A Method for Holistic Evaluation of Sustainable Buildings of the Future


Project description:

Interest in quantitative assessment of building performance has increased through the last decades in line with the material and professional development of sustainable buildings. Now, concerns of a more holistic approach to sustainable buildings began to emerge and the increasing holistic approach calls for new ways to assess and evaluate our buildings, not only based on quantitative reviews but particularly based on qualitative reviews. The avenue towards how we can determine and assess both quantitative and qualitative aspects of sustainable buildings without distorting the value of either of them.

Research set up:
The research project consists in measuring, registering, analyzing, and comparing seven houses and occupants - through both quantitative and qualitative studies. The qualitative performance is captured through observations on the technical parameters, occupants’ interactions with the environment, and the occupants’ private perspectives. The quantitative performance is captured through measurements on occupants’ registered and validated experiences and through, assessments, surveys, interviews, registries, and sight descriptions.

Research hypothesis:

Quantitative measurements on sustainable houses can help determine how energy consumption and energy production in passive and renewable spaces, healthy indoor climate and interactions with the surrounding environment.

Research hypothesis:

Qualitative measurements on sustainable homes can help demonstrate that its occupants experience benefits of a healthier indoor climate and affects the surrounding environment and to discover increasing awareness of their energy behavior.

Research hypothesis:

Measuring qualitative and qualitative aspects of sustainable houses and their occupants makes it possible to identify what parameters are critical to develop sustainable buildings of the future and design a method for holistic evaluation of these houses.

How can we measure our buildings by their ability to improve our lives?

Research design and methodology:
The project used an interdisciplinary team focused on developing sustainable buildings of the future. The research design is based on a combination of natural science research methods and qualitative research methods. The various scientific approaches treat the same project problems with different lenses and methods for interpreting the issues from different perspectives. The strategy is based on a Mixed Methods Research approach (Creswell 2009) that involves combining quantitative and qualitative aspects of data. Case Study Research (Yin 2009) methodology handles each house as an individual case in a triangulation of multiple case studies. Often data are extensive case comparisons through continuous data collection on different cases, with a focus on the same data set. The structures are intended to discriminate what parameters it is suitable to change to evaluate the methodology.

How can we determine what parameters to evaluate by measuring the performance of occupied experimental sustainable homes?

What is measured?

Data and information is a necessity in order to analyze and identify what parameters are critical to measure and evaluate. It requires the need for a combination of what methods to use for measuring qualitative and qualitative aspects of sustainable buildings. Following the Active House vision measures will be on energy, indoor climate, and environment.

“Just imagine if the quality of our buildings was measured by their ability to improve life!”

“I only wish that the first really worthwhile discovery of science would be that it recognized that the unmeasurable is what they’re really fighting to understand, and that the measurable is only the servant of the unmeasurable; that everything that man makes must be fundamentally unmeasurable.”

— Louis Kahn