

ISO 15686-5:2008-06 (E)

Buildings and constructed assets - Service-life planning - Part 5: Life-cycle costing

| Contents | | Page |
|--------------------|--|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms, definitions and abbreviations | 1 |
| 3.1 | Costs | 1 |
| 3.2 | Analysis/measures | 3 |
| 3.3 | Elements of calculation | 4 |
| 3.4 | Other terms | 5 |
| 4 | Principles of life-cycle costing | 5 |
| 4.1 | Purpose and scope of life-cycle costing | 5 |
| 4.2 | Costs to include in LCC analysis | 5 |
| 4.3 | Typical analysis at different stages of the life cycle | 8 |
| 4.4 | Analysis based on client requirements and the intended use of the results | 9 |
| 4.5 | Data for analysis at different stages of the project life cycle | 14 |
| 4.6 | Cost variables | 15 |
| 4.7 | Calculating cost variables and the form of future costs analysis | 15 |
| 4.8 | Discounting costs to present values | 15 |
| 4.9 | Approval and validation | 16 |
| 4.10 | Reporting LCC analysis | 16 |
| 5 | Setting the scope for LCC analysis | 16 |
| 5.1 | Relevance and importance of setting parameters for the use of life-cycle costing | 16 |
| 5.2 | Service life, life cycle and design life | 17 |
| 5.3 | Period of analysis | 17 |
| 5.4 | Cost variables | 18 |
| 6 | WLC variables used in some investment option appraisals | 22 |
| 6.1 | General | 22 |
| 6.2 | Externalities | 22 |
| 6.3 | Environmental cost impacts | 22 |
| 6.4 | Social costs and benefits | 23 |
| 6.5 | Sustainable construction | 23 |
| 6.6 | Intangibles -- Impact on business reputation, functional efficiency, etc | 23 |
| 6.7 | Future income streams | 24 |
| 6.8 | Financing costs | 24 |
| 7 | Decision variables -- Basis of calculating costs | 24 |
| 7.1 | Real costs | 24 |
| 7.2 | Nominal costs | 25 |
| 7.3 | Discounted costs | 25 |
| 7.4 | Present value | 25 |
| 8 | Uncertainty and risks | 26 |
| 8.1 | General | 26 |
| 8.2 | Identification of the causes of uncertainty and risks | 26 |
| 8.3 | Monte Carlo analysis and confidence modelling | 27 |

| | | |
|-----|--|----|
| 8.4 | Sensitivity analysis and modelling the effects of changing key assumptions | 28 |
| 9 | Reporting | 28 |
| 9.1 | LCC analysis -- Presenting the results and supporting information | 28 |
| 9.2 | Reporting costs | 29 |
| 9.3 | Approvals and audit trail | 30 |
| | Annex A (informative) Worked examples -- Analysis techniques used in LCC | 31 |
| | Annex B (informative) Measures of comparison in WLC/LCC | 34 |
| | Annex C (informative) Demonstrating sensitivity analysis | 36 |
| | Annex D (informative) Graphical representation of LCC analysis | 37 |
| | Annex E (informative) Example of levels of cost analysis | 39 |
| | Bibliography | 40 |