Calculating total cost of ownership

Why, when and how

June 19, 2018

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ICLEI
Local Governments for Sustainability

Montréal

Members of CTP ECPAR - ECPAR's TCO initiative

With the collaboration of the Ministère de l'Économie, de la Science et de l'Innovation

Presentation

Scope of the work by ECPAR

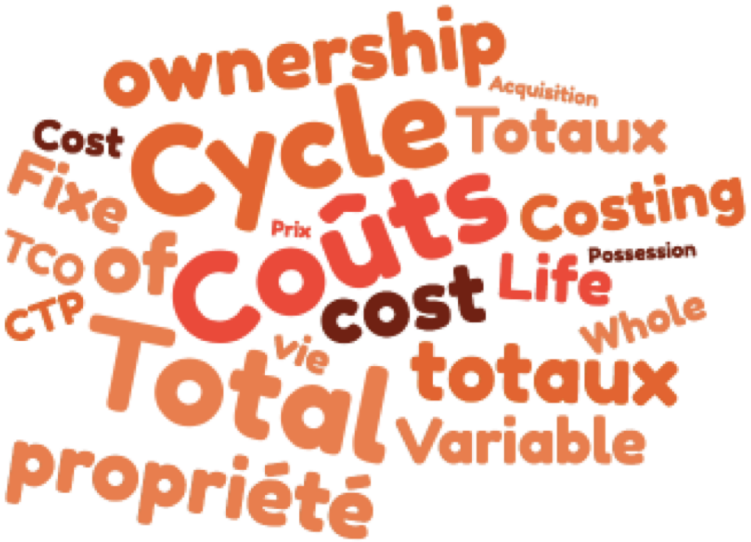
Lessons learned

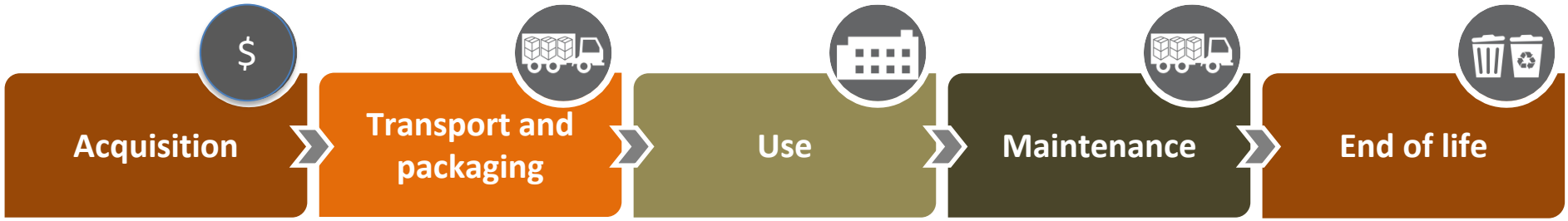
TCO approach and tools

1 – SCOPE OF THE WORK BY ECPAR

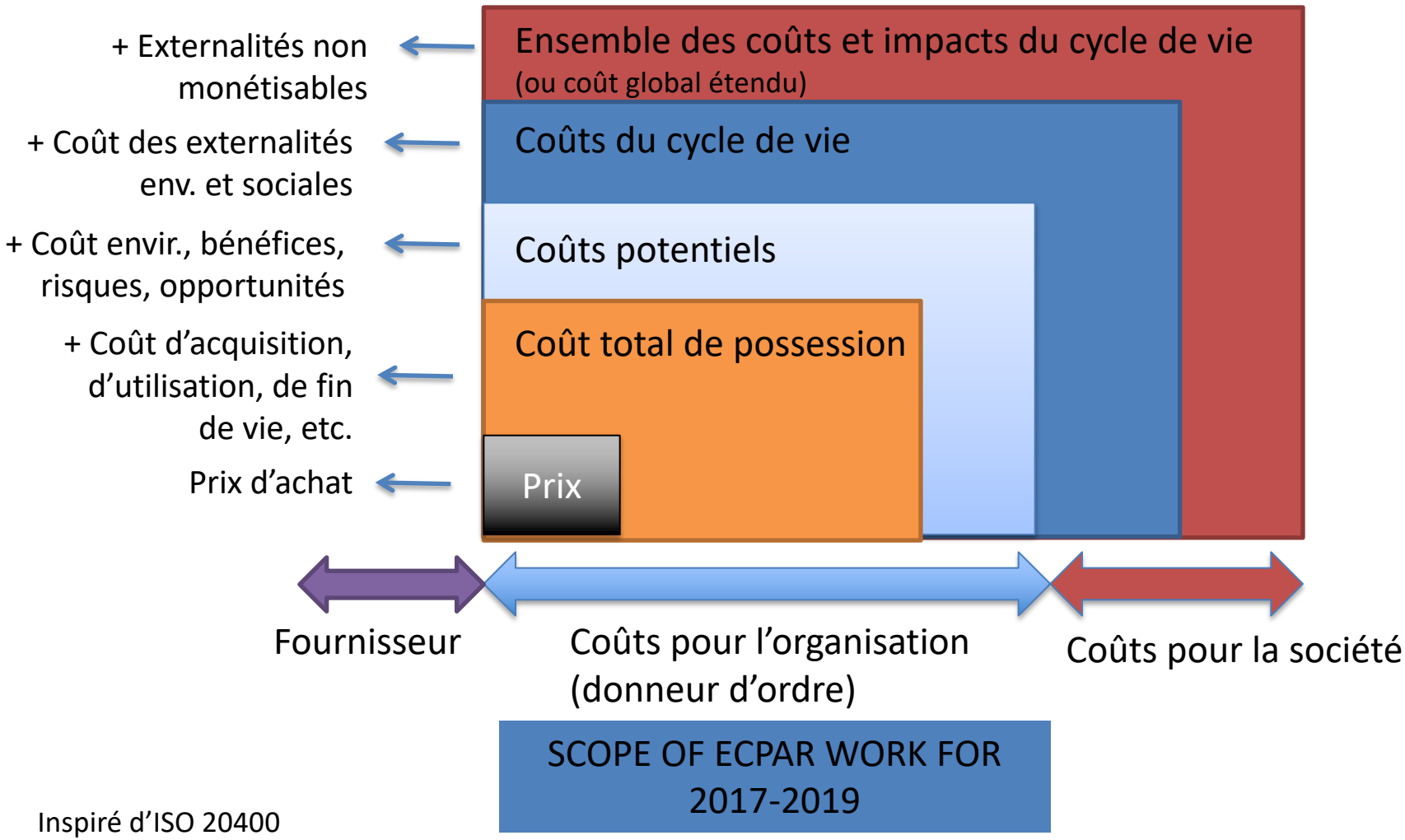
TCO approach – What is it about?

