

Green Guide Update: BRE Response to Comments on the Normalisation Briefing Paper (3b)

Comments in **bold** have been provided by our Life Cycle Assessment Peer Reviewers. A list of all those who have provided comments is given at the end of the document.

Erratum

- **Two figures seem to be wrong in the second table on p.2, in particular: Fresh water aquatic ecotoxicity and radioactivity.**

BRE apologise for the mistake – the freshwater aquatic ecotoxicity should be 1.32 tonne 1,4-DB eq and the nuclear waste figure should be 24.1 cm³ high level waste. Revised figures in the updated table can be found later in this document.

Changes in Normalisation resulting from the consultation on Characterisation

As a result of the consultation on the characterisation factors, BRE have made a number of amendments to the characterisation categories, resulting in changes to the normalisation factors. These changes are detailed below:

Abiotic Depletion:	No longer included
Minerals Extraction:	No longer included
Radioactivity:	Renamed Nuclear Waste
Fossil Fuel Depletion:	New category to replace energy element of Abiotic Depletion
Solid Waste:	Category now also includes waste sent to incineration or underground deposit.
Mineral Resource Depletion:	New category to replace minerals element of Abiotic Depletion and Minerals Extraction.

Further details of these changes can be found in the document providing the BRE response to the Consultation on Characterisation which can be downloaded from the website, www.bre.co.uk/greenguide/update.

General Comments

- **The purpose of the note is to explain the main principles of normalisation using well respected methodologies and following the ISO standards.**
- **Normalisation is to better understand the relative magnitude for each indicator result of the product system under study.**
- **ISO 14044 says normalization is the calculation of the magnitude of the category indicator results relative to some reference information**
- **The background description appeared a little bit misleading to me. It is in particular NOT the purpose of normalisation to "allow for a direct comparison of impact categories". I recommend BRE rely on the ISO 14042 description "calculation of the magnitude of the category indicator results relative to reference information".**

ISO defines Normalisation as the process of calculating indicator results relative to reference information. In this instance, the reference information is the impact of a European citizen. We

can therefore calculate a climate change impact relative to that of a European Citizen – for example half of one citizen's impact, and a Toxicity impact to the same reference, for example a quarter of a citizen's impact. Although ISO may not state this, this process allows you to compare the climate change impact with the toxicity impact.

- We have no issues at present with Briefing Note 3b Normalisation apart from some detail may be lost in the conversion and it could be seen as over simplifying matters.
- Normalisation is simple to calculate (for quantifiable impacts), but maybe is not a simple concept.

Application of Normalisation

- When impacts are normalised to Western Europe, how will products from non-Western Europe be assessed? E.g. European parts of the former Soviet Union.

All impacts will be normalised on the same basis, wherever they occur, be it in Europe, Asia, the USA or elsewhere. As we are undertaking increasing work within Europe, and for clients selling into the European market, this is why we are intending to use a European citizen as the normalisation reference.

Age of Data

- The normalisation data seems very outdated being from 1995. By the time the updated Green Guide is published it will be 12 years out of date.

BRE agree it is unfortunate that the data will be so out of date. However it is hoped that CML will update their normalisation factors at some point, when we will be able to move to their newer factors. Within the budget for this project, it will not be possible to update the European Normalisation factors ourselves.

Using European Data

- How similar is an European citizen's impact profile compared to a UK one's?
- Nothing much to comment on this, but would like to see how the Normalisation factors of average Western European citizen differs from those currently used - this should be able to provide insight into how this would affect individual profiles.

The table below shows the relationship between the European and UK citizen's impacts.

Category	European Citizen (1995)	UK Citizen (1997)	Unit
Global warming (GWP100)	12.3	12.3	tonne CO ₂ eq. (100 yr)
Ozone layer depletion (ODP)	0.217	0.29	kg CFC-11 eq.
Human toxicity	19.7	*	tonne 1,4-DB eq.
Fresh water aquatic ecotoxicity.	1.32	*	tonne 1,4-DB eq.
Terrestrial ecotoxicity	123	*	kg 1,4-DB eq.
Photochemical oxidation	21.5	32.2	kg C ₂ H ₄ eq.
Acidification	71.2	*	kg SO ₂ eq.
Eutrophication	32.5	8.00	kg PO ₄ eq.
Solid waste	3.75**	7.19	tonne waste
Radioactivity	24.1	18	cm ³ high level waste
Minerals Resource Depletion	24.4	16.8	tonne extracted
Fossil Fuel Depletion	*	4.085	Tonne of oil eq, (toe)
Water Extraction	624	423	m ³ water extracted

*Data not yet calculated using the new methodology.

