

2 *Using Appraisals to Make Better Choices*

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OVERVIEW

This chapter presents key points on how to improve decisions through project appraisal, and is structured to consider six key questions covering the project appraisal process:

- What is project appraisal?
- Why do project appraisals?
- Why involve stakeholders?
- What is value?
- How to compare options?
- How to make the decision?

A much more detailed discussion of these points is contained in Chapter 2 of the MCM (Penning-Rowsell et al., 2013).

The framework laid out here remains the same as in the Handbook 2010. But between the 2005 and 2013 Manuals, there has been more research done on Multi-Criteria Analysis, with a “scoring and weighting” system being developed for the Environment Agency and Defra by Risk and Policy Analysts (Environment Agency, 2022). The involvement of stakeholders in decision making continues to be strengthened, and is now routine, with the implementation of Defra’s *Making Space for Water* (Defra, 2004). Users are also recommended to consider Defra’s Policy Statement (Defra, 2020).

LESSONS FROM EXPERIENCE

- The role of economic analysis is in supporting the stakeholders in deciding which is the best option;
- Do not look for a mechanical means of making choices; what project appraisal can provide is greater understanding of what the choice involves: decision-support, not decision-making;
- The appraiser is seeking to make ‘better’ choices. One of the central conflicts here may therefore be different understandings concerning what is a ‘better’ choice;
- The option choice process should be appraisal led;
- As a learning process, the appraiser should start by identifying the critical parameters as these that affect the choice between options and concentrate our attention upon those parameters;
- There is no universally superior project appraisal technique; the choice of technique has to be matched to the reasons why the choice is necessary;
- Do not expect all choices to be clear-cut: some will be truly marginal;
- Even though economic analysis is a central component of the appraisal process, it should always be used critically and only as an aid to decision-making; it is not an end in itself.

WHAT IS PROJECT APPRAISAL?

The Environment Agency's project appraisal guidance outlines that project appraisal is the process of identifying and then evaluating options in order to select the one that most likely satisfies the defined project objectives. The purpose of the project appraisal process is to improve decision-making towards making the 'best' choice. Good decisions and the 'best' choice are most likely to result from considering all economic, social, environmental and technical issues for a full range of options.

The methods used in project appraisal are aimed at:

1. Simplifying the complexity of choice;
2. Understanding what choice involves; and
3. Enabling this understanding to be shared by stakeholders.

To ensure that project appraisal is not a mechanical exercise, appraisal led design is essential. Appraisals should drive the design process, with the identification and specification of project options evolving through this appraisal process.

To be useful, appraisal methods should ensure best value and hence the highest rate of return for public monies. They must also provide accountability, transparency of the basis for choice, and result in a rational comparison of the available options and the consequences of these options.

WHY DO PROJECT APPRAISALS?

If the appraiser wants to make better decisions in flood and coastal erosion risk management, we need to start by understanding why we have to make the particular decision in the first place. This commences with identifying the problem and defining the objective/s.

In the simplest terms, a choice is required when there is conflict (i.e. disagreement) and uncertainty about a course of action to meet the defined objective/s. Uncertainty arises because of initial limited knowledge of an option's pros and cons (benefits and costs), and whether the 'best' choice to be made will be the most sustainable.

Economic appraisal enables the comparison of widely differing options, with careful consideration applied to how options are appraised as to their 'value' to arrive at the 'best' choice.

WHY INVOLVE STAKEHOLDERS?

A better decision is one that is both a 'just' decision and one that turns out to be 'correct' in the long run. For a decision to be 'just', it is not only the outcome that must be seen to be fair but so too must the process by which the decision is made. Critical to the achievement of a 'just' process and a better decision is therefore appropriate stakeholder involvement.

Project appraisal therefore has two roles:

1. Stakeholders need informed involvement, with information available to all: the project appraisal technique itself can contribute to creating a shared knowledge base;
2. The project appraisal method must serve as a framework through which stakeholders can explore, argue and negotiate their concerns and explore different options.

Also, relatively new techniques are being developed, including Multi-Criteria Analysis (MCA) which, when appropriately applied, could lead to improved stakeholder involvement in decision-making.

WHAT IS VALUE?

Value is central to benefit-cost analysis and, in economics, all values are subjective: the value of some 'good' is given by the individual and reflects his or her subjective preference for that 'good'. Value does not have to be measured in monetary terms only, although the Treasury Green Book (H.M. Treasury, 2022), suggests that *'real or estimated market prices provide a first point of reference for estimating the value of benefits'* (p44), and that *'benefits are valued in monetary terms, unless it is not proportionate or possible to do so (p40)'*.

In this respect, the shorthand term 'good' is used to denote any commodity, resource or item which an individual prefers or desires (for example, a coastal protection project, a flood risk management scheme, a beach, a river, or a recreational experience). The values assigned to any such good then reflect the relative contribution that this good makes to an individual's 'utility' or wellbeing.

Value is also 'sacrificial'. This means it quantifies or reflects the degree to which the individual would be willing to *give up* an amount of that 'good' in order to have *more* of another: more flood risk management means fewer hospitals. Values are, therefore, not absolute but reflect the basis upon which choices are made between enjoying these different goods (which the economist calls 'consumption').

There are three general strategies for deriving values for use in benefit-costs analysis:

1. Using market prices (e.g. the cost of repairing flood damage).
2. Using 'inferential' methods, which use statistical techniques to infer the value of something that does not have an observable market price (e.g. valuing a recreation resource by the distance people are prepared to travel to enjoy that resource).
3. Using 'expressed preference' methods which usually involve questionnaires to elicit a value (e.g. asking people what choices they would make between different recreation venues).

