



Life Cycle Costs – Any use?

Jakob Laigaard Jensen

COWI, Kongens Lyngby, Denmark

Contact: lai@cowi.com

Abstract

Nowadays, life cycle costs assessments are frequently carried out for major infrastructure assets at some stage of their service life based on net present values, interest rate, data on construction costs and operation and maintenance costs. This may be considered as part of an overall assessment in parallel with other important issues such as risk assessment, environmental assessment, traffic impact assessment and so forth.

Such assessments may be carried out as part of feasibility studies to find the most cost-efficient solution, as part of detailed design to determine an in-service budget for the owner, as part of the tender to evaluate the most attractive bid proposal, or as part of infrastructure operation to evaluate the optimum operation and maintenance strategy.

The paper looks into the use of life cycle costs in tendering. It is well known that the operation and maintenance scenario for a service life may turn out very differently from expected. It will depend on construction deficiencies, operation and maintenance organization as well as the chosen inspection and maintenance strategy and assumed unit prices and quantities for operation, inspection and maintenance.

Considering those uncertainties, the question is which life cycle related parameters are efficient to use in tendering and how tenders should be carried out to control life cycle costs.

Keywords: Life cycle costs, bridges, tunnels, service life, operation and maintenance.

1 Introduction

The new European public procurement legislation implemented in 2016 now formally includes life cycle costs Life cycle cost (LCC) as an evaluation criteria in line with the criteria "lowest price" and "economically most feasible".

Hence, LCC is becoming an increasing important parameter in the development of projects for tender as in the actual operation through the service life of infrastructures such as a bridges, tunnels, roads or railways, [1]. One reason for this is the increasing population of aging bridges and tunnels, which means increased needs for agency

funding of operation and maintenance (O&M). This development has led to agencies' interest in reducing the operation and maintenance costs by more durable designs, higher construction quality, more efficient O&M and also smarter methods of tendering construction works and concessionaire contracts for O&M. Ideally, project requirements should encourage tenderers to provide a project with the lowest possible life cycle costs.

In seeking to control life cycle costs, this may be done by direct or indirect requirements and the requirements may be qualitative or quantitative or both: