

Sustainability or Resilience: Need of the Hour: A Debate

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INTRODUCTION

People are often confused by the terminology used by both environmental protagonists and development supporters. One such term is Sustainability. It is difficult to comprehend how one can achieve sustainability amidst the destruction of resources. In reality the word sustainability has a deep rooted meaning and its existence is paramount for the well-being of our society. It is argued that we cannot make assumptions at the expense of reality and as such should have resilience to meet our development goals. The individual or society who believes in the strength of resilience can face both expected and unexpected setbacks, from a better position.

Having interacted with both groups, I have come to the conclusion that both the viewpoints are important, and in reality they complement each other. Perceptions of both schools of thought are presented below and leave the discussion to the knowledgeable who have wisdom in segregating the needed from not so needed. After introducing you to the ongoing debate, we will look in to basic definitions, followed by a detailed setup of the topic.

WHAT IS SUSTAINABILITY?

In ecology, sustainability refers to how biological systems remain diverse and productive. Long lived and healthy wetlands and forests are examples of sustainable biological systems. In more general terms, sustainability is the endurance of systems and processes. The organizing principle for sustainability is sustainable development, which includes the four interconnected domains: ecology, economics, politics and culture. Sustainability science is the study of sustainable development and environmental science.

Sustainability is a complex concept. The most often quoted definition comes from the UN Brundtland commission: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Despite the increased popularity of the use of the term "sustainability", the possibility that human societies will achieve environmental sustainability has been, and continues to be, questioned—in light of environmental degradation, climate change, overconsumption, and societies' pursuit of indefinite economic growth in a closed system.
(Source: en.wikipedia.org/wiki/Sustainability....Wikipedia)

SUSTAINABILITY: CAN OUR SOCIETY ENDURE?

Among the many ways that sustainability has been defined, the simplest and most fundamental is: "the ability to sustain" or, put another way, "the capacity to endure."

Today, it is by no means certain our society has the capacity to endure – at least in such a way that the nine billion people expected on Earth by 2050 will all be able to achieve a basic quality of life. While sustainability is about the future of our society, for today's industries and businesses, it is also about commercial success.

THE CHANGE WE NEED

To endure, we as a society must transform our markets – both how we produce and consume, and the very ways in which we define and measure value and progress.

This is a big challenge, and not just for business and economics. It is a call for massive social, political, technological, cultural and behavioral transition.

BUSINESS IS CRUCIAL - BUT WE NEED NEW WAYS OF DOING IT

To achieve this transformation, we need the capacity of business to innovate and to execute, meeting market needs swiftly, effectively and on a global scale. To do this in a way that "meets the needs of the present without compromising the ability of future generations to meet their own needs," we will need new ways of doing business. The successful businesses of tomorrow will be those that lead and create value both inside and outside the walls of the company.

This will mean managing for the long-term as well as the short-term, developing strategies that balance competition and cooperation, designing and delivering products and services that meet social and environmental needs, shifting to more resilient business models.

Above all, we believe that for tomorrow's enduring businesses, sustainability will be about making money by meeting real and fundamental human needs.

What's next?

A truly sustainable world is one where all humans have access to health care, nutrition, energy, shelter, mobility, education and economic opportunity

(Source: <http://www.sustainability.com/sustainability>)

From the above it is clear that sustainability needs to be pursued, but with a different outlook.

It is now believed by a significant number of people that resilience is needed to complement these efforts.

What is Resilience?

We have many ways of overcoming adversity. Resilience is the capacity to adapt successfully in the face of stress or catastrophe. People can improve their capacity for resilience at any time of life. Resilience refers to the ability to maintain psychological well-being in the face of adversity, and is the ability to “bounce back” from difficult experiences.

(Source: <http://www.pbs.org/thisemotionallife/topic/resilience/what-resilience/>).

In ecology, resilience is the capacity of an ecosystem to respond to a perturbation or disturbance by resisting damage and recovering quickly. Resilience refers to ecosystem's stability and capability of tolerating disturbance and restoring itself. If the disturbance is of sufficient magnitude or duration, a threshold may be reached where the ecosystem undergoes a regime shift, possibly permanently. A sustainable use of environmental goods and services by humanity requires understanding and consideration of the resilience of the ecosystem and its limits. There are many areas where human activity impacts upon and is also dependent upon the resilience of terrestrial, aquatic and marine ecosystems.

(Source: [http://en.wikipedia.org/wiki/Resilience_\(ecology\)](http://en.wikipedia.org/wiki/Resilience_(ecology)))

RESILIENCE AS PART OF SUSTAINABILITY?