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



Inspiré d'ISO 20400

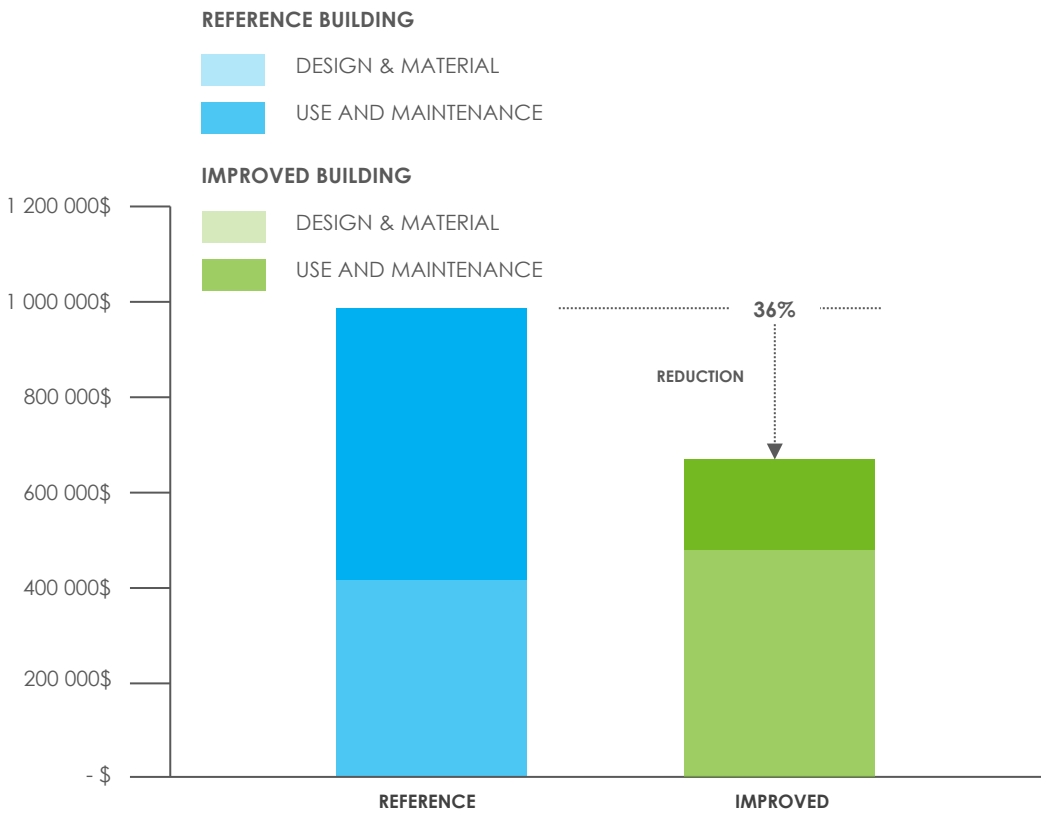
Benefits of the TCO approach

- 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.)

