Starting Situation
The company LG Electronics is planning to launch their newest LED LCD TV with the climatop label in the European area. For this purpose, an ecological comparison between the previous TVs of LG Electronics and the new, more economical, and weight reduced model is conducted. The goal of the conducted study was to test, if the new model (47LM760S-ZA) is significantly better in respect of climate and environmental impact compared to the previous reference model, and thus, to test if a climatop certification is possible.

The Carbotech AG was instructed with the implementation of the critical review.

Criteria and the course of the critical review
In accordance with the ISO 14040ff, the course of the critical review should guarantee that

- The applied methods correspond to the international standards
- The applied methods are scientific and technically valid
- The applied data are reasonable and appropriate for the purpose of the study
- The goal and the limitations of the study are taken into account concerning the conclusions
- The report is transparent and consistent

In the context of this review, the individual points as well as the plausibility of the results are verified. From experience, it is known that defining the framework, such as setting the goal, a basis for comparison, or the system boundaries, is a critical point concerning life cycle analysis. Accordingly, these points are treated in this review. By means of a systematic sample, the applied data, the assumptions, as well as the calculations are checked for their consistency and their adequacy.

The important decisions, the interim results, as well as its plausibility was discussed. The results of this discussion were taken into account in the final report and are therefore not mentioned in this critical review.

This review is based on the one hand on these discussions, and, on the other hand in the final report of the 18th April 2012.
Opinion on the final report of the study

Goal and framework conditions of the study
The chosen framework conditions such as functional unit, system boundaries und indicators are adequate for the goal of the study. It was clearly defined what was taken into account.

The study was limited to the comparison of two LG Electronics TVs. A cross-reference with the EU energy labels shows that the previous model carries the energy label A and the new model carries the energy label A+.

Although the goal of the study was to determine the climate impact, the total environmental impact is reflected based on the ReCiPe method. This is considered as very desirable since the results concerning the climate impact do not always correlate with the environmental impact.

With this additional view of the total environmental impact, it is guaranteed that the products certified with the climatop label do not perform worse concerning the environmental impact than comparable products.

Methods and Data
The procedure applied in this study is scientifically comprehensible and consistent with the goal and the framework conditions of the study. The chosen functional unit, the system boundaries and the indicators are adequate for the goal of the study.

The material data for the production of the TV components are obtained from the stock list (BoM) and linked with the ecoinvent V2.2 inventory. The energy for the production of the TV components was unknown and was estimated based on the known data for plastics and metals from the ecoinvent database. Moreover, an exact allocation of the energy demand of the individual processes in the end phase was not possible. This is the reason why the total annual demand was linked to the annual production rate. This action is considered as reasonable.

The contribution of the active and standby modus in the use phase is defined independently of the TV and was defined based on the Energy Test of Energy Star. For the electricity mix the European scenario (UCTE electricity mix) was chosen.

Results and Discussion
The results are review on the basis of plausibility. The transparent illustration of the individual steps of the life cycle was helpful. Moreover, an assessment of the LCA was conducted revealing that the results are correct. An uncertainty analysis is desirable to highlight the difference between the results. Since the new Model has better results due to the lower energy consumption in the use phase and the reduced weight at almost identical technological level, this error is considered as sufficient small to say that the difference is clear enough.

On the basis of this review and the checking of the input data, we consider the results as correct. The results fulfil the demanded criteria.

Conclusion
The results are plausible and seem to be correct based on the conducted review. The procedure is scientifically correct and corresponds to the initially defined goals. A particularly positive factor is the transparency of the report. For future analysis, an uncertainty analysis is desirable.
The resulting recommendations to climatop are comprehensible and coherent.


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