



Climate Score Methodology

Review Statement

Review statement regarding the methodology behind the LCA-based tool Climate Score for the calculation of climate impact from hotels (developed by Jens Sørensen and René Chanoûf Jacobsen, Conscious Convenience)

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17 January 2024



This statement is the result of a critical review process following the guidelines of the international standards ISO 14040/14044. The review has been conducted by a critical review panel consisting of:

- Stefania Butera, Danish Technological Institute (chairperson for the review panel)
- Koldo Saez de Bikuña, Quantis
- Alessandro Galli, Global Footprint Network.

The review was conducted in the period October 2023 – January 2024. The process has been that Jens Sørensen and René Channouf Jacobsen (hereby referred to as Conscious Convenience) provided in October 2023 the review panel with a detailed report describing methodology, goal and scope, applications, assumptions and data used for the Climate Score calculation, as well as two examples of its application. Eight appendices were also provided. The material was provided both in a confidential and in a public version, where confidential data and other data that were considered critical intellectual property for Conscious Convenience was removed/anonymised. Each reviewer has first individually commented on the report describing the Climate Score methodology; comments from the three reviewers were then merged and sent to Conscious Convenience, who addressed the comments and made some changes on the methodology and report; reviewers were also provided with a rebuttal file indicating how Conscious Convenience handled each comment. The same process was repeated two more times, and after the third review of the revised report there were only a few additional comments, which were subsequently implemented by Conscious Convenience. All comments and changes from the three rounds of review are documented in the excel sheet "Critical review table".

The review is based on the report received in the beginning of October 2023 and its subsequent revisions until 16th January 2024. The below review statement refers to the final version of the methodology, i.e. after the implementation of the agreed revisions.

The following aspects were beyond the scope of the critical review:

- Review and assessment of how Climate Score data is used to produce ESG reporting.
- Review and assessment of how the climate impact is normalised and converted into the Climate Score, as well as how the latter will be communicated.
- Review and quality assurance of the underlying calculations, implementation of formulas and emissions modelling, other than an assessment of the overall methodology and formulas' consistency.
- Language and consistency of the report.
- Any subsequent changes or additions to the methodology after the conclusion of the critical review process.

While an assessment of data actually used is normally within the scope of a critical review of LCA studies, this was only partially possible, as the object of the review was not an LCA study but rather the methodology and overall principles behind a tool (Climate Score), where some of the specific data and emission factors may vary depending on the application and context (e.g. geography, time or relevant technology).

General comments to the Climate Score Methodology

The panel's overall opinion is that the Climate Score methodology is consistent with ISO 14040/14044 and good LCA practice. It is scientifically and technically valid and transparently reported.

The data used is generally sufficient to support the conclusions and the expected applications of the method, even though it is acknowledged that results are moderately sensitive to quality and completeness



of hotel input data. The interpretation of the results reflects the limitations of the method and the purpose of the methodology.

Goal and scope

The goal and intended applications of the methodology are clearly defined, as well as its limitations. The target group is also clearly described, as well as system boundaries and geographical, temporal and technological scope.

The functional unit is adequately presented in the report as “to provide an average person with a 24-hour stay, including three meals (breakfast, lunch, and dinner), on-ground transportation, daytime activities, and consumption at a hotel”. Guest long-distance transportation to the hotel location (via e.g. flights, ferries) is not included, despite their potentially dominant impact, in accordance with the goal of the methodology. It was agreed that this important exclusion – although duly noted and motivated in the report – will be mentioned and highlighted when communicating guests’ impact results.

Data

The data required by Climate score is very comprehensive and complex but generally well described. Much primary data behind the so-called “weighting factors” is supplied by stakeholders within the hotel industry. Furthermore, primary consumption data is provided by the hotel themselves. The validation process for the hotel input data is described and its importance highlighted as part of the sensitivity analyses, which show among other things that results are moderately sensitive to quality and completeness of hotel input data. Emission factors are sourced as secondary data from ecoinvent v3.8, Agribalyse v3.1 and EXIOBASE 2021 ixi. The choice of combining conventional process-based LCA and environmentally extended input-output data has been assessed by the panel to be reasonable, considering the need to match the pragmatically available input data from hotels to the most appropriate emission factor. A detailed examination of the data quality in terms of spatial, temporal and technological representativeness has been carried out for both weighting factors and emission factors, although not covering the entire geographical scope but only Denmark. The panel finds that the data used in the Danish context is generally sufficient to support the conclusions, although the data accuracy for emission factors is in general not very high. The sensitivity analysis has shown among other things that results are robust with respect to variations of weighting factors. It should be noted that data used in the model (e.g. weighting factors, emission factors) may change over time and space depending on the application and context (e.g. geography, time or relevant technology).

Minimum data requirements for hotel input data have been adequately described and discussed, and are deemed appropriate, considering the realistically available input data from hotels. This is because the most critical data inputs contributing most to the final impact are covered with a sufficient level of granularity as reflected in the minimum data requirements.

Environmental assessment

The choice of impact assessment method is well argued and the environmental assessment itself and the methodology used (ReCiPe Midpoint 2016 V1.07 / World (2010) H) is adequately presented in the report and unproblematic. The method only focuses on Global Warming Potential, and the limitations of this narrow focus, i.e. that a better climate impact result does not necessarily mean a better overall environmental performance nor a higher sustainability, are highlighted in the report.



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Interpretation and conclusion

The sensitivity analysis, completeness and consistency checks cover the main data uncertainties in a reasonable way. The conclusions relate well to the purpose of the Climate Score method, and the interpretation of the results obtainable via Climate Score reflects the purpose and limitations of the method.

17th January 2024

The review panel,

A handwritten signature in blue ink, appearing to read 'Stefania Butera'.

Stefania Butera, Danish Technological Institute

A handwritten signature in black ink, appearing to read 'Koldo Saez de Bikuña'.

Koldo Saez de Bikuña, Quantis

A handwritten signature in black ink, appearing to read 'Alessandro Galli'.

Alessandro Galli, Global Footprint Network