For decades, people who concern themselves with the world's “wicked problems” — interconnected issues like environmental degradation, poverty, food security and climate change — have marched together under the banner of “sustainability”: the idea that with the right mix of incentives, technology substitutions and social change, humanity might finally achieve a lasting equilibrium with our planet, and with one another.

It's an alluring and moral vision, especially in these times when record-setting natural hazards are occurring all over the world, it would seem a pressing one, too.

Yet today, precisely because the world is so increasingly out of balance, the sustainability regime is being quietly challenged, not from without, but from within. Among a growing number of scientists, social innovators, community leaders, nongovernmental organizations, philanthropies, governments and corporations, a new dialogue is emerging around a new idea, resilience: how to help vulnerable people, organizations and systems persist, perhaps even thrive, amid unforeseeable disruptions. Where sustainability aims to put the world back into balance, resilience looks

for ways to manage in an imbalanced world.

Goals based on sustainability “are no longer the best framework” for thinking about environmental law, governance systems, and socioecological dynamics in a world that is rapidly changing due to climate change and other forces. That is according to Melinda Harm Benson, assistant professor in the Department of Geography and Environmental Studies at the University of New Mexico, who challenged the long held concept of environmental sustainability at an 8 July, 2014 discussion entitled “The End of Sustainability?” sponsored by the Environmental Law Institute. Benson and another panelist—Robin Craig, a law professor at the University of Utah—are coauthors of a May 2014 paper in *Society and Natural Resources: An International Journal* in which they argue that a more flexible “resilience” concept is a better way to address environmental and natural resources challenges in an uncertain future. That argument was contested by several environmental lawyers who said sustainability continues to provide a good framework for environmental protection. At the panel discussion, Benson said, “You cannot meaningfully pursue a goal of sustainability when the natural resources upon which society depends are changing under your feet in ways that you often cannot predict. This is especially true in light of the other dynamics of the Anthropocene, which include an increasing human population and the likelihood of increasing conflict in climate change refugees.” She said that climate change already is altering the basic measures and drivers of ecological stability, including air, sea surface, and soil temperatures; freshwater resources; precipitation patterns; ocean acidification; and sea level rise. “As a decision making framework, sustainability has failed to have a meaningful influence on global climate change, resource consumption, biodiversity loss, and a lot of other issues,” Benson said. “Humans have lost our ability, to the extent we ever had it, to meaningfully sustain much of anything. We need a new paradigm and a new approach to cope with this continual change. We suggest resilience thinking is that new approach.” She said that the concepts of sustainability and resilience are not inherently incompatible but that “you need to think more radically about what we are facing in terms of the changes climate change will bring and that by just continuing to invoke sustainability as a goal, we are distracting ourselves from some of the trade offs that need to happen.” In their paper, Benson and Craig state that the pursuit of sustainability assumes people know what can be sustained “and have the capacity to hold onto some type of stationarity and/or equilibrium.” Benson and Craig contrast that with resilience, which they say acknowledges disequilibrium and nonlinear change in socioecological system dynamics. (Source: — RANDY SHOWSTACK, Staff Writer, *Eos*, Vol. 95, No. 29, 22 July 2014)

It's a broad-spectrum agenda that, at one end, seeks

to imbue our communities, institutions and infrastructure with greater flexibility, intelligence and responsiveness to extreme events and, at the other, centers on bolstering people's psychological and physiological capacity to deal with high-stress circumstances.

For example, "resilience thinking" is starting to shape how urban planners in big cities think about updating antiquated infrastructure, much of which is robust in the face of normal threats like equipment failures but — as was just demonstrated in the New York region — fragile in the face of unanticipated shocks like flooding, pandemics, terrorism or energy shortages.

Combating those kinds of disruptions isn't just about building higher walls — it's about accommodating the waves. For extreme weather events, that means developing the kinds of infrastructure more commonly associated with the Army: temporary bridges that can be "inflated" or positioned across rivers when tunnels flood, for example, or wireless "mesh" networks and electrical micro-grids that can compensate for exploding transformers.

We'll also need to use nature itself as a form of "soft" infrastructure. Along the Gulf Coast, civic leaders have begun to take seriously the restoration of the wetlands that serve as a vital buffer against hurricanes. A future New York may be ringed with them too, as it was centuries ago. Hurricane Sandy hit New York hardest right where it was most recently redeveloped: Lower Manhattan, which should have been the least vulnerable part of the island. But it was rebuilt to be "sustainable," not resilient, said Jonathan Rose, an urban planner and developer.

"After 9/11, Lower Manhattan contained the largest collection of LEED-certified, green buildings in the world," he said, referring to a rating program for eco-friendly design. "But that was answering only part of problem. The buildings were designed to generate lower environmental impacts, but not to respond to the impacts of the environment" — for example, by having redundant power systems.

