
**VOLUME 13 ECONOMIC
ASSESSMENT OF
ROAD SCHEMES**
SECTION 1 THE COBA MANUAL

PART 0

**THE APPLICATION OF THE COBA
MANUAL**

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2. INTRODUCTION

- 2.1 The Government's approach to the appraisal of all transport projects is set out in the 'Guidance on the Methodology for Multi-Modal Studies' (GOMMMS). The publication 'Applying the Multi-modal New Approach to Appraisal to Highway Schemes' (known as the Bridging Document) enables those carrying out highway project appraisal to interpret the multi-modal, study based, appraisal advice in GOMMMS.
- 2.2 Transport projects are appraised against five objectives (Environment, Safety, Economy, Accessibility and Integration). The COBA (COst Benefit Analysis) program compares the costs of providing road schemes with the benefits derived by road users (in terms of time, vehicle operating costs and accidents), and expresses the results in terms of a monetary valuation. The output contributes to the appraisal process in the following ways:
- 'Economy' Objective: Time and Vehicle Operating Cost (VOC) changes;
 - 'Safety' Objective: Changes in Accident Costs and Casualties;
 - 'Environment' Objective: Changes in the amount of fuel used to assist in determining environmental changes.
- 2.3 This document is primarily a user manual for the cost-benefit analysis computer program COBA11. However, it also includes details of basic economic concepts used in the appraisal of highway schemes and details of the Overseeing Organisations' requirements on the reporting of appraisals. COBA users are also referred to the Department's WebTAG Guidance notes for a fuller explanation of economic parameters and concepts. The manual is written primarily for use by the Overseeing Organisations' officials and their agents engaged in the economic appraisal of trunk roads improvement schemes. Administration procedures described therefore refer to those of the Overseeing Organisations.

Implementation

- 2.4 This document supersedes the COBA10 manual. **The COBA11 program was released in March 2001 at the same time as the TUBA program (Transport Users Benefit Appraisal) and GOMMMS (Guidance on the Methodology for Multi-Modal Studies).** The COBA11 program should be used (from March 2001 onwards) on all schemes where a COBA appraisal is appropriate for the appraisal of trunk roads, including motorways. For use in Northern Ireland, this program will be applicable to those roads designated by the Overseeing Organisation.

Application of COBA

- 2.5 COBA is used in the appraisal of Trunk Road schemes in England, Wales and Northern Ireland. In Scotland the program NESA is used instead of COBA. In addition COBA is used by many Local Authorities to appraise a wide range of highway schemes.
- 2.6 COBA is not applicable to the economic appraisal of all Trunk Road schemes and alternative techniques may be more appropriate. Highway schemes where alternative techniques may be more appropriate are:
- a) schemes costing less than £1m where a less sophisticated approach can be adopted by using the Overseeing Organisations' small scheme assessment methodology. However, there will be schemes in this category that can and should be assessed using COBA;
 - b) schemes where traffic related responses other than reassignment are considered significant. For these schemes a variable trip matrix evaluation technique may be applied using values

and principles consistent with COBA;

- c) schemes where the formulae used in the COBA program are considered inappropriate (for example, where the modelling of interacting junctions forms an important part of the appraisal.

- 2.7 Wherever (b) or (c) apply, alternative economic appraisal techniques, such as TUBA, should be applied.
- 2.8 Economic appraisal can take place only when the highway network and the traffic flows associated with the options under consideration have been defined. Guidance on the techniques available for these procedures are contained in the Traffic Appraisal Manual (TAM (DMRB 12)).

Why Use Cost-Benefit Analysis?

- 2.9 Resources, particularly public sector investment resources, are scarce. All Governments are therefore concerned to secure value for money from investment expenditure, and to find tools which measure value for money objectively between programmes, in priorities within them and in relation to individual projects. While charging for the use of roads the Government does not differentiate by type of road and quality of service. Financial profitability yardsticks cannot be applied to road investments and cost benefit analysis was developed as a technique for assessing 'value for money' in such circumstances. It is, however, a partial technique; economic appraisal of the sort embodied in COBA (and, for that matter, profitability measurements in circumstances where financial appraisal is possible) does not purport to measure value for money over the whole range of costs and benefits, including those broadly classified as environmental. The limited but important role of economic appraisal has been spelt out in successive White Papers.

Change in Approach to Economic Appraisal

- 2.10 Since COBA10 the approach used in the appraisal of transport schemes has changed. In order to appraise multi-modal projects alongside road schemes, the Department has moved from a method (or calculus) based on social costs and benefits (as used in COBA10) to one based on willingness to pay. At the same time the unit of account has been changed from factor costs to market prices. These changes do not affect the fundamental principles of appraisal, merely the presentation of results. However, it is important to note that the distinction between the two units of account is entirely separate from the distinction between the methods of accounting. These terms are described in more detail in Part 1.

