Instructions for two LCA based tools: CCaLC2 and Ilmastodieetti

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CCaLC2
Carbon Footprinting Tool
http://www.ccalc.org.uk

(For municipalities as well as companies)

Carbon footprinting tool CCaLC2

The following information can be found in the CCaLC2© for Windows Manual (V1.1)

- CCaLC2 is the second generation of the CCaLC carbon footprinting tool that enables estimations of life cycle greenhouse gas emissions along different supply chains. It was developed by a large project coordinated by the University of Manchester.
- The methodological approach follows the life cycle methodology as defined by ISO 14044 and PAS 2050.
- The tool can be downloaded for free from
  - CCaLC • CCaLC2 for Windows Carbon Footprinting Tool
- The manual gives guidance in using the tool:
  - Manual_CCaLC2.pdf

Overview of CCaLC2

Source: CCaLC2© for Windows Manual (V1.1)

The CCaLC2 application allows estimations of environmental impacts and value added along the supply chains. It takes a life cycle approach, and it enables estimation of the following environmental impacts:

- Carbon footprint (or global warming potential);
- Water footprint;
- Acidification potential;
- Eutrophication potential;
- Ozone layer depletion potential;
- Photochemical smog; and
- Human toxicity potential.

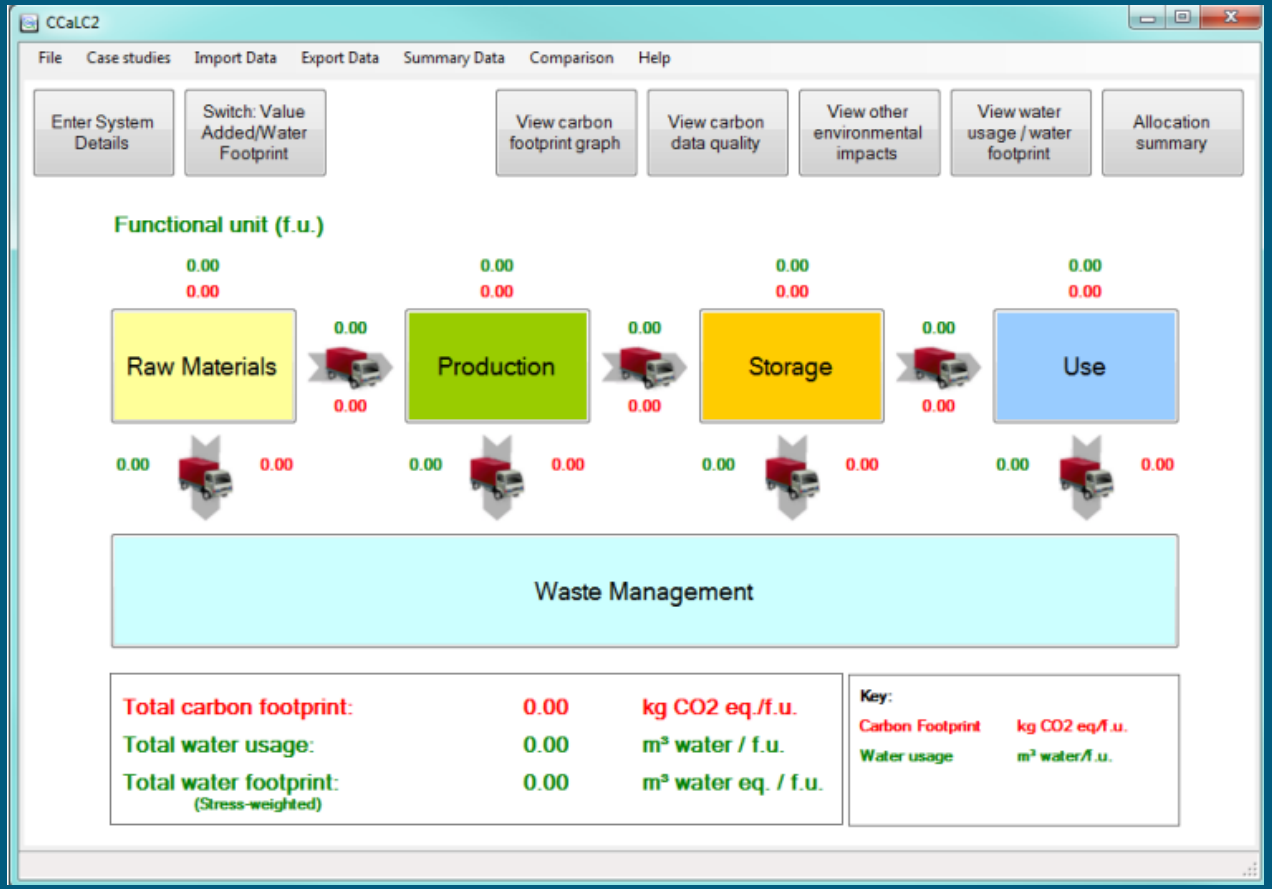
The top-level view layout of the CCaLC2 tool represents a map of a typical product life-cycle and includes the stages:

