LCA with One Click

Bionova Ltd / One Click LCA
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We’re Bionova, and our software is called One Click LCA

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EASY TO USE, AUTOMATED LIFE-CYCLE METRICS SOFTWARE

FOUNDED IN
2001
In Finland

SALES IN
50+
Countries

APPLICATIONS
110+
Tools available
Solution chosen by the leaders...

...and those on the way there
Increasing amount of certification systems recognise the value LCA and provide corresponding credits for design performance improvements proven using LCA.
Unique and extensive materials database, including IMPACT

IMPACT DATABASE INCLUDED. ALL EPDs INCLUDED.

ALL DATA IS

- Updated
- Verified
- Enhanced

QA process approved by BRE
One Click LCA integrates tightly to the industry “ecosystem”
Why building impacts matter?

Buildings are directly responsible for 35% of global emissions.

When all aspects of buildings are considered, some estimate that over half of emissions are related to the building sector *

Life time emissions are determined in design (mostly).

The highest potential to reduce building emissions lies in the early design stages. Decisions today determine next half century.
LCA gives you the big picture

Life-cycle metrics provide a numerical assessment of a project/product impacts over its life-cycle. It does not tell whether a thing is good or bad – that depends on available alternatives.

**Life cycle assessment, LCA**

- CO$_2$e + other impacts

**Life cycle cost, LCC**

> 1 year

Use phase e.g. 60 years

End of life

- Material manufacturing
- Construction
- Use
- Major renovation
- Demolition

Life cycle cost, LCC

$ / € / £
LCA measures the emissions over the life time

CO2e emissions = Carbon footprint = Global warming potential

Other indicators follow same method

Material manufacturing

Construction

Use phase e.g. 60 years

Use

End of life

> 1 year

Embodied impacts

Operational impacts
Life cycle costing measures the whole life time cost.

Life-cycle cost focuses on the cost from all different building phases.

Nominal life cycle cost: The inflation rate and interest rate are estimated to be the same.

Net present value / discounted life cycle cost: the difference between inflation rate and interest rate is taken into account.
What causes the emissions?

Life cycle carbon for an average residential building varies by energy supply


- 6 floors + cellar
- Floor area 2,500 m²
- 50 years life time

- Energy consumption
- Construction material manufacturing
- Construction
- Repairs
- Demolition

% of life time carbon (GWP)
Life cycle stages according to CEN/TC 350 EN standards

A1: Raw material supply
A2: Transport
A3: Manufacturing

A4: Transport
A5: Construction-installation process

B1: Use
B2: Maintenance
B3: Repair
B4: Replacement
B5: Refurbishment
B6: Operational energy use
B7: Operational water use

C1: De-construction demolition
C2: Transport
C3: Waste processing
C4: Disposal

D: Benefits and loads beyond the system boundary
LCA helps you to find the optimal solution

**Example:** Carbon footprint (kgCO2e / m²) of three apartment buildings located in Nordics (over 50 years of building life time).

A) Emissions from building material manufacturing and construction stage only

B) Emissions from building materials and construction and building use phase including energy consumption / material replacements
Combined LCA & LCC help to find most efficient solutions

Example: When the results of the apartment buildings combined with life-cycle cost.

The best and worst building from previous slide

The building with least carbon emissions also has lowest cost over the life time – attractive design choice!
Different applications of LCA

- Achieving Certifications credits
- Choosing between designs, materials or products
- (Carbon) Awareness – transparency and understanding
- Regulating life-cycle impacts of projects (or materials)
All One Click LCA enabled BREEAM UK credits

CREDITS IN BREEAM UK NC 2018

<table>
<thead>
<tr>
<th>RIBA stage 2</th>
<th>RIBA stage 4</th>
<th>Sourcing</th>
<th>Construction</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept design</td>
<td>When you have data, including BIM</td>
<td>Building in use</td>
<td>Man 05 exemplary</td>
<td>Man 05 exemplary</td>
</tr>
<tr>
<td>Mat 01 LCA</td>
<td>Mat 02 EPD</td>
<td>Mat 03 RSM</td>
<td>Mat 05 Durability</td>
<td>Mat 06 Efficiency</td>
</tr>
<tr>
<td>Superstructure benchmark LCA – 2 credits</td>
<td>Specify EPDs – 1 cr.</td>
<td>Buy materials – 4 cr.</td>
<td>Efficiency – 1 credit</td>
<td>Man 03 Site</td>
</tr>
<tr>
<td>Superstructure LCA options – +2 credits</td>
<td></td>
<td>Superstructure LCA options – +1 credits</td>
<td></td>
<td>Site monitoring – 2 cr</td>
</tr>
<tr>
<td>Superstructure LCA options – +4 credits</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Substructure/services LCA options +1 +1 cr.</td>
<td></td>
<td>Third party - +1 credit</td>
<td></td>
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<tr>
<td>Man 02 LCC</td>
<td>Component LCC + 1 cr.</td>
<td>LCC alignment +1 cr.</td>
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<tr>
<td>Elemental LCC – 2 cr. + capital cost 1 cr.</td>
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<tr>
<td>Wst 05 Climate</td>
<td>Climate adaptation 1+1 exemplary credit</td>
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</table>
## Mat 01 LCA in different BREEAM UK versions

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Credit</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BREEAM UK NC 2014</td>
<td>Mat 01</td>
<td>2 exemplary</td>
</tr>
<tr>
<td>BREEAM UK NC 2011</td>
<td>Mat 01</td>
<td>2 exemplary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Credit</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREEAM UK RFO 2014 (non domestic)</td>
<td>Mat 01</td>
<td>6 + 1</td>
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</table>

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<tr>
<th>Scheme</th>
<th>Credit</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BREEAM UK NC 2018</td>
<td>Mat 01 LCA</td>
<td>7 + 3</td>
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<tr>
<td></td>
<td>Mat 02 EPD</td>
<td>1</td>
</tr>
</tbody>
</table>
Out of five approved tools for BREEAM UK NC 2018, One Click LCA delivers four

<table>
<thead>
<tr>
<th>Tool name</th>
<th>Version (date recognised)</th>
<th>Range of environmental indicators categories</th>
</tr>
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<tbody>
<tr>
<td>BREEAM Simplified building LCA tool</td>
<td>1.3.x (MAR '18)</td>
<td>CO2e AND other environmental categories. Simplified tool (capped).</td>
</tr>
<tr>
<td>One Click LCA (LCA for BREEAM UK)</td>
<td>2018.3 (APR '18)</td>
<td>CO2e AND other environmental categories.</td>
</tr>
<tr>
<td>One Click LCA (IMPACT Compliant) – using BRE EN15804 data v5.x only</td>
<td>2018.4 (APR '18)</td>
<td>CO2e AND other environmental categories.</td>
</tr>
<tr>
<td>One Click LCA (LCA for BREEAM UK, within IES-VE)</td>
<td>2018.3 (APR '18)</td>
<td>CO2e AND other environmental categories.</td>
</tr>
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<td>CO2e AND other environmental categories.</td>
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</tbody>
</table>
The only software approved for every BREEAM scheme, always able to deliver the maximum credits

IMPACT-Compliant
BREEAM NC 201X, HQM

IMPACT-Equivalent
BREEAM NC 2011, 2014

All other versions
BREEAM RFO, International

Also approved for all other BREEAM versions
One credit - Environmental product declarations (EPD)

- Specify construction products with EPD that achieve a total EPD points score of at least 20, according to the Methodology.
- Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The Mat 01/02 Results Submission Tool will verify the EPD points score and credit award.

<table>
<thead>
<tr>
<th>Recognised types of EPD</th>
<th>Validity</th>
<th>EPD points</th>
</tr>
</thead>
</table>
| EPD applicable to more than one product in the same product category, and a more than one manufacturer. | - EPD unexpired at the point of specification.  
- Product installed in the building by the end of construction.  
- EPD issued or registered by an ISO 14025 compliant programme operator.  
- For products covered by the Construction Product Regulations, the EPD must have been generated using product category rules based on either BS EN 15804 or ISO 21930. | 0.5        |
| EPD applicable to more than one product in the same product category, and a single manufacturer |                                                                                                    | 0.75       |
| EPD applicable to a single product*, and a single manufacturer (the product may be manufactured in more than one location) |                                                                                                    | 1.5        |
Four credits available

Two credits – Elemental LCC:
- High level LCC should be done at concept design stage
- Future replacement costs analysis as required by the client (e.g. 20, 30, 50 or 60 years)

One credit - Component level LCC option appraisal
- A component level LCC option appraisal has been developed by the end of Process Stage 4 in line with PD 156865:2008 and includes the following component types (where present):
  - Envelope, Services, Finishes, External spaces

One Credit- Capital Cost reporting (£/m²)
Seamless integration with Revit

GET DATA FROM YOUR REVIT MODEL AT ANY TIME
We are very proud of our partnership with IES
Any Questions?

For free trial visit Web: https://www.oneclicklca.com/

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