Valuation Principles

- 2.11 Cost-benefit analysis was developed for sectors which do not have a marketable output, and typically it is geared to measuring costs and benefits to society at large (and referred to as **social** cost-benefit analysis). In this country users are not charged for road travel, and therefore the roads sector is a classic case for cost-benefit analysis. However, the problems of valuing in cash terms all the costs and benefits of road investments to society at large have proved intractable, so that generally cost-benefit analysis in this sector has fallen short of full social analysis. In most countries measurements of benefits in cash terms have been confined to those changes in costs which accrue to road users resulting from the scheme itself, disruption during construction and changes in delays due in maintenance of the network.
- 2.12 Delays during construction and changes in delays due to routine maintenance are usually calculated externally to COBA using the computer program QUADRO (QUEues And Delays at ROadworks) or other suitable methods.

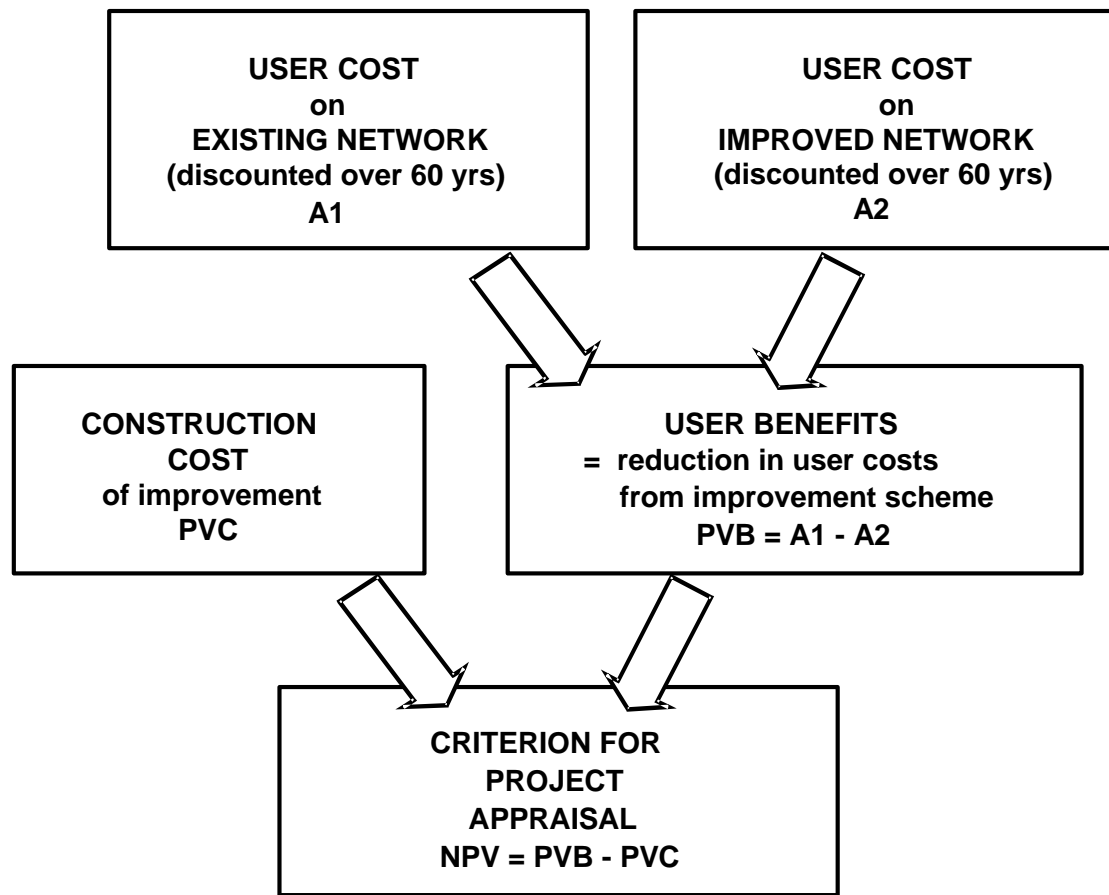


Figure 0/1: The COBA Appraisal Process

2.13 COBA calculates the user costs on the network in terms of the three user cost streams mentioned earlier:

- changes in *time*;
- changes in *operating costs*; and,
- changes in *accident costs*.

2.14 The total costs of the scheme are considered in terms of:

- capital costs, (including preparation and supervision costs); and
- changes in the capital cost of maintenance of the network.

2.15 Figure 0/1 illustrates how the scheme costs and user cost changes are brought together in the overall appraisal process. The COBA program itself measures costs and benefits over the entire road network affected by a scheme, but assumes that the pattern of trip making (as opposed to the routes used) is unaffected; this 'fixed trip matrix' assumption is not, however, universally applicable (see Part 1 Chapter 3).

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