is provided in chapters 4 – 8
- technical information and shared valuations for use in appraisal are provided in annexes 1 – 6
- hyperlinks have been inserted to allow users to cross-reference within the Green Book and associated supplementary guidance

1.9 The Green Book’s chapters are as follows:

- **chapter 2** provides a non-technical introduction to appraisal and evaluation
- **chapter 3** provides an overview of how appraisal fits within government decision making processes
- **chapter 4** explains how to generate options and undertake long-list appraisal
- **chapter 5** explains how to undertake detailed Social Cost Benefit Analysis of a short-list of options
- **chapter 6** sets out the approach to valuation of costs and benefits
- **chapter 7** sets out how to present appraisal results
- **chapter 8** sets out the approach to monitoring and evaluation
annexes 1 – 6 provide further technical information and values for use in appraisal across government

Scope and relationship with other appraisal guidance

1.10 The content and boundary of all Green Book guidance is determined by HM Treasury. The content is peer reviewed by the Government Chief Economists Appraisal Group. It applies to all government departments, arm’s length public bodies with responsibility derived from central government for public funds and regulatory authorities.

1.11 Departments also produce internal guidance, setting out how Green Book appraisal should be carried out for their areas of responsibility. For consistency, departmental guidance should align with the Green Book. Where departmental guidance affects other government departments, or contains significant developments in methods and approach, relevant sections should be agreed with HM Treasury and the Government Chief Economists Appraisal Group.

1.12 Throughout the guidance there are links to external supplementary guidance. These provide further detail on subjects that are relevant across government e.g. the valuation of greenhouse gas emissions. To provide background and support understanding, non-governmental research and discussion papers are referenced in the Green Book. These documents do not form part of the guidance.
2 Introduction to Appraisal and Evaluation

2.1 This chapter provides a non-technical introduction to appraisal and evaluation.

Principles of appraisal

2.2 Appraisal is the process of assessing the costs, benefits and risks of alternative ways to meet government objectives. It helps decision makers to understand the potential effects, trade-offs and overall impact of options by providing an objective evidence base for decision making.

2.3 Economic appraisal is based on the principles of welfare economics – that is, how the government can improve social welfare or wellbeing, referred to in the Green Book as social value.

Rationale for intervention

2.4 The first step in appraisal is to provide the rationale for intervention. This can be based on ensuring markets work effectively e.g. ensuring pollution is accounted for by business, or to achieve distributional objectives e.g. to promote fair access to education. Alternatively, this could involve providing goods generally not provided by market mechanisms e.g. defence.

2.5 A clear rationale for intervention should be used to identify the objectives or outcomes the government wishes to meet through intervention.

Generating options and long-list appraisal

2.6 The next step is to consider how best to meet the government’s objectives. Options might include direct government delivery, market creation, regulation, tax changes or public information initiatives. There are also a wide variety of delivery and funding options.

2.7 Generating a long-list of options at the start of the appraisal process ensures that a full range of possibilities are considered. This should be informed by stakeholder consultation or engagement, lessons learned from previous interventions, international best practice and the wider evidence base. Starting out with a narrow set of options or a pre-determined solution may miss the opportunity to explore more novel, innovative solutions that might offer better social value.

2.8 Once a long-list is developed it can then be filtered down to a set of viable short-list options ahead of detailed economic analysis. Viability can be assessed from the perspectives of strategic fit to wider policy objectives, potential Value for Money, affordability and achievability. Dependencies and constraints (e.g. legal frameworks) should also be considered.

Short-list appraisal

2.9 Analysis of short-list options is at the heart of economic appraisal. This is where the expected costs and benefits of an intervention are estimated and the trade-off between costs and benefits is considered. This is referred to as Social Cost Benefit Analysis (CBA) or, where appropriate, Social Cost-Effectiveness Analysis (CEA), which compares the costs of alternative ways of producing the same or similar outputs.
Valuing relevant costs and benefits

2.10 Social CBA requires all impacts – social, economic, environmental, financial etc. – to be assessed relative to continuing with what would have taken place in the absence of intervention, referred to in the Green Book as Business As Usual.

2.11 The relevant costs and benefits are those for UK society overall, not just to the public sector or originating institution. They include costs and benefits to business, households, individuals and the not-for-profit sector. Assessing the costs and benefits across all affected groups matters as a relatively low-cost public sector option, such as a new regulation, may have significant costs for businesses or households.

2.12 The costs or benefits of options should be valued and monetised where possible in order to provide a common metric. This is usually done by assessing the value which reflects the best alternative use a good or service could be put to – its opportunity cost. Market prices are the usual starting point for the valuation of costs and benefits.

