

Carbon Calculator APP for Timber

Objective

On a mobile phone or tablet

With a customer/designer/purchaser

Within a reasonably short time with some interaction

For timber components of an installation

Total carbon or carbon saving

Total up, calculate and display results

embodied carbon

sequestered carbon

Total carbon

Future Development

Costs (already exists in Sarah's app)

CO2 Compare with alternative materials

CO2 saving

Embodied energy

Embodied water

Design notes

Specification clauses populated by tool

Primary issue for development

How accurately do you want calculations?

Accuracy dictates price of development

Is there a budget to work to?

Where are the drivers for the information coming from?

What level of accuracy is required by?

BREEAM?

EcoHomes?

Code for Sustainable Homes: is gone

Ska?

Sustainable Procurement?

Enterprise Carbon Accounting?

Issues dictating accuracy

Density

No need to know species

but can work from species via density too

Moisture Content:

normally timber is specified to a MC

Quantity calculation or weigh in

Carbon calculation approach v LCA

Accuracy Levels:

Density:

Choose Hardwood or Softwood

Density ranges

Species specific densities

Moisture content

Green

Air dried

Kiln dried

% range

%

Quantity

Ex Size

Wrot size

Planned size

Profiled cross section area

Minimum length

Actual length

Weight

Carbon calculation

Via LCA along whole supply chain

Quoted Carbon calculation at end of line

Combination

Based on what you sell

Sequestered carbon

Based on what is wasted as well

Embodied & Sequestered carbon

Calculate

Choose profile of section:

drop down menu words & images

Choose Size of section

Drop down menu or type

Choose or type Length of piece

Type Number of pieces

Calculate Volume of timber

Choose Moisture Content from ranges

Drop down menus or type in

Choose density or Species

from drop down menu/look up table

Add weight is known or

Calculate Weight in kg

for LCA calculations

for carbon/CO2 calculation

Equation for kg to Carbon/CO2

Wastage Factors

Utilisation of log % v % wastage

Milling, cutting and planning losses

Profile losses

Damage in transport and storage

Out of scope

Application wastage

Data needed

Data assembled as drop down lists

For consistent entries

For all available options

Filtered by users or supplier according to their stock

Species dataset

ICE database including hardwood & softwood

NGS has created timber dataset excluding carbon

RICS has started a Carbon Database

TTF have developed a Timber Dataset with Carbon

_____ has an LCA database of timber species

Timber component section dataset

EcoChoice Ltd. may have one

English Woodlands Timber has one

British Standards have some

Future Development/Optional Extras

Alternative materials dataset

ICE but inconsistent

NGS & CAPEM have created Generic materials dataset

May need completing from other sources

RICS has started the Carbon Database

Configuration of Assemblies as look up table

To add data to all cells to enable calculations

Special Profile data set

Standard profiles in market

Need to be collected

Or create a calculator to work out

Determine wastage to create profile

Costing datasets

English Woodlands Timber has one

EcoChoice Ltd. must have one

Could there be an interface

for all suppliers to add their own?

Or bespoke it to their current or normal stock?

Installation configuration

Basic configuration with 3D illustration

Examples

Bridge

Pier/Deck

Groyne

Revetment/Retaining all

Crib wall

Fencing

Weatherboarding & battens

Flooring/Decking

Stud wall

Timber framed building

Lock Gates

Post and Beam building

Installation quantities

Overall Size of installation

Components

Sections

Spacing

Length(s)

Accessories

Fasteners

Bespoke configuration

Calculator

Collator

Not easy

Needs intervention by us to capture and reuse

as basic installation configuration

Save function

For repeat of process with variables

To user

To core for other users

Report function

To present to others in design team

Print function

Email function

Other considerations

Timber sector needs this to compete with other materials

Ideally should not be developed for EcoChoice alone

Bespoked by each supplier according to stock

Could be online for all to access

Useable by all

Make it an APP for tablet and mobile, etc.

Sell cheaply to many

Bespoke it for a fee

Train in use of it

LCA may take into account:

(Andrew to advise if included in calculations or not)

Land use change

Forestry/Plantation impacts

Transport on land at forest/plantation end

Transport in rivers

Transport across oceans by tanker

Transport locally rail and/or road

Where in the supply line is machining?

Energy and carbon in timber mills

Biomass waste to energy at mills

Future Development/optional extra

Water consumption

Embodied water

Future Development/Optional extra

Durability

Life expectancy as species for application

Need or avoidance of preservative treatment

Important for LCA

Less important for embodied carbon?

Need or avoidance of kiln drying

Important for embodied energy

Could be important for embodied carbon depending on fuel

Species selector

Choose species based on

performance requirements

properties

appropriate characteristics

appropriateness to application

Colour and appearance, figure and grain

Application

Report on why species shortlisted are suitable

And why chosen species are not suitable

Guidance on choosing and reserving logs

Partners and Prior experience

Sarah Farmer @ English Woodlands Timber

Timber in the blood

Created timber stock and price calculator for supplier (employer at the time)

Used on tablet

Fast selection species, sizes, quantities
Delivers price instantly
Willing to introduce us to Director to consider sharing core of tool with a different output for the wider benefit of the sector

Dr Andrew Norton @ Renuables

Timber & Biobased in the blood
LCA expert (for carbon and other outputs)
Timber and Biobased expertise
CAPEM Compass experience

Brian Murphy @ Green Building Encyclopaedia

Green blood
Data hoarder/Excel champion
CAPEM compass experience
GreenSpecSTUDIO experience
Fast learning about crowd funding
Request from EcoChoice to fulfill if UEA fail
Website to disseminate results
CPD and promotion opportunities

Future Development/Optional Extras

Dan Ward @ Archisan

Architect runs own practice
Green aspiration
Graphics champion
Sketchup Champion:
3D Models, BIM Ready
Can create a BIM library of installation objects
with Carbon & LCA Data

Paul Jary @ BIM Systems UK

ITC in the blood
BIM Level 3 user
Has integrated CAPEM outputs into BIM
Has BIM Library online

Costs:

Have not even started thinking about it

Accuracy level dictates level of development and costs
Keep it simple meet EcoChoice Ltd. requirement and no more
EcoChoice Ltd. will fund what they want.

Future development optional extras: later not now

Optional extras may be of interest for EcoChoice Ltd.
later

Sarah has done something very like this already but focus on costs

May be able to work out rough time spent
Weeks Months?

Need some prices from front end interface developer
Upgrade to mobile as well as tablet

Start with Excel function,
first prove it works
Then put a good front end on it

The price the other activities

By doing test runs

Need to work out some costings for activities

Need to determine any data licences

We can barter with CAPEM datasets

Funding further developments

Need to approach TSB/InnovateUK/LEP about R&D funding

Need to consider Crowdfunding as match funding to develop further

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Video for TRANSECO: to be developed

Involvement in project in abeyance

Revisions

Revision	Comment	Author	Org	Da
A00 %%%	Created file after Peterborough B2B 2014 exhibition in readiness for meeting with Grant Fund agencies	BRM	NGS	26
A00 %%%	Had meeting with EcoChoice who want Carbon calculator APP for his business discussed with Sarah Farmer	BRM	NGS	28 29 30
A00	Issue 5 pages on Carbon calculator to SF & AN	BRM	NGS	30
A01	Updated after call to Andrew Norton	BRM	NGS	30
A01	Issue to EcoChoice for consideration	BRM	NGS	30