- raw materials,
- production,
- storage,
- use,
- transport, and
- waste.

The user can access any of these stages by clicking on the relevant box.

CCaLC2 contains three databases: CCaLC, Ecoinvent and User database.

Source: CCaLC2© for Windows Manual (V1.1)



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Carbon footprint estimation in CCaLC2

- The carbon footprint of a system can be calculated in two main ways:
  - by starting a new study from scratch, with all the information and data entered by the user step by step or
  - by using the built-in case studies, which can be loaded up via the menu option Case studies and then modified according to the user specification.
- CCaLC2 tool has 54 built-in example case studies in five sectors:
  - Biofeedstocks and biofuels,
  - chemicals and related,
  - energy,
  - food and drink, and
  - packaging

Source: CCaLC2© for Windows Manual (V1.1)

Instructions and information

CCaLC2:

- Homepage:
  - CCaLC • Carbon Calculations over the Life Cycle of Industrial Activities
- The tool and the manual:
  - CCaLC • CCaLC2 for Windows Carbon Footprinting Tool
  - http://www.ccalc.org.uk/downloads/Manual_CCaLC2.pdf
- Recordings from the training webinar, organized by the Circwaste project on 2 April 2019, on how to use the Carbon Footprinting Tool CCaLC2. The recordings allow users to learn the basics of life cycle modelling and to use the CCaLC2 tool with the help of simple case examples. The links to the recordings are available from
  - Circwaste > Life cycle based tools (materiaalitkiertoon.fi)

Diverse sustainability tools for companies (in Finnish):

- Työkaluja toiminnan kehittämiseen - Riihi (eepeeriihi.fi)

Climate diet calculator

[Ilmastodieetti (ymparisto.fi)]

(For citizens)

Climate diet calculator

- Climate diet calculator is a citizens' tool for assessing their personal carbon footprint.
- The tool can be used to calculate one's annual carbon footprint from housing, mobility, food, waste and other consumption. The calculator is based on the lifecycle approach.
- The calculator guides and advices the user through the different consumption sections and provides tips on how to reduce the carbon footprint.
- The user interface of the calculator can be used also on mobile devices (such as tablet computers).
- The first version of the service was published by the Finnish Environment Institute with the Finnish Broadcasting Company, Yle, in 2010. The service has been updated and modernised in 2013, 2016, 2017 and 2019.
- The most important calculation principles used in the tool are reported in the calculation info at [Ilmastodieetti (ymparisto.fi)]

Waste section in the Climate diet calculator

Description from the report ”Calculation details”

- “Waste sorting and recycling are often the first things that come to mind at the mention of everyday environmental deeds. The priority should always be on waste prevention. Preventing the generation of waste means both minimising the adverse effects of waste and reducing unnecessary production.”
- “You can make some products last longer with appropriate maintenance and repair. If you no longer need certain goods or materials, the primary step should always be to re-use them. An excellent example is the re-using of clean and undamaged clothes. If the item cannot be reused, the material should be recycled or recovered as energy. For example, paper, cardboard and metal can be recycled, which reduces the need for virgin raw materials. Waste that cannot be recycled should be recovered as energy. Waste prevention and recycling have many benefits. For example, they prevent substances that are hazardous to health or to the environment from entering the environment. Furthermore, if the reuse or recycling of material replaces the use of virgin materials, the environmental gain is even greater.”

