

The Definition of Sustainability

The Sustainable Water Pollution Engineering Committee, in an effort to disseminate information through the committee, shares a series of articles regarding sustainable design. In this first entry, the definition of sustainability is explored.

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Note: The Sustainable Water Pollution Engineering Subcommittee/EWRI Sustainable Design Water Pollution Engineering Committee has become the EWRI Sustainability Task Committee.

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Are you putting off learning more about sustainability because it seems so ill-defined? As the push for sustainability gathers momentum, it seems that every product, practice, and company is touted as being “green” or sustainable, so that some pretty careful discernment is required to figure out what the term really means. Admittedly, sustainability concepts are something of a moving target, with new notions coming along as people seek more sophisticated ways to apply and evaluate them, but there are some fundamental tenets that remain constant. In an effort to keep you actively learning more about this new design paradigm, we’d like to offer a definition here that should guide you as you learn and that will work every time you’re called upon to explain sustainability to someone else.

In a nutshell, sustainability is about sustaining the natural systems that support human life. It is not so much an effort to preserve beautiful vistas or cute koala bears as it is the science of ensuring that our species can persist. There was a fixed amount of natural resources (water, oil reserves, metal and material deposits) available to humans in our earliest days on the planet along with rich biodiversity that kept natural systems in balance. We tend to take these resources and the benefits of their balanced interactions (e.g. soil fertility, pollination, potable water) for granted. We’re now realizing that human activity is consuming these resources, or “natural capital,” and ecosystem services at rates much higher than the rates at which they can be replenished or restored. Further, this recognition comes at a time when the human population is growing exponentially!

Taken together, these two trends lead to the sobering recognition that our current ways of doing business are unsustainable. Sustainable engineering seeks to reverse this trend. It leads us to envision, plan, design, operate, and decommission in ways that maintain the integrity of the natural systems that support human life. As engineers, we translate science into tangible infrastructure, facilities and technologies that make human life safe and comfortable. Now we are being called upon to help translate that science to the public as we make the sharp shift to more sustainable designs and practices.

We hope this definition and your exploration of some of these topics will lead you to include sustainable design criteria in your work: less use of virgin materials, water, non-renewable energy; less production of waste, polluted water, air, or soil; more use of reclaimed materials, facilities that generate more energy than they use, biodegradable materials, integrated designs.

The committee welcomes your questions about sustainability. We will try to answer them in future issues. Send questions to: Helene Hilger, hhilger@uncc.edu.

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