IS SUSTAINABILITY A MYTH?







ACKNOWLEDGEMENTS

Barbara Lazewski

Steenbock Library liaison to UWEX Cooperative Extension

Steenbock Library University of Wisconsin-Madison



Photos courtesy of Microsoft Design Gallery unless otherwise noted.

WORD & CONCEPT ORIGIN

"Sustain" comes from the Latin sustinere, meaning "to uphold" or "to bear the weight of."



Other definitions include "to keep going" and "to endure without giving way or yielding."

Sustainability was preceded by the "sustained-yield" concept, which had its roots in the forest industry of 1800's Germany.



MODERN USAGE

Modern concept of sustainability was popularized by 1987 World Commission on Environment and Development (Brundtland Commission) report *Our Common Future*.

Development is considered to be sustainable when it meets present needs without compromising the ability of future generations to meet their needs.



TYPES and PRACTICES

TYPES: Development, Agriculture, Design, Living, Energy, Tourism, Housing, Industry, Communities, Foods, Packaging, etc.

PRACTICES: Green roofs, organic fibers, walkable communities, community supported agriculture, renewable energy, micro loans, conservation subdivisions, low VOC inks, day-lighting, closed-loop manufacturing, biodegradable materials, urban gardening, hazardous waste collections, manure digesters,



raín gardens,

mass transit,



publishing on demand, historic preservation, permeable pavement, virtual education, accessible health care, biomimicry, recycling, value stream mapping, etc.

TYPES and PRACTICES



SKEPTICS

"It is increasingly difficult to have a discussion about planning or urbanization without mentioning sustainability. And if you don't, you're likely to be dismissed as being hopelessly out of date and out of touch with today's dogma. I myself have often experienced this reaction, in part because <u>I describe myself as a sustainability skeptic</u>. I do so not because I am skeptical about the underlying issues, but because I am skeptical about our current ability to find solutions."

.

- Paul Farmer, Executive Director, American Planning Association July 2008

SKEPTICS

"That so few sustainable resource-use plans have been effective stands as testimony to the differences between what we expect of nature and what nature can provide. In the context of the use of wild living resources, I suggest that sustainability is more myth than reality."

- David Duffus, Associate Professor of Geography, University of Victoria, British Columbia, June 1993

HURDLES

- 1. AMBIGUITY
- 2. MOVING TARGETS
- 3. CONSISTENCY
- 4. BIODIVERSITY
- 5. COMPLEXITY
- 6. VOLATILITY



AMBIGUITY

"Sustainability, to begin with, is an idea that has never really been defined.... Consider the matter of a time frame. Is a sustainable society one that endures for a decade, a human lifetime, or a thousand years?... What degree of sustainability should we settle on?"

- Donald Worster, Distinguished Professor of History, University of Kansas, The Wealth of Nature, 1993



"The idea of 'sustainability' is problematic precisely because it is utterly devoid of truth content - one can never know if one has achieved it."

- Daniel W. Bromley, Professor of Applied Economics, University of Wisconsin-Madison Ecological Economics, March 2007

AMBIGUITY

Extremes of opinion of what is needed to attain sustainability...

Sustainable Development advocates support economic growth as long as it doesn't harm humans and the environment.



Wildlands Conservancy opposes a new wind/solar/geothermal project in Mojave; Wilderness Society supports it.

(TIME Magazine, 2009)

Club of Rome concluded that in order to avoid ecological, demographic and resource disasters in the near future, it was necessary to stop demographic and economic growth.

The "deep ecologists" suggest that negative growth is the only option, with the ultimate aim of eliminating all human impacts.

MOVING TARGETS

Modeling the future is far from an exact science ...



"Originally, industry and Forest Service planners stated that the rate of logging was sustainable. However, so many different figures and interpretations have been made of the forest's productivity in the Tsitika valley that ... Now it appears that nobody believes the forest has been logged at a sustainable rate." (David Duffus, 1993)

Ecologists can try to make predictions, but the uncertainties are so great that a crystal ball might do as well. Stephen Carpenter, a freshwater ecosystem specialist at UW-Madison, says that ecologists tend to use words like "projection" and "scenario" rather than "prediction" or "forecast," for just these reasons.

(World Watch, Sept/Oct 2003)

MOVING TARGETS

Modeling the impacts of human activities on the future global climate, for example, relies on the following inputs ...



Economic activity (estimate) Population (estimate) Land use/land cover (estimate) Technological innovations (guess) Volcanic activity (estimate)

"Estimates of future global and regional impacts of human-induced climate change are inherently uncertain. This is because projections are based on a series of model calculations with each succeeding model using as its inputs increasingly uncertain outputs of previous models."

- 2007, Indur Goklany, U.S. delegate to International Panel on Climate Change

CONSISTENCY

- 1. INTERNAL: Meed consistency among your own efforts so as not to conflict with what you've already done or with other types of sustainability goals.
- 2. EXTERNAL: Any process that doesn't get total participation from <u>everyone</u> risks being undermined by negative efforts.

CONSISTENCY



(INTERNAL)

"You cannot really declare any practice 'sustainable' until you have done a complete life-cycle analysis of its environmental costs. Even then, technology and public policy keep evolving, and that evolution can lead to unforeseen and unintended consequences."

- Michael D. Lemonick, Scientific American, 2009

Not all human needs can be met legislatively.



