Wienerberger Sustainable Building Academy

BUILDING LABELS
SUMMARY

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Problem

The building sector is one of the biggest contributors to environmental impacts. Among others, this sector is responsible for high energy consumption, waste generation and resources depletion. Thus, the use of building labels is one approach to reduce this contribution, because they aim to ensure more sustainable buildings over the long term. However, since there is no single definition of the term sustainability, the understanding thereof depends on the cultural background and differs worldwide. That is the reason for a substantial variety of the labels in use. The main purpose of this report is to analyse the structure, organisation and content of four different labels to get a better understanding of how these labels define the term sustainability. The interest is not to study the result of one label; it is to understand what set of values a label is carrying. The ultimate objective of this work is to think about sustainable buildings that would be suitable for our common future.

Methodology

The respective labels, concerning only residential buildings, are BREEAM from Great Britain, LEED from the United States, DGNB from Germany and SNBS from Switzerland. The methodology used for the comparison of the labels is as follows: first, the structure of the labels is revealed on different hierarchical levels. Narrowing a label down to the level of indicator allows seeing how they really measure sustainability. The relative weight of each parameter per label was calculated and assigned to one of the three pillars of sustainability, namely society, economy and environment. Second, parameters similarities are analysed as representation of the content of the labels. Third, it is then about representing these results in an understandable way.

Results

Weighting criteria

The four labels substantially differ in the structure, especially related to the internal organisation and to the number of indicators. Thus, the final weighting of each parameter depends on the number of parameters per label. The more parameters are considered (e.g. in SNBS and DGNB), the less one single item contributes to the final result. For BREEAM and LEED, less parameters need to be considered to account for 50% of the final result. As figure 1 shows, SNBS and DGNB, which represents the second generation of building labels, measure sustainability considering the three pillars of sustainability more or less equally. Whereas BREEAM and LEED, which belong to the first generation of building labels, mainly consider the environmental pillar, indicators related to society and economy are almost negligible. Therefore, the first two labels have a rather holistic view on sustainable buildings.

Assessment process

In the history of environmental thinking, two main paradigms were established to reduce environmental damage: incentives to reduce harm or to maximise benefits. The most important parameters per label were assigned to these two categories to analyse how different labels try to promote sustainable buildings. A clear tendency throughout all four labels can be identified: the more parameters are considered, the more the focus on maximising benefits than reducing harm is (figure 2). Thus, the core of each label is first to constrain important issues and only then to include positive incentives in order to maximise benefits. It can be observed, that the newest standard SNBS pursues a fairly different strategy than the other three labels and therefore represent a paradigm shift in the understanding of promoting sustainability. This is indicated by the exceptionally high fraction of maximising benefits.

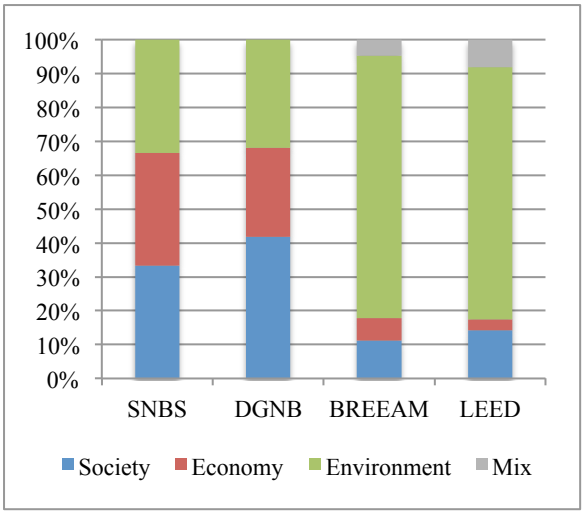

Figure 1: Representation of the labels in respect to the parameters assigned to the three dimensions of sustainability.

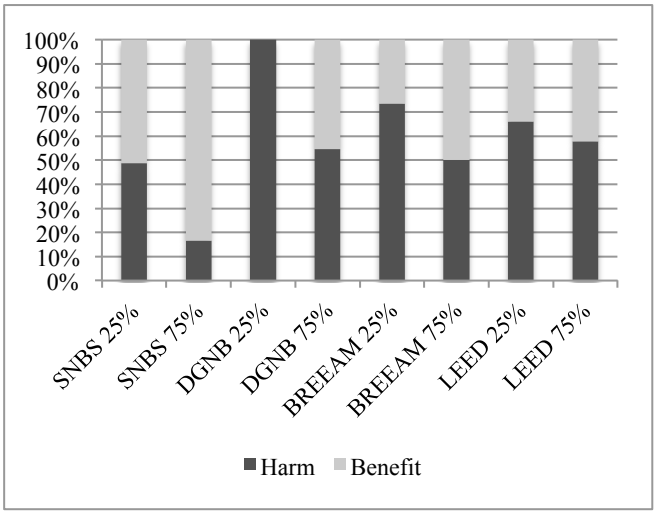

Figure 2: Qualitative assessment (reducing harm vs. maximizing benefits) of the most important parameters (25% / 75%) of each label.

Contribution of materials

After comparing the four labels in their general structure, having a deeper look on how these labels are treating different aspects of a building was required. As an example topic, a more detailed look at building materials in SNBS, DGNB, LEED and BREEAM was undertaken. By investigating the distribution of material-related parameters over the three pillars of sustainability, it can be stated, that the biggest influence on the final rating comes from environmental and social aspects, while most of them have to be considered during building use. Economical aspects do not seem to play such a big role. In total, DGNB (55.4%) and BREEAM (48.6%) had a higher percentage of material-related parameters compared to SNBS (18.7%) and LEED (16.7%).

Bricks

Further, one special building material was analysed. This turned out to be bricks, because of its long tradition and worldwide use. First an own rating system consisting of eight parameters that we think are the most important requirements on bricks was created. These parameters are thickness and U-value, fire protection, durability, low maintenance, robustness of the construction, working quality, tradition/lovability and value retain/selling potential. Then a search through all labels was carried out, trying to find material parameters that could eventually be linked to bricks and then assigned to our rating system. In doing so, it can be showed how bricks are treated in each label and hence, this enables to make some propositions for improvements that might increase the label grading of brick buildings, like putting a higher focus on the durability of a brick. Overall, the share of brick-related parameters varies from 11.3% (SNBS) to 21.2% (DGNB).

Conclusion

The differences between the labels are legitimate, because there is no single global definition of sustainability as mentioned above. After this study, it is clearer what this really means. It is important to highlight that labels are only one approach in promoting sustainable buildings. Since the effect of labels can be questioned and getting a rating is expensive, bureaucratic and partially arbitrary, there is also resistance against this approach. That is the reason why the recently launched standard SNBS is rather seen as a strong planning and management tool than a certification scheme. Labels in the future should not only be business, they should really implement their good intentions.