

The Weighting Step in Life Cycle Impact Assessment: Results from the Building for Environmental and Economic Sustainability (BEES) Stakeholder Panel

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The Building for Environmental and Economic Sustainability (BEES) software implements standardized life cycle approaches to help the building community identify cost-effective, environmentally-preferable building products. These products are defined as those achieving the most appropriate balance between environmental and economic performance based on the *decision maker's values*. As such, BEES incorporates the optional environmental life cycle impact assessment steps of normalization and weighting to allow decision makers to compare the environmental performance—and ultimately the combined environmental/economic performance—of competing products.

In May of 2006, NIST convened a panel of about 20 stakeholders with balanced representation from building material producers, consumers, and LCA experts. Stakeholders were brought together to evaluate the relative importance of the BEES life cycle impact categories, including global issues of climate change, ozone depletion, and fossil fuel depletion; regional impacts of acidification, eutrophication, photochemical smog formation, water use, human health effects, and ecological toxicity; and a local indicator of indoor air quality. Panel discussions were facilitated by employing the rigorous Analytic Hierarchy Process (AHP). The relative weights were measured and recorded, resulting in a collective representation of the judgments and values of the panel. The results of this work are groundbreaking and represent a contemporary snapshot of societal priorities by stakeholders and experts in the context of the application – that is, the potential burdens to environment and human health when building and construction products are consumed in the United States. The set of weights developed by the stakeholder panel will be offered as one of several optional weight sets in the next version of BEES, scheduled for release in Fall 2006.