

New design tool for sustainable buildings

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INTRODUCTION

Buildings account for 40% of worldwide energy use. Furthermore, energy used during its lifetime causes as much as 90% of environmental impacts from buildings. By designing sustainable buildings with a holistic approach, it will have not only environmental benefits, but also economic and social benefits.

Several rating systems have been developed for sustainable (green) buildings, one of which is the German DGNB. Green building Denmark has established a Danish version of DGNB, which is currently the most commonly used certification program for green buildings in Denmark.

There is a big potential in developing and disseminating the certification program in order to optimize the process and make it more attractive to use. A new design tool could help illustrating the 61 categories better by showing which parameters could be changed, in order to optimize the sustainability of the building and to obtain the rating target.

METHODS

Development and potential

When designing sustainable buildings in relation to DGNB, a simple Excel sheet with tables is typically used to give points to the different categories based on previous calculations and assumptions.

The new sustainable design tool, which is also planned to be made in Excel, will contain a graphical overview of the obtained points in the different categories, which will give a better overview and give a sense of where to take measures. Categories, which can be improved, will be colored automatically depending on the obtained score and possible solutions will be shown next to it. The accuracy of the point score is shown next to categories and total score in order to get a sense of the outcome.

In the long term it would also be possible to develop an app with the same functions as the excel sheet, which can be used on the road, in meetings etc. Furthermore, a software can be developed, which can suggest solutions by using a predefined database and the specification of requirements for the building. The software could communicate with BIM-software by using gbXML (the Green Building XML) and import necessary data.

The advantages of the new design tool is among other things:

- Promote sustainable building
- Optimize the process of sustainable design and thereby the building itself.

The tool is being developed in collaboration with EKJ consulting engineers and Green Building Council Denmark.