

Calculator: CO2 Emissions Estimator Tool

http://aggregain.wrap.org.uk/sustainability/try_a_sustainability_tool/co2_emissions.html

Summary

The CO2 Emissions Estimator Tool was originally developed by TRL Limited, Costain and Taylor Woodrow Technology under a contract from WRAP and was updated in 2010 by TRL. The tool measures the carbon footprint derived from the use of aggregates in construction and gives an estimate of the climate change contribution reduction by selecting different construction techniques and supply alternatives (use of primary or recycled and secondary aggregates).

Developers: TRL Limited, Costain, Taylor Woodrow Technology, WRAP

| Applicable sectors | | | | | | | Themes | | |
|---------------------------------------|---|-------|-------|--------|-----------|---------------------------|--|------------|------------|
| All Infrastructure | Buildings | Roads | Water | Energy | Transport | Construction | Materials | Ecology | Wastewater |
| | | | | | | | Potable Water | Carbon/GHG | Other |
| Countries | UK, but databases can be modified for application in other countries. | | | | | Access | Free to download | | |
| Compatibility with other tools | No specific tool | | | | | Guidance for users | The excel-based tool is accompanied by a <i>User Guide</i> which offers step by step instructions covering: <ul style="list-style-type: none"> - the inputs required to complete a CO2 estimation; - helpful tips and warnings on using the tool; - assumptions and approximations used; - case study examples demonstrating CO2 savings. | | |
| Inputs & outputs | The tool is composed of: <ul style="list-style-type: none"> - Eleven different input sheets: two for each of the four construction types (one to specify materials and one to specify transport), two to specify additional component materials not specified elsewhere, and one for users of the WRAP aggregates LCA tools; - One output sheet; - Five calculations sheets; - A formulae sheet, containing a list of the formulae used in the calculations; - Four process-parameters sheets containing all physical and technical data used to calculate the emissions; - Various sheets containing background data and references. The users input application-specific and site-specific data such as materials and quantities of components used, distances travelled and modes of travel. These are the basic data that are used in combination with the background process-specific parameters to calculate the CO2 emissions. <p>The overall results are summarised in the output sheet, where, for each application, the tool estimates the CO2 emissions for each option and the savings with respect to the first option, which is considered the base case scenario.</p> A more detailed emissions breakdown is provided in the four calculations sheets. | | | | | | | | |
| | | | | | | Methodology | The tool gives an estimate of GHG emissions reduction achieved by selecting different construction techniques and supply alternatives (use of primary or recycled and secondary aggregates). <p>The tool is designed to assess the climate change contribution resulting from four types of construction involving aggregates:</p> <ul style="list-style-type: none"> - bitumen bound - concrete - hydraulically bound - unbound <p>For each construction type, the estimator tool allows up to three options to be compared. The options would be alternative mixtures with varying percentages of RSA or techniques that the users know are fit for the same purpose.</p> The tool estimates the CO2 emissions for each option and then compares the second two options with respect to the first, which is considered the base case scenario, highlighting any CO2 savings. | | |

Note: "Free to download" does not necessarily imply that it is free for commercial use.

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| Database library | The tool contains inbuilt databases with UK, EU and own values for emissions involved in processing, transport & handling for different aggregates (bitumen bound, concrete, hydraulically bound, unbound). | Data intensity | Data flexibility is high. The tool allows for user defined values but also offers a database of pre-set values, offering a choice between UK data, EU data and own data. Data intensity is reduced through the use of inbuilt databases. |
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