Whole System Measures to See What's Missing from the Problem

GreenBuild 08 - 30min presentation, submission 226

The reason for using whole system measures is to help see beyond projects as reduced to defined 'puzzles in a box' to be analyzed and solved. Big things can be left out. We might look at a project's unaccountable fraction of the whole economy's energy use perhaps. That helps show parts of the whole problem we can not define. Whole systems can not be reduced to defined puzzles. What whole system measures tend to show is what's undefined but clearly missing from what you can define. That can be sobering, that can be a huge help. One might then add or subtract from the pieces of the defined puzzle to solve, or change it's design entirely, or turn away from the puzzle to follow some fresh path of exploration. In all cases one comes to better understand the context that the puzzles we work on are operating in. The perspective change can make some choices seem to have 10 times the impact, and others $1/10^{th}$.

Defined puzzles, like formulas, are strictly self-contained by their definitions, and that independence means they can't interact and change with an environment. All physical things, as well as the deeply complex and changing organizations of environmental processes we call 'natural systems', all do. That, of course, is how they keep up, and why our definitions of things often do not. Defined puzzles can be useful for helping people interact with environments, though, because they can help us see the difference, and when and how to change the puzzle. We won't find that looking 'in the puzzle' or 'in the box' as some refer to it. You find that with a practical method for looking all around.

The application to be discussed is how project measures for total 'embodied energy' and 'embodied CO^2' are defined, and how to use them along with other whole project impact assessments for:

- comparing effects before & after,
- compared to targets
- adjusted for meaningful compensations

One of the obvious key principles for tasks of this broad scope is, well,… the work is always incomplete! Some work is for nipping off loose ends, and other work is for growing them. This is for growing them. It's a learning process benefited by being both ambitious about being systematic and comprehensive, and somewhat casual about completion. Once you develop your menu for searching the environment outside your problem definition, with the last item being, 'What else should be on the menu?', that may use up the time available for that cycle of the exploration. The idea is to establish a regular method of comprehensive cyclic exploration of the whole environment of the problem.

Learning objectives

- learn to distinguish between defined problem and its environment
- learn how project global energy impacts are measured
- learn how to compare different whole project impact assessment methods