2.13 For some costs and benefits there may be no market price, or the market price may not fully reflect societal costs or benefits e.g. environmental values. In these cases, valuation techniques and a range of specific standard values can be used. Where it is not possible or proportionate to monetise costs and benefits they should still be recorded and presented as part of the appraisal.

2.14 Costs and benefits should be calculated over the lifetime of the intervention or asset. For many interventions, a time horizon of 10 years is suitable. Where significant assets are involved up to 60 years may be suitable e.g. buildings and infrastructure. For interventions likely to have significant costs or benefits beyond 60 years, such as nuclear waste storage, a suitable appraisal period should be agreed at the outset.

Distributional analysis

2.15 Distributional analysis is necessary where an intervention either has a redistributive objective or where it is likely to have a significant impact on different groups, types of business, parts of the UK or Devolved Administrations. Distributional analysis can include regional, sub-national and local analysis based on geographically defined areas.

Optimism bias, risk and sensitivity analysis

2.16 When conducting appraisal consideration should also be given to:

- **optimism bias** – this is the proven tendency for appraisers to be too optimistic about key project parameters, including capital costs, operating costs, project duration and benefits delivery. Over-optimistic estimates can lock in undeliverable targets and it is therefore critical to make adjustments for this. The Green Book recommends applying specific adjustments for optimism bias. Cost estimates are increased by a set percentage to reflect evidence of underestimation from previous similar interventions. Adjustments should be based on an organisation’s own evidence base for historic levels of optimism bias. In the absence of this, generic values are provided.

- **risks** – these are specific uncertainties that arise in the design, planning and implementation of an intervention. Risk costs are the costs of risks materialising, avoiding risks, sharing risks and mitigating risks, estimated on an expected likelihood basis. Policy makers need to ensure these risks are fully understood and managed, including low probability but high impact events.
sensitivity analysis – involves exploring the sensitivity of expected outcomes of an intervention to potential changes in key input variables. Switching values can be estimated as part of sensitivity analysis where appropriate. These are the values an input would need to change to in order to make an option no longer viable.

Discounting

2.17 Discounting is used to compare costs and benefits occurring over different periods of time – it converts costs and benefits into present values. It is based on the concept of time preference, that generally people prefer to receive goods and services now rather than later. If Projects A and B have identical costs and benefits but Project A delivers benefits a year earlier, time preference means Project A is valued more highly.

2.18 In government appraisal costs and benefits are discounted using the social time preference rate of 3.5% (the basis for this is explained in Annex 6).

Selecting the preferred option

2.19 Comparison of each short-list option, and their advantages over Business As Usual, allows identification of the best option for the delivery of social value. The total value of discounted benefits less costs provides the Net Present Social Value (NPSV) of an intervention. The NPSV and Benefit Cost Ratio (benefits divided by relevant costs) alongside risks and any other relevant considerations, such as unmonetisable costs and benefits, help determine the preferred option.

Monitoring and Evaluation

2.20 Monitoring is the collection of data, both during and after policy implementation. This data can be fed back into implementation, current decision making and the appraisal process to improve future decision making. It requires the collection of data before implementation to act as a baseline.

2.21 Evaluation is the systematic assessment of an intervention’s design, implementation and outcomes. It tests:

  - if an intervention is working or worked
  - if the costs and benefits were as anticipated
  - whether it had any other consequences
  - whether the consequences were anticipated
  - how well it was implemented

2.22 Monitoring and evaluation of all proposals should be planned, costed and provided for as an integral part of the proposed intervention under consideration. This helps ensure that they will be systematically carried out. Taken together monitoring and evaluation can identify what lessons can be learned to inform the design and delivery of future interventions.

2.23 The key stages in appraisal are summarised in Box 2.
Box 2. Description of Key Appraisal Steps

The key steps in the appraisal process are:

- The first step in appraisal is to provide the **rationale for intervention**. This should be used to identify the **objectives or outcomes** the government wishes to meet through intervention.

- The next step is to consider how best to meet the government’s objectives by considering a **long-list of options**, including a wide range of possible approaches. These should be assessed for viability and filtered down to a short-list.

- **Short-list appraisal** follows and is at the heart of economic appraisal where expected costs and benefits are estimated and the trade-off is considered. This is done using Social Cost Benefit Analysis (CBA) or Social Cost-Effectiveness Analysis (CEA).

- **Identification of the preferred option** is based on the detailed analysis at the short-list appraisal stage. It involves determining which option provides the best balance of costs, benefits, risks and unmonetisable factors.

- **Monitoring** is the collection of data, both during and after implementation to improve current and future decision making. **Evaluation** is the systematic assessment of an intervention’s design, implementation and outcomes. Both monitoring and evaluation should be considered before, during and after implementation.