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Keynote Lecture by

Barry A. Benedict

Professor of Mechanical Engineering at the University of Texas at El Paso

Integrated Sustainable Solutions That Incorporate Resilience and Asset Management

Sustainability requires consideration of environmental, economic, and social issues.

Life cycle sustainability assessment (LCSA) includes environmental LCA (life cycle assessment), life cycle costs, and social LCA. Asset management also includes life cycle costs, as well as commitment to the public and risk management. Resilience can also be seen as the ability to respond promptly and thoroughly to hazardous (or chronic) problems. Since the response must include responding to environmental, economic, and social disruption, resilience can be considered as a design process aligned with LCSA. Further, asset management and risk assessment are linked. Since life cycle costs are contained within these analyses, the underlying factors for asset management, risk assessment, life cycle sustainability assessment, and resiliency can be considered together.

This paper outlines how to build upon the LCSA framework to include elements of uncertainty (and hence risk assessment) plus how to use the same features to assess resilience and asset management.

Scenario planning will be applied to the life cycles for the three sustainability elements contained within LCSA. The scenarios developed will be based on critical events based on plausible outcomes within the STEEP (Social, Technological, Economic, Environmental, and Political) arenas. This will typically include four scenarios (or plausible futures) that can each be applied to the life cycle assessment of each of the three elements of sustainability. This enables reviewing the possible risks associated with any future. These scenarios will be further applied to design for resilience and asset management. There are some slight differences involved between these two elements and sustainability, and those will be described.

All these processes are commonly under the same organizational unit, so this author believes that the combination of elements will lead to savings of time and costs, while ultimately producing more robust assessments.

About the author

Dr. Barry A. Benedict received his B.S., M.S., and Ph.D. in Civil Engineering from the University of Florida. He has served on the faculty at eight institutions, both public and private. He has twenty years of academic leadership experience as a Dean or Vice President.

His teaching, research, and consulting covers topics such as strategic planning, quality management principles, organizational behavior, innovation, frugal innovation, interdisciplinary efforts, life cycle assessment, sustainability, scenario planning, policy analysis, diffusion of innovation, asset management and energy systems.

He also has extensive research experience in contaminant transport (in surface and ground waters, as well as in the atmosphere). A team on which he was a key player developed an extensive online climate education resource and community (www.camelclimatechange.org). His consulting includes service as an expert witness in several cases involving hydrologic events such as hurricanes, storms, and environmental impacts. He has also been a consultant to the United Nations Development Program in India. His record includes over 100 publications and presentations.

The Louisiana Board of Regents issued him a commendation in February, 1995, for contributions to the state's research infrastructure and university collaborations due to exemplary service as Louisiana NSF EPSCoR Project Director from 1990-1994, during which time he oversaw research expenditures of over twenty million dollars. He has led development of other major research initiatives.