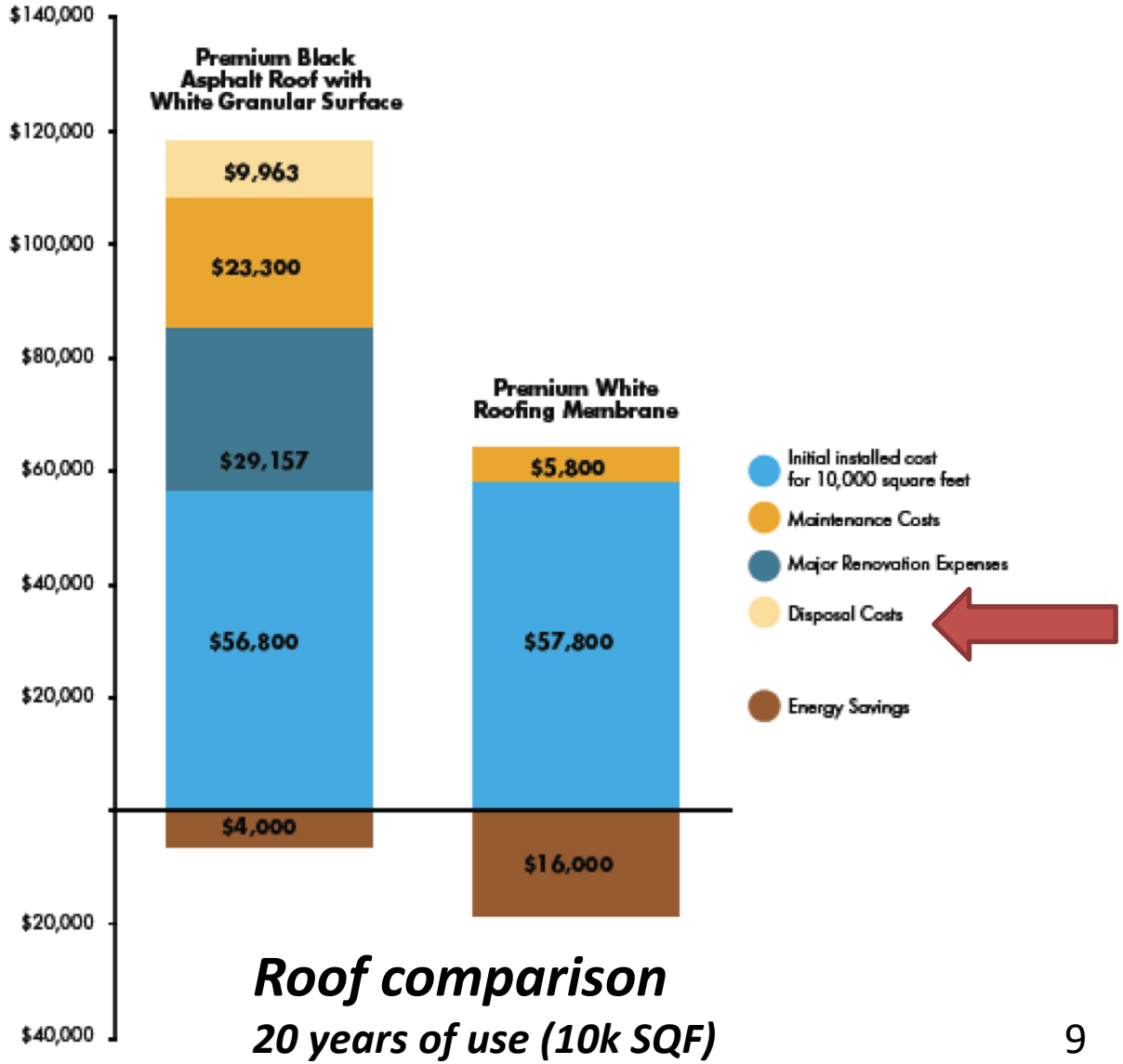


TCO comparison Green buildings

Key applications

2

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

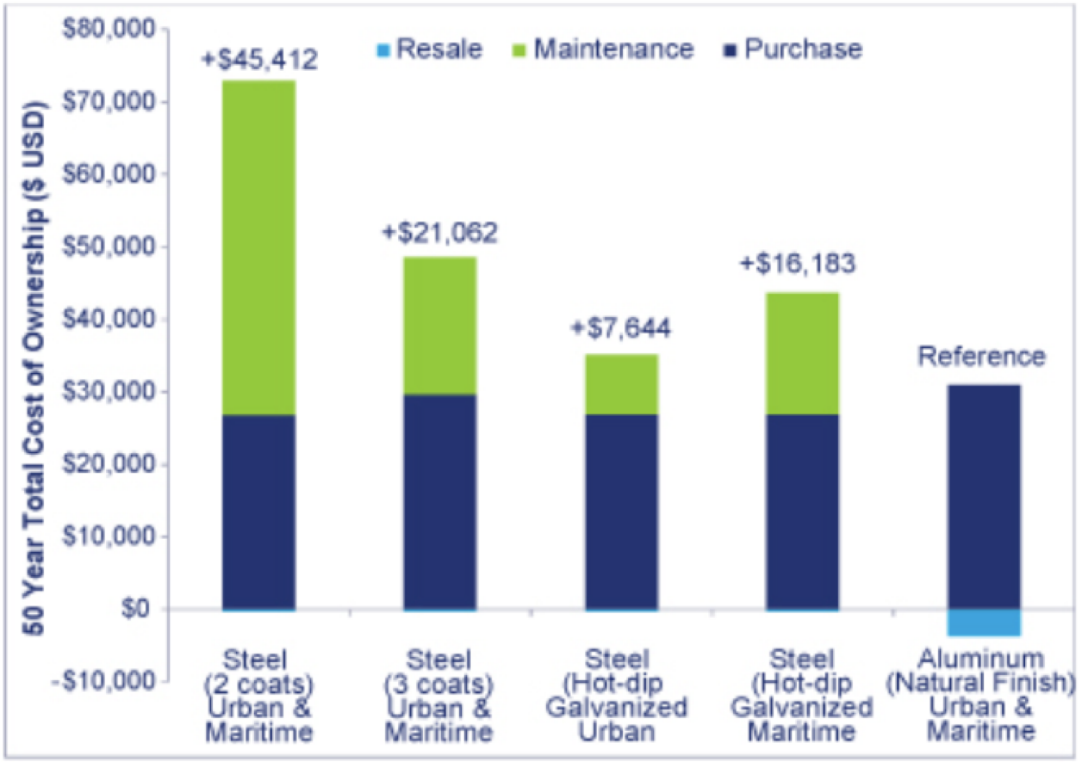


Roof comparison

20 years of use (10k SQF)

