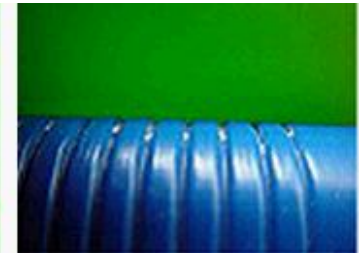
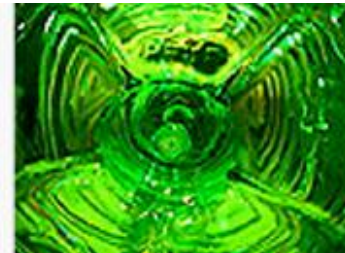


Life Cycle Costing (LCC) – Introduction to the Smart SPP LCC-CO₂ Tool

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Overview

- What is the LCC-CO₂-Tool
- Purpose of the tool
- Who should fill in the tool
- General features of the tool

What is the SMART SPP LCC-CO₂ Tool?

Excel Tool for calculation of life-cycle costs (LCC) and CO₂ emissions of different products and services

- LCC are the costs that a product will cause during its useful life
 - Acquisition cost
 - Operational cost (energy & water consumption)
 - Maintenance cost
 - Taxes
 - Disposal cost / Resale value
- CO₂ emissions
 - Embedded emissions
 - Direct emissions in different use modes
 - Different fuels

Purpose of the tool

- Supports procurement decision-making, e.g. by tender evaluation
- Can be applied for most products relevant in public tendering
- Can also be used for assessment of current solutions and for monitoring purposes
- Enables public communication of reduced cost and emissions

Who should fill in the tool?

- Responsibilities within contracting authority:
 - Experience with LCC and CO₂ assessment favorable
 - Cooperation between all affected departments reasonable (incl. energy costs, waste disposal, ...)
- Data requirements
 - Basic data to be provided by CA (e.g. electricity mix)
 - Further explanations for full definition of cost positions, technical specifications and evaluation criteria needed
 - Bidders should provide evidence for submitted data
 - Data can be provided in a separate document

When should the tool be used?

Before tendering:

To roughly assess different proposals to help guide market engagement activities before tendering, or to narrow down the different technological solutions to be considered.

During tendering:

To compare the LCC and the anticipated CO₂ emissions of different offers, during the evaluation phase. If the tool is used during this phase, the authority must ensure that the information provided by companies is accurate and comparable by:

- Defining in the tender set standards and test norms with experts and/or during market engagement, and
- Asking suppliers to provide evidence in support of the information provided, preferably third party verified.

After tendering (if not already used):

To evaluate and communicate the LCC and CO₂ emissions improvements of the purchased product in comparison to the current situation and/or other products and to communicate results.

Data Requirements

Option A

Suppliers are given a document stating the exact information they must provide, including evidence in support of their data. The procurer should then complete the tool with the data from each supplier in a different column of the tool

Option B

Suppliers are asked to provide data directly in the tool. Evidence in support of the data should be attached. The procurer must then copy the information from each supplier into a single master file

Necessary Data for the calculation of Life Cycle Costs: Lamps

Data	Description	Value	Recommendation
Discount rate / interest rate	A discount rate is usually defined according to the long-term interest rate. It is used to discount and transform future cash flows (such as future operation, replacement, disposal costs) into present value costs. (%)		Information available at the national central bank or at http://www.worldinterestrates.info/asiapacific.php .
Inflation rate (for operation materials as well as energy specific inflation rate)	The percentage increase of in price levels over time (usually annually). (%)		
Purchase price (local currency)	Including taxes (such as value added tax, VAT)		Check recent offers or carry out a brief internet research. Check local VAT .
Installation costs (local currency)	Costs for the installation of the device.		Consult a competent facility manager or a mechanic in your country.
Life time (in years)	Time in years for which the product will be used.		Life time should be assumed according to manufacturer's information or local experience. Also a facility manager can be consulted.
Annual operation costs (local currency)	For example: maintenance and/or repair costs, insurance, taxes, etc.		Note: For Lamps maintenance and repair costs are possibly not relevant!
Luminous flux (in lumen)	Amount of luminous flux emitted by the lamp measured in lumen.		Check the data sheet of the device or consult manufacturer or trader.
Power input of the lamp (in Watt)	Power Input of the lamp in Watt		Check the data sheet of the device or consult manufacturer or trader.
Energy costs (local currency per kWh)	Typically electricity price per kWh		Check electricity price at the local power supplier .
End-of-life costs (in local currency)	Disposal or recycling costs.		Check local legislation for relevant disposal or recycling costs.
CO₂ emission factor (in kg CO ₂ per kWh)	The amount of CO ₂ emission in kg per kWh electricity.		Check composition of energy carriers in the local electricity mix. The local energy authority can possibly provide information.

