Calculating total cost of ownership

Why, when and how

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Edouard Clement, Eng., M.Sc.
Secretary, Administrator- ECPAR

VP CSR Services - Groupe AGÉCO edouard.clement@groupeageco.ca
Members of CTP ECPAR - ECPAR’s TCO initiative

With the collaboration of the Ministère de l’Économie, de la Science et de l’Innovation
Scope of the work by ECPAR

Lessons learned

TCO approach and tools
1 – SCOPE OF THE WORK BY ECPAR
TCO approach – What is it about?

Moving beyond the concept of purchase price to account for all costs incurred in the life cycle of a product or service.
TCO approach – Our conceptual framework

✓ Price
✓ Direct costs
  • Energy
  • Consumables
✓ Indirect costs
  – Training
✓ Certain potential costs
  – Spill management
≠ Externalities
Benefits of the TCO approach

- **Anticipation**
  - of total costs throughout a project’s life cycle

- **Identification**
  - of financial risks associated with a purchase and relevant costs

- **Support**
  - for decision making and alternative comparisons

- **Improvement**
  - of the predictability and preparation of operating budgets

- **Demonstration (supplier)**
  - of the financial benefits of an innovative product
Key applications

1. Provide economic justification for a **purchasing project with environmental benefits** (e.g. green building, clean technology, etc.)

![Diagram showing TCO comparison: Green buildings](https://via.placeholder.com/150)

**TCO comparison**

**Green buildings**
Key applications

Include **environmental costs** that may be assessed from an economic perspective (e.g. waste management or decontamination costs, etc.)

**Roof comparison**

20 years of use (10k SQF)
Key applications

Use TCO approach to ensure that sustainable procurement contributes to economic efficiency

TCO comparison
Steel vs. aluminium bridge

Source: MAADI Group
2 – LESSONS LEARNED
General observations on the TCO approach

- There are several definitions—and no consensus—on the cost categories to consider.
- The direct costs are the most widely documented.
- The environmental costs are almost not taken into account.
- The TCO approach seems to be chiefly applied within government organizations.
- The main limiting factor is the availability of data for calculations.
- The TCO approach does not support the various steps in the procurement process.
### Costs considered

<table>
<thead>
<tr>
<th>Category</th>
<th>Costs Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Price</td>
</tr>
<tr>
<td>Storage</td>
<td>Gross costs, Protection, Decontamination</td>
</tr>
<tr>
<td>Delivery</td>
<td>Gross costs, Special permits</td>
</tr>
<tr>
<td>Installation</td>
<td>Gross costs, Hardware, Assembly/planting, Dismantling</td>
</tr>
<tr>
<td>Inspection</td>
<td>Gross costs</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Replacement rate</td>
</tr>
<tr>
<td>Dismantling</td>
<td>Gross costs</td>
</tr>
<tr>
<td>Decontamination</td>
<td>Gross costs</td>
</tr>
<tr>
<td>Waste management</td>
<td>Gross costs</td>
</tr>
</tbody>
</table>

### Comparative analysis

**Steel vs. wood H-frames**

![Graph comparing Steel and Wood](image)

### Service life hypothesis

- Wood: 50 years
- Steel: 100 years

*Figures are fictitious but representative*
Application to strategic procurement

- Strategic vs. common goods

<table>
<thead>
<tr>
<th>Relevance of the TCO approach</th>
<th>Application challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Major volume/spending</td>
<td>✓ Combined costs</td>
</tr>
<tr>
<td>✓ Long service life</td>
<td>✓ Several data owners</td>
</tr>
<tr>
<td>✓ Potential economic gain</td>
<td>✓ Complex cost monitoring over long period</td>
</tr>
<tr>
<td>✓ Several cost categories</td>
<td>✓ Modeling based on non-standard hypotheses</td>
</tr>
<tr>
<td>✓ Comparison of different options/technologies</td>
<td>✓ Comparison challenges (different cost categories)</td>
</tr>
</tbody>
</table>
Accounting for environmental costs

- Rarely taken into account but:
- several cost categories are identified
  - Protection measures for storage
  - Potential decontamination (end of life and storage)
  - Packaging management
  - Equipment maintenance costs in protected areas
  - Dismantling
  - Waste management
- the environmental costs are not necessarily significant for all product categories
  - What product categories are most affected?
  - What is the % at which they should be taken into consideration?
  - How can potential costs be considered?

Product 1: Life cycle costs
Product 2: Life cycle costs

$2 to 15\%$ of total cost of ownership
Preferred areas of application

- Products that consume energy
- Products that require consumables
- Products that generate waste
- Products that can generate environmental costs

Significant difference in service life

Significant difference in operating costs
Role of suppliers

- Possess data
- Possess expertise (service life, hypotheses)

Challenges

- Lack of data
- Lack of collaboration
- Disagreement over results
- Difficulties comparing services/functions

Opportunities/solutions

- Involve suppliers
- Include a collection form in the tender documents
- Information and communication documents
- Standardize the approach
- Provide a calculator
- Use TCO approach
TCO approach: obstacles and challenges

- Purchasing teams’ lack of knowledge on TCO topics
- Lack of facts to encourage organizations to take action
- Lack of tailored tools (simple and efficient) and difficulties obtaining data to calculate TCO
- Lack of a clear implementation process
- Lack of information on priority product categories for which TCO could be relevant
- Difficulties identifying required data and especially their significance
- Lack of information on priority/significant costs to account for in each product category
3 – ECPAR’S APPROACH AND TOOLS
Responsible procurement involves the integration of sustainable development and social responsibility into the purchasing practices of public and private organizations.

Certain environmental costs with an economic value are considered in the TCO approach. However, externalities are currently excluded.

The TCO approach calls for the assessment of economic costs throughout the life cycle.
Tools developed and next steps

**Literature review**
- Common terminology
- Factual arguments
- Best practices
- TCO guides and tools references/lists

**TCO checklist**
- Inventory of cost categories (direct and indirect)
- Categorization
- Data for calculations

**TCO calculators**
- Excel calculation tool
- Identified for 9 common goods (including IT, vehicles and buildings)
- Comparative calculation possible

**Et la suite**

1. Development of case studies (business cases) on TCO
2. TCO training and awareness-building material
3. Prioritization of purchasing categories and priority TCOs
RP practices and TCO tools

Needs identification
- Needs assessment
- Market studies
- Alternative comparisons

Contract and tender requirements
- Definition of criteria and specifications to integrate into the RP process

Selection of supplier
- Analysis of tender results
- Analysis of information provided by suppliers
- Results comparison

Contract and document follow ups
- Follow up of RP indicators over the contract period
- Feedback to the requisitioner

Checklist
- Identification of TCO categories
- Identification of data required

TCO calculators
- Modeling
- Comparison
TCO approach – Application framework

- Guide needs determination by the requisitioner
- Support decision making related to purchasing
- Identify relevant costs
- Assess financial risks and priority costs
Conclusions

• The TCO approach is both a strategic and responsible procurement tool
• Importance of including TCO tools throughout the procurement process
• Approach requires/enables the involvement of different departments within an organization
• Approach makes it possible to identify costs that may be underestimated or not taken into consideration in the decision-making process
• Best practices that have been identified:
  – Make purchasing a priority, begin with promising, simpler projects (lower costs, more relevant costs)
  – Standardize the approach at the internal level
  – Involve suppliers in data collection
  – Document and follow-up on TCO to support future decision making
• Develop in-house skills
• Set out case studies and measure and communicate benefits
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