Key applications

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

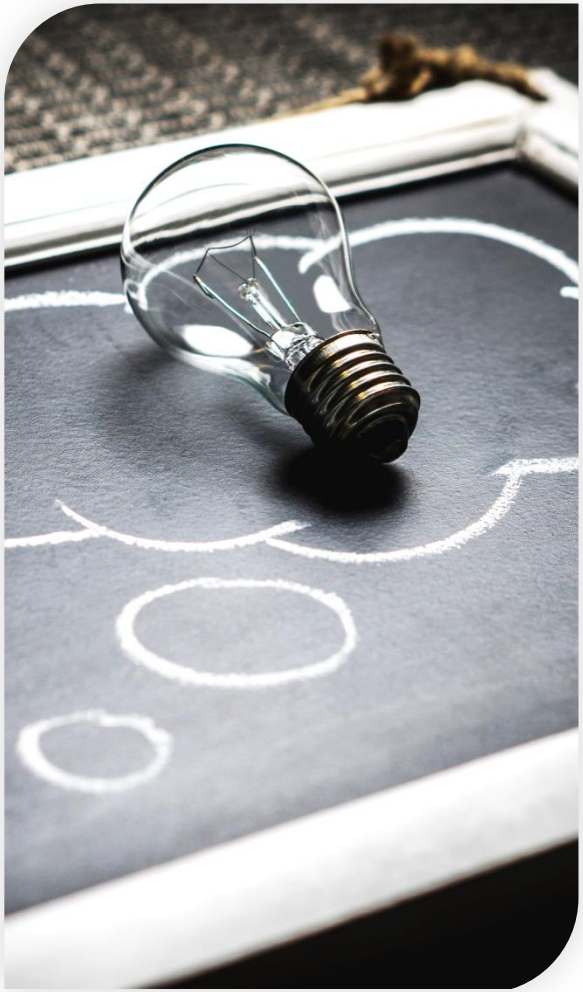


TCO comparison
Steel vs. aluminium bridge

Source: MAADI Group

2 – LESSONS LEARNED

General observations on the TCO approach

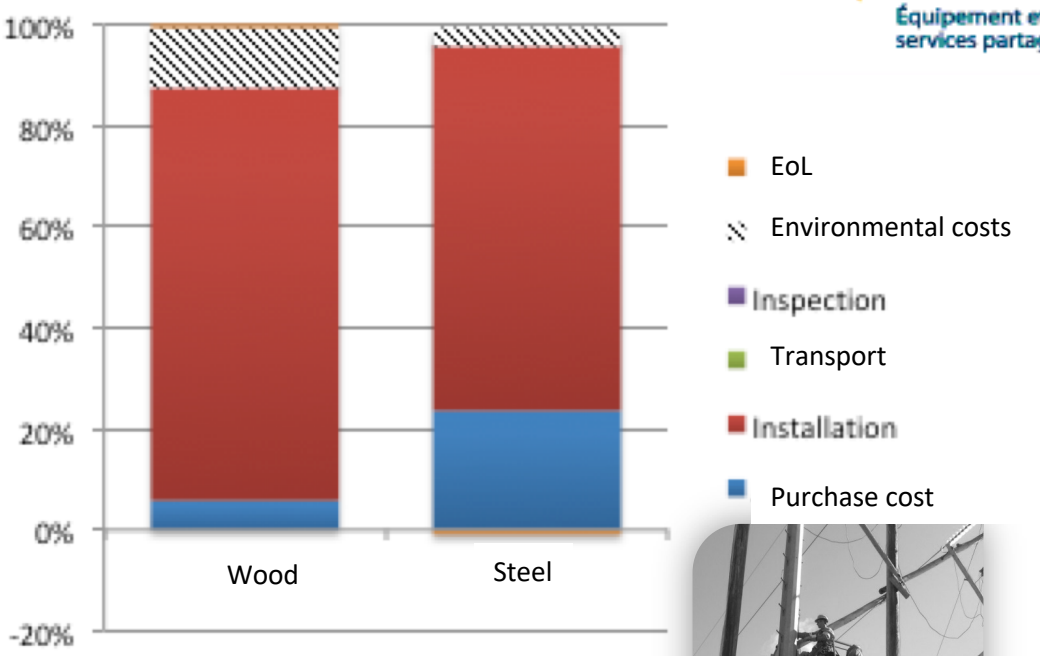


- There are several definitions—and no consensus—on the cost categories to consider.
- The direct costs are the most widely documented.
- The environmental costs are almost not taken into account.
- The TCO approach seems to be chiefly applied within government organizations.
- The main limiting factor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

Application to strategic goods

Comparative analysis
Steel vs. wood H-frames

Costs considered	
Acquisition	Price
Storage	Gross costs Protection Decontamination
Delivery	Gross costs Special permits
Installation	Gross costs Hardware Assembly/planting Dismantling
Inspection	Gross costs
Maintenance	Replacement rate
Dismantling	Gross costs
Decontamination	Gross costs
Waste management	Gross costs



** Figures are fictitious but representative*

Service life hypothesis: 50 years for wood vs. 100 years for steel

Application to strategic procurement

- Strategic vs. common goods

Relevance of the TCO approach
✓ Major volume/spending