Waste section in the Climate diet calculator

How is the carbon footprint caused by wastes calculated?

- The waste section uses as a starting point the estimated average amount of household waste (320 kg/person/y, including both sorted and mixed household waste). The user can adjust the estimate of the amount of waste generated, as well as specify the degree to which one sorts different waste fractions (organic, paper, cardboard, plastic, glass, metal, electronics, hazardous wastes). Emissions are calculated for the incineration of the unsorted waste.
- “Typically, the impact of waste on the carbon footprint is small. However, the transportation and treatment of waste require energy, which causes emissions. The ‘average’ amounts of waste in the calculator are the average amounts of waste in Finland, based on data collected in the KEIKKA project (Salmenperä et al. 2018). Mixed waste produces 506 kg CO_2e/t mixed waste when burned in a waste-to-energy plant. The emission factor is based on the energy content of the mixed waste (10 GJ/t), the emission coefficient (40 kg CO_2e/GJ; fuel classification from Statistics Finland 2019) and the energy gain at the Vantaa Energy.”

Climate diet calculator

Comparison of the carbon footprint results

- The result page contains a comparison with the ‘average Finn’ and some groups of respondents.
- The average carbon footprint of Finnish households is roughly 10 tonnes per year (based on consumption expenditure).
  - Housing (building, energy consumption, household goods) makes up one-third of the total footprint, mobility and food contribute to one-fifth each, and the remaining emissions result from the consumption of goods and services.
  - Household expenditure does not cover all services provided by society, such as education and healthcare.
- Comparison with the following groups of respondents is possible:
  - all respondents starting from release in March 2019
  - respondents with the same postal code
  - respondents with the same family size
  - respondents with similar income
  - respondents with similar diet

Climate diet calculator

What do the carbon footprint results tell?

- The calculated carbon footprint is an estimate. However, it illustrates the volumes and shares of emissions.
  - What are the main sources of emissions in our daily lives?
- One can reduce the carbon footprint every day through small and easy choices.
  - The calculator includes links to sources of additional information that support both short and long-term changes.
- Committing to the Paris agreement to keep global warming below 1.5 degrees require thorough changes to energy systems and the ways in which we produce, consume, store and transfer energy. Citizens can affect greenhouse gas emissions by making wise choices, creating demand for low-carbon solutions and supporting ambitious climate policy

Climate diet calculator

Instructions, information and references

- The starting page of the calculator: Ilmastodieetti (ymparisto.fi)
- The most important calculation principles used in the tool are reported in the calculation info at Ilmastodieetti (ymparisto.fi)
- Watch a brief video about the calculator: Climate diet – YouTube
- The Calculation details:
  - Salo M, Nissinen A, Mattinen M K, Manninen K, Dahlbo H, Judl J, 2019. How is the carbon footprint calculated in the Climate diet tool?
- Niemistö et al. (2019):
  - Niemistö J, Soimakallio S, Nissinen A, Salo M, 2019. Lentomatkustuksen päästöt - Mistä lentoliikenteen päästöt syntyvät ja miten niitä voidaan vähentää? Suomen ympäristökeskuksen raportteja 2/2019. Suomen ympäristökeskus
- Salmenperä et al. (2018):
  - Salmenperä H, Sahimaa O, Koutonen H, 2018. Kierrätyksen keinot, taloudelliset vaikutukset sekä toteutettavuus. Ympäristöministeriön raportteja 17/2018. http://urn.fi/URN:ISBN:978-952-11-4798-2 (accessed 26 February.2019).

[Circwaste > Tools and services (materiaalitkiertoon.fi)]

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