** Data does not yet include waste which is incinerated or in underground deposits.

- Given that top quality data is considered to be UK data, it seems strange to normalise everything by European citizens.

BRE do not believe that there is any difference in the quality of the data provided for the European citizen by CML, and that for the UK citizen assembled by BRE for the original Environmental Profiles Methodology.

- The rationale for shifting to normalisation based on a European instead of a UK citizen implies that normalisation has more meaning than it does in reality. As you indicate, it is simply a convenient way to deal with the disparate units problem to facilitate direct comparisons across impact categories. It therefore matters little whether you normalize to one reference point or another, except in terms of general understanding on the part of users. In that case, I would argue that the UK citizen reference point is more relevant since the Green Guide is used for UK buildings. The UK demand indirectly creates the impacts irrespective of where the products are made. In a trading world, there is no better logic supporting a shift to a European citizen than to a G8 or a world citizen. I think the UK citizen is the logical choice for the reason noted above.**
- The normalisation is an important part of the methodology in order to support the understanding of the significance of environmental impacts caused by building materials industry. The impact per citizen of Western Europe is a good reference, which helps to concretise the results of an LCA.**
- Normalisation to an EU citizen is useful as it makes UK products EU-comparable as well as making EU products UK-comparable – giving them a common bench mark.**

BRE believe that the use of the European citizen will give BRE Environmental Profiles a greater acceptance and uptake within Europe.

- In aggregates terms, the UK is the second lowest user per capita in Europe, with a rate almost half the average; will that be to our benefit?

Based on an impact of 2.97 tonnes of mineral extraction, the normalised impact using a European citizen would be 0.100, and for a UK citizen would be 0.164. To obtain a BRE ecopoints score, these normalised impacts are then multiplied by a weighting factor. It will be important that the weightings are undertaken on the same basis as the normalisation, for example, if a European citizen's impact is taken as the norm, then the weightings must be undertaken on the basis of the

impacts caused by European activity, whereas if the norm was a UK citizen, then the weightings would need to be undertaken on the basis of UK activity.

- The normalisation factors are specific to the year in question and so it should be made clear as to where the data comes from.

CML have published the source data for the CML normalisation factors, see <http://www.leidenuniv.nl/interfac/cml/ssp/index.html>. Solid waste and water extraction factors have been sourced from the Eurostat website and Fossil Fuel Depletion and Minerals Resource Depletion factors have been sourced the Eurostat document on the Total Material Requirement Indicator which can be downloaded from

http://epp.eurostat.ec.eu.int/portal/page?_pageid=1073,46587259&_dad=portal&_schema=PORTAL&p_product_code=KS-AO-01-002. The factors for Nuclear waste have been obtained by calculating the overall impact of the European and UK electricity production using Simapro LCA software and the Ecolnvent energy models. More information on the sources of the data will be provided in the written documentation describing the update to the Environmental Profiles Methodology.

Consultees who provided comment: (* Methodology Peer Reviewer)

Rolf Frischknecht, ESU-services, Switzerland*

W. B. Trusty, Athena Sustainable Materials Institute*

John Bowdidge, representing Construction Products Association*

Tarja Häkkinen, VTT Building and Transport, Finland *

Andrew Frost & Tom De Saulles, The Concrete Centre / British Cement Association

Dr C Perkins, Senior Scientist, Arup Materials Consulting

Dr Mark Barrett, Director, Sustainable Environment Consultants (SENCO)

John Gelder, NBS

Nick Avery, Corus Research Development and Technology

Jerry McLaughlin, Director, Economics and Public Affairs, Quarry Products Association

Simon van der Byl, Director General, QPA

Chris McFarlane, Forbo Flooring

Ieuan Compton, Kingspan

Process regarding BRE response to Stakeholders feedback on briefing notes

The following process will be adopted for the communication of BRE's position on stakeholders feedback to this briefing note:

- Feedback from all respondents has been collated by BRE and a response prepared. This document is BRE's position on the points raised, including a justification and rationale for the position taken.
- Any disagreement should in the first instance be immediately tabled to BRE, by response to this mail and by 15 September 2005.
- BRE will then consult with the relevant parties to try to seek resolution.
- If there is still a disagreement on BRE's position, the issue will be tabled to the Project Steering Group (PSG), either via email, or at the next meeting (which ever is soonest) to seek resolution.
- If resolution cannot be achieved, any member of the PSG can take the issue further by tabling the issue (with BRE support) to the Sustainable Construction Board, an independent committee of industry representatives who will make the final decision (see PSG Terms of Reference for governance structure).

Please direct all further responses to:-

greenguide@bre.co.uk



30 August 2005

BRE Environment
BRE, Garston, Watford, WD25 9XX