✓ Long service life
✓ Potential economic gain
✓ Several cost categories
✓ Comparison of different options/technologies

Application challenges
▪ Combined costs
▪ Several data owners
▪ Complex cost monitoring over long period
▪ Modeling based on non-standard hypotheses
▪ Comparison challenges (different cost categories)

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

2 to 15% of total cost of ownership

- **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?

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	Opportunities/solutions
• Lack of data	✓ Involve suppliers ✓ Include a collection form in the tender documents
• Lack of collaboration	✓ Information and communication documents
• Disagreement over results	✓ Standardize the approach ✓ Provide a calculator
• Difficulties comparing services/functions	✓ 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

TCO in an RP approach

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

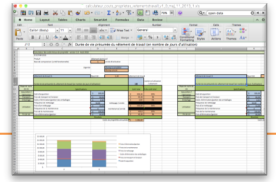
- Common terminology
- Factual arguments
- Best practices
- TCO guides and tools references/lists

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

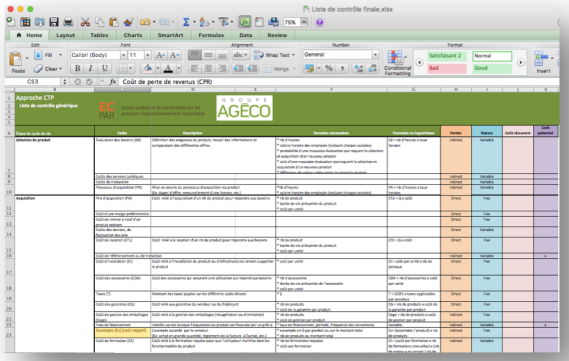
- Definition of criteria and specifications to integrate into the RP process