Further information on these techniques and on the issues covering non-use values is provided in Chapter 10 here and in the MCM (Penning-Rowsell et al., 2013). New techniques for Multi-Criteria Analysis could facilitate better comparison of certain monetary and non-monetary values.

HOW TO COMPARE OPTIONS?

Option appraisal should provide an assessment of whether a proposal is worthwhile. However, the steps outlined in the Treasury Green Book involving *Justifying Action* (e.g. identifying need) and *Setting Objectives* should take place before *Option Appraisal*. Once options are developed, the appraisal process assesses option performance, usually by comparing the consequences of '**do something**' options against some baseline option (usually '**do nothing**'). Appraisers should only be interested in these differences. Benefit-cost analysis is normally used to make comparisons and judgments on these differences, whilst other techniques such as MCA can improve this comparison stage.

An initial **sensitivity analysis** should ideally be undertaken at the start of the project appraisal process, and not at the end, in order to understand how sensitive the choice is to the likely accuracy of data or methods being used. An experienced appraiser should be able to anticipate those

parameters to which the estimated benefits and costs are most sensitive. It is those parameters that should be progressively refined as the analysis progresses.

The consequences of the different options often differ in terms of:

- Who is affected;
- What is affected;
- How they are affected; and
- When this effect occurs.

Thus, all appraisals should focus on these points, and any comparison between options will involve judgments about how these different consequences can be brought to a common base.

HOW TO MAKE THE DECISION?

According to the Treasury Green Book, the purpose of an appraisal is to indicate that no policy, programme or project is adopted without first having the answers to these questions:

- (a) Are there better ways of achieving a given objective (e.g. reduced flood risk)?
- (b) Could the resources be put to better use (e.g. building a hospital)?

The appraisal also should explore how confident we can be that one option is better than a range of other options. Two criteria frequently used in comparing the different options are:

- The **benefit-cost ratio**: the ratio of the present value of all of the streams of benefits over the present value of all of the streams of costs; and
- The **net present value**: the difference between the present value of all of the streams of benefits and the present value of all of the streams of costs.

Projects are only economically viable if the benefits exceed the costs (i.e. the ratio of benefits to costs is greater than 1.0). Where benefits marginally exceed costs, there is often high uncertainty as to whether an option is justified, because only a small change or error in either the benefits or costs would tilt the balance the other way. So when comparing a 'do something' option to the baseline option, confidence is needed that a 'do something' option is clearly preferable.

In this regard, the decision process explores whether the best value for money is provided while achieving the most appropriate standard of risk management. This is undertaken by assessing the incremental benefit-cost ratio of each economically viable option. The full mechanics of this decision process for England can be found in the Environment Agency's FCERM-AG appraisal guidance (FCERM-AG, 2022) (<https://www.gov.uk/guidance/flood-and-coastal-erosion-risk-management-appraisal-guidance/8-compare-and-select-the-preferred-option> *Compare and select preferred option: Decision criteria and decision process*). Users should consult the decision rules appropriate for their context.

The Environment Agency guidance for England (and others may wish to follow the same advice) suggests that the decision should be modified as necessary to take account of factors that are not fully counted in the economic analysis. New techniques which incorporate these other factors into the decision-making process in a more consistent and transparent way, such as Multi-Criteria Analysis, have been tested and developed (see FCERM-AG, 2022).

FUTURE DEVELOPMENTS

The Treasury's Supplementary Guidance Note to their Green Book (HM Treasury, 2005), sets out five principles that government will apply to managing risks to social, environmental and economic aspects of sustainability:

1. Openness and transparency.
2. Involvement.
3. Proportionality and consistency.
4. Evidence.
5. Responsibility.

Future guidance on project appraisal and decision-making will draw on a number of techniques that will contribute to underpinning these principles, as shown below:

- Improved transparency, openness, proportionality and greater consistency of appraisal policy with the 'Green Book' should emerge through the adoption of Willingness to Pay economic approaches. Amongst other changes, these approaches seek to disaggregate benefits and present information on how project and programmes impact on different economic interest groups and financial budgets;
- Improved evidence, involvement, responsibility and transparency should emerge through the application of Multi-Criteria Analysis (MCA). MCA aims to establish preferences between options with reference to an explicit set of objectives and associated criteria for assessing the extent to which the objectives have been achieved. Two of the key advantages of MCA are that, when appropriately applied, it can allow greater stakeholder involvement and provide greater transparency to the decisions being made at all levels of appraisal.

These areas have been the subject of some research and theoretical development. But more work is required to test their feasibility and practical application before recommendations can be made for wider and universal adoption in flood and coastal erosion risk management applications.

REMAINING ISSUES

New edition of the UK Government HM Treasury Green Book

The Green Book sets the rules for UK Government economic appraisal and so is important for our work. A new version was released in 2022¹.

Key definitions: 'Private', 'public', 'collective' and 'individual' goods

- Those goods that are bought and consumed by individuals such that they are then not available to others are termed **private goods**. The assumption here is that individuals make their own purchasing decisions for their own purposes. This applies to most marketed goods, although some goods can be shared between individuals without being used-up (e.g. newspapers and books);

¹ Although all efforts have been made to align with current English Government policy, it is important for users of these data and methodologies to check the relevant national appraisal policy guidelines for any recent updates.

- **Public goods**, by contrast, occur when the provision of a good by one individual necessarily means that it is also provided for others without diminishing its value. The assumption here is that there is no way of excluding others from receiving the benefits of the goods provided (e.g. a lighthouse, or a ring flood embankment around a town);
- There are some goods that any individual, given sufficient resources, can acquire for him/herself and these are termed **individual goods** (e.g. flood proofing a house);
- **Collective goods**, by contrast, can either only, or only efficiently, be provided collectively (e.g. a public flood warning system).

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