CONSISTENCY

(EXTERNAL) Outside influences... wildcards



"Under sustainable development, success is dependent upon the extent to which a community is a closed system."

- Edward Jepson, Jr., Ph.D., WAPA News, 2001

BIODIVERSITY



"The notion of a 'sustainable yield' is a myth. It assumes that the preservation of *species* is all that is important, and ignores loss of diversity below the species level."

- Michael J. Vandeman, Ph.D., UCLA, 2001

The very first time a new gene is created, it most likely exists in a single individual. Suppose, for example, that a soon to-be-logged tree in a "sustainably" harvested forest contains a mutation that would allow the species to survive global warming. Harvesting even that one tree could destroy biodiversity and have a significant negative effect on the species.

Thus, harvesting any reproducing organism can never be "sustainable." No one can guarantee that it won't destroy a key piece in the world's future store of genetic biodiversity.



COMPLEXITY

Biosphere 2 is a major sealed glasshouse complex north of Tucson in the desert of Arizona



"Biosphere 2 was an experiment in sustainability, exploring the essential question: How do we make a self-contained place to live, and keep it going for a long time?

Biosphere 2 showed that ecosystems are extraordinarily complex and dynamic, poorly understood, and prone to unforeseeable behavior that may alter their functionality. (As the saying goes, ecology isn't rocket science; it's a lot harder.)"

- World Watch, Sept/Oct 2003

COMPLEXITY

Advanced life-forms require more resources, and thus make ever more demands on the ecosystem.

AMEOBA: Simple life-form needs only water, food, air

HUMAN: Complex life-form needs clean water; vitamins and minerals; a specific ratio of nitrogen, oxygen, and other gases to breathe; nurturing and care for our first years of life; shelter from the elements; warmth; clothing; a mate in order to reproduce; mental stimulation; and probably more.



Humans are much harder to <u>sustain</u> than any other life-form. Even worse, in the last 100 years, our life span has increased, our caloric intake has risen, and our interests have become more varied.

"Change now appears to be intrinsic and natural at many scales of time and space in the biosphere.... Whenever we seek to find constancy, we discover change." - Daniel Botkin, Ph. D. ecologist



Butterfly Effect

"When we try to pick out anything by itself, we find it hitched to everything else in the universe." - John Muir



"Since the dawn of life, species have become extinct, paving the way for the development of new species that might better utilize the environment.... If species did not become extinct to make room for more advanced organisms, life on Earth would not have progressed to where it is today.... <u>Geologists are beginning to accept global catastrophes, such as mass</u> <u>extinctions, as normal occurrences in geologic history.</u>"

- Jon Erickson, geophysicist, author of Dying Planet

VOLCANOES: About 14 active and dozens more considered dormant (not extinct).

VENTS/GEYSERS: "Old Faithful" is overdue for a super explosive calderaforming eruption.

QUAKE FAULTS: "Nothing, not even the wind that blows, is so unstable as the crust of this earth." - Charles Darwin



USGS

ASTEROIDS: An approximately 400-meter wide NEO will come closer to Earth in 2029 than the orbit of our geostationary satellites. If it passes through a several hundred-meter wide "keyhole" in 2029, it will impact Earth in 2036. Current estimates, however, rate the probability of impact as very low.

SOLAR RADIATION: Supernova Vela appeared about 10,000 years ago. Its deadly cosmic rays may have led to the extinctions of mastodons and mammoths.

DISEASE: Several pandemics have swept the Earth.

MAGNETIC FIELD REVERSAL: Currently undergoing a slow steady decrease in intensity; Earth well overdue for a reversal.

CLIMATE CHANGE: There have been 4 major ice ages in the last 100,000 years.



PBS



"For ... as long as anyone would claim for 'ecological time' there has never been an interval when temperature was in a steady state with symmetrical fluctuations about a mean..."

- Professor Margaret Davís, University of Minnesota

Be thankful it's not an ice age

UW researchers have good news about the cold: We should be entering another ice age — but we're not.

By RON SEELY rseely@madison.com 608-252-6131

Consider yourself lucky. It UW could be much, much colder ers. outside – like ice age cold. "7

Researchers at UW-Madison have used powerful computer climate models to show that, were it not for a rise in global temperatures that started thousands of years ago with

the first clearing of European forests, we would be entering another ice age. Glaciers would be growing instead of melting. Your back would be even more sore from shoveling.

The findings were to be presented today at a meeting of the American Geophysical Union in San Francisco by Steve Vavrus, John Kutzbach and Gwenaelle Philippon, all UW-Madison climate researchers.

"The world would be a much colder place right now," said Vavrus of the researchers' conclusion.

Vavrus and his colleagues

Please see ICE, Page A9

Wisconsin State Journal December 17, 2008

2012년



NOAA

93 homes were completely destroyed, 64 others were damaged. 17 of the 18 businesses and public facilities in the community were also destroyed.





CONCLUSION

The Earth is volatile, unpredictable, temporary, and unsustainable — and we keep hoping to make it stable, predictable, permanent, and sustainable.



"SUSTAINABLE" vs. "RESPONSIBLE"

Taking proper care of my yard is being <u>responsible</u>, that | can guarantee. But nothing | do will guarantee my yard is still going to be around 50 years from now.



"We shall never achieve harmony with land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations, the important thing is not to achieve but to strive."

"That the situation appears hopeless should not prevent us from doing our best."

"A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land."

THE END



(IS ALWAYS ANOTHER BEGINNING)