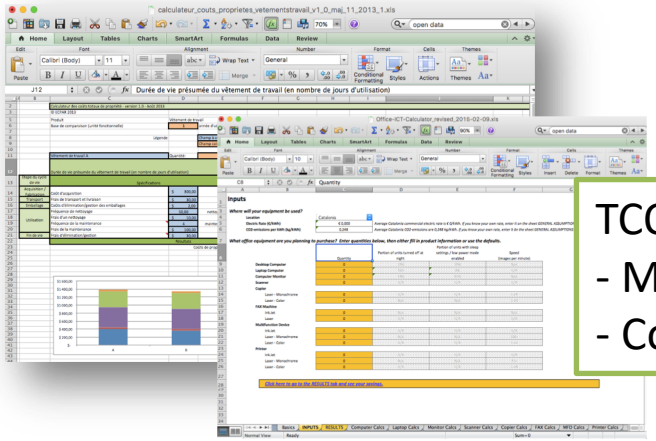
Selection of supplier

- 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



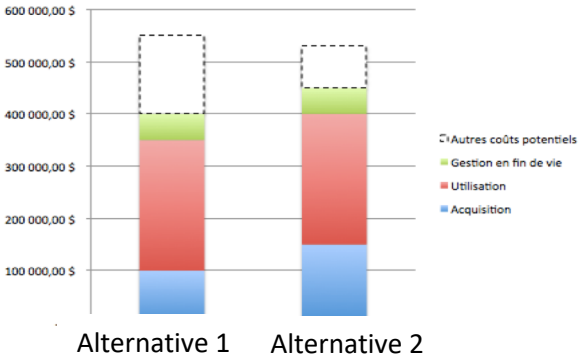


Checklist
- Identification of TCO categories
- Identification of data required

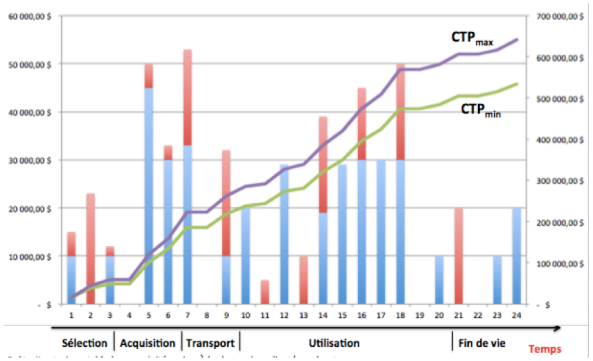
TCO calculators
- Modeling
- Comparison

TCO approach – Application framework

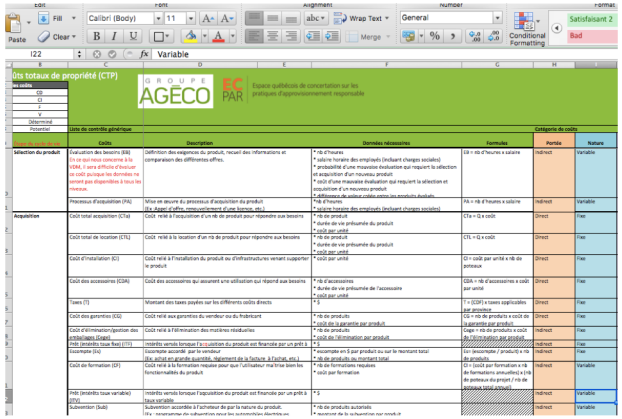
Guide needs determination by the requisitioner



Support decision making related to purchasing



Identify relevant costs



Assess financial risks and priority costs

	Groupe de marchandise					
	Câbles et accessoirs spécialisés	Poteaux, pylônes et isolateurs	Génératrices	Transformateurs	Batteries et accumulateurs	Produits chimiques divers
Acquisition	Prix	Prix	Prix	Prix	Prix	Prix
Entreposage	N/A	Protection et décontamination	N/A	Protection et décontamination	Protection et décontamination	Protection et décontamination
Livraison	Emballages	Permis spéciaux	Emballages	Emballages	Emballages	Emballages
Installation	Quincaillerie et installation	Plantage, Quincaillerie et installation	N/A	Quincaillerie et installation	Quincaillerie et installation	N/A
Utilisation	N/A	N/A	Carburants	N/A	N/A	Consommables
Inspection	Inspection	Inspection	Inspection	Inspection	Inspection	N/A
Maintenance	Remplacement	Remplacement	Huiles et leur disposition	Huiles et leur disposition	Huiles et leur disposition	N/A
Démantèlement	Démantèlement	Démantèlement	N/A	Démantèlement	N/A	N/A
Décontamination	N/A	Décontamination (potentielle)	Décontamination (potentielle)	Décontamination (potentielle)	Décontamination (potentielle)	Décontamination (potentielle)
Gestion des MR	Disposition et transport	Disposition et transport	Disposition et transport	Disposition et transport	Disposition et transport	Disposition des emballages

Coûts environnementaux prioritaires
Autres coûts significatifs à considérer
N/A

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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