General features of the tool

[OO]

the different sheets in this tool please click on the expansion button on the left side.

LCC_Diagrams / CO2_Diagrams / Tenders Evaluation / Conversion Factors / Glossary / LCC_Formulas / CO2_Formulas / Emission Factors

↑
All sheet tabs in **light green** are to be directly used by you in order to enter data or evaluate the results.

↑
All sheet tabs in **dark green** contain text for your information.

↑
All sheet tabs in **dark grey** are background sheets for calculations and provision of specific information. You should only access those sheets through the hyperlinks buttons in each sheet.

The sheets of the tool

- **Introduction:** Provides basic information
- **General:** Main worksheet for entering data
- **LCC Diagrams:** Provides result diagrams on LCC
- **CO₂ Diagrams:** Provides result diagrams on CO₂ emissions
- **Tenders evaluation:** Allows for ranking of different product options
- **Conversion factors:** Provides conversion factors for different units
- **Glossary:** A glossary of terms used in the tool
- **LCC Formulas:** Explanation of the LCC related calculations
- **CO₂ Formulas:** Explanation of the CO₂ related calculations
- **Emission Factors:** Example lists for emission factors (can also be adapted).
- **Periodic investments:** Input worksheet for leasing or reinvestments
- **Operation:** Calculation of cost and emissions in the use phase
- **Maintenance:** Allows for specification of maintenance cost
- **CO₂:** Allows for specification of embedded emissions
- **LCC Annual Calculations:** Background calculations on LCC

Co

Additionally, cells are colour-coded to help identify how to use them.

Red cells contain comments (draw your cursor over it to view them)

In **white cells** you have to input data

Click on **+/- button** to expand and reduce extra rows and columns.

LCC & CO₂ - Calculation for Procurement Activities

A user guide has been developed to help you use this tool. You can download it at www.smart-spp.eu

General Information Input

Tender ID: [Red cell]

Example tender: Street Lighting

Information to be specified by the procurer:

- Your location: [White cell]
- Planning horizon: [White cell] [years]
- Discount rate (nominal): [White cell] [%]
- Inflation rate: [White cell] [%]
- CO₂ emission factors: [White cell]

Information to be specified by the supplier:

- Product Offers: [White cell]
- Personal offer ID: [White cell]
- Number of units to be purchased/leased: [White cell] [R]
- Lifespan: [White cell] [years]

Life-cycle Costing (LCC) information input

Discount rate: [White cell] [%] 3.8

Inflation rate: [White cell] [%] 2

Acquisition Costs

Purchase price: [White cell] [EUR/unit] 800.00 800.00

or Specify annual investment costs >> [White cell]

Installation costs for all units: [White cell] [EUR] 7,300.00 7,000.00

Initial one-off costs: [White cell] [EUR] 10,300.00 16,000.00

Product A: Lamp_Inst.A (20 units)

Product B: Lamp_Inst.B (20 units)

Product C: [White cell]

Product D: [White cell]

Product E: [White cell]

Comments of the Procurement Coordinator: [Red cell]

Grey cells contain text or calculation results. These files are protected and **can not be altered!**

In **orange cells** you can select an option from the dropdown menu

Click on **light orange** – the links will bring you to other sheets where you can continue your input (and back again).

Finally, **Error alerts** are red text.

Getting started

- The tool contains explanations, comments and help sections
- A [User Guide Document](#) is available which provides a step-by-step introduction to the tool
- [Important: Different forms of LCC modelling](#)
- **So, Let's start !!!!**

Thank you for your time and attention!

<http://www.smart-spp.eu/guidance>
[User Guide](#) for the LCC- CO₂ Tool

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