The resilience frame speaks not just to how buildings weather storms but to how people weather them, too. Here, psychologists, sociologists and neuroscientists are uncovering a wide array of factors that make you more or less resilient than the person next to you: the reach of your social networks, the quality of your close relationships, your access to resources, your genes and health, your beliefs and habits of mind.

Based on these insights, these researchers have developed training regimens, rooted in contemplative practice, that are already helping first responders, emergency-room physicians and soldiers better manage periods of extreme stress and diminish the rates and severity of post-traumatic stress that can follow. Researchers at Emory University have shown that similar practices can bolster the psychological and physiological resilience of children in foster care. These tools will have to find their

way into wider circulation, as we better prepare populations for the mental and not just physical, dimensions of disruption.

There's a third domain where resilience will be found, and that's in big data and mobile services. Already, the United States Geological Survey is testing a system that ties its seismographs to Twitter; when the system detects an earthquake, it automatically begins scanning the social media service for posts from the affected area about fires and damages.

Similar systems have been used to scan blog postings and international news reports for the first signs of pandemics like SARS. And "hacktivists" are exploring ways to help people not only better connect to government services, but also self-organize in a crisis.

In a reversal of our stereotypes about the flow of innovation, many of the most important resilience tools will come to us from developing countries, which have long had to contend with large disruptions and limited budgets. In Kenya, an insurance program for small-hold farmers, uses wireless weather sensors to help farmers protect themselves financially against climate volatility. In India, Husk Power Systems converts agricultural waste into locally generated electricity for off-grid villages. And around the world, a service called Ushahidi empowers communities around the world to crowd-source information during a crisis using their mobile phones.

None of these is a permanent solution, and none roots out the underlying problems they address. But each helps a vulnerable community contend with the shocks that, especially at the margins of a society, can be devastating. In lieu of master plans, these approaches offer diverse tools and platforms that enable greater self-reliance, cooperation and creativity before, during and after a crisis.

As wise as this all may sound, a shift from sustainability to resilience leaves many old-school environmentalists and social activists feeling uneasy, as it smacks of adaptation, a word that is still taboo in many quarters. If we adapt to unwanted change, the reasoning goes, we give a pass to those responsible for putting us in this mess in the first place, and we lose the moral authority to pressure them to stop. Better, they argue, to mitigate the risk at the source. In a perfect world, that's surely true, just as it's also true that the cheapest response to a catastrophe is to prevent it in the first place. But in this world, vulnerable people are already being affected by disruption. They need practical, if imperfect, adaptations now, if they are ever to get the just and moral future they deserve tomorrow.

Unfortunately, the sustainability movement's politics, not to mention its marketing, have led to a popular misunderstanding: that a perfect, stasis-under-glass equilibrium is achievable. But the world doesn't work that way: it exists in a constant disequilibrium — trying, failing, adapting, learning and evolving in endless cycles. Indeed,

it's the failures, when properly understood, that create the context for learning and growth. That's why some of the most resilient places are, paradoxically, also the places that regularly experience modest disruptions: they carry the shared memory that things can go wrong.

"Resilience" takes this as a given and is commensurately humble. It doesn't propose a single, fixed future. It assumes we don't know exactly how things will unfold, that we'll be surprised, that we'll make mistakes along the way. It's also open to learning from the extraordinary and widespread resilience of the natural world, including its human inhabitants, something that, counterintuitively, many proponents of sustainability have ignored.

That doesn't mean there aren't genuine bad guys and bad ideas at work, or that there aren't things we should do to mitigate our risks. But we also have to acknowledge that the holy war against boogymen hasn't worked and isn't likely to anytime soon. In its place, we need approaches that are both more pragmatic and more politically inclusive — rolling with the waves, instead of trying to stop the ocean.

(Source: Andrew Zolli, the executive director of PopTech, is the author, with Ann Marie Healy, of *Resilience: Why Things Bounce Back*. "http://www.nytimes.com/2012/11/03/opinion/forget-sustainability-its-about-resilience.html?pagewanted=all&_r=0" [http://www.amazon.com/Resilience-Why-Things Bounce-Back/dp/1451683812](http://www.amazon.com/Resilience-Why-Things-Bounce-Back/dp/1451683812))

NEED FOR SUSTAINABILITY:

As against the argument and in support of sustainability, John Dernbach, professor of law and co director of the Environmental Law Center at Widener University, said that resilience is insufficient to address climate change because it does not address mitigation and does not fully address equity and environmental justice issues. Sustainable development "provides the framework within which to do resilience" and take other measures to address environmental and poverty challenges, he said. The idea behind sustainable development— which Dernbach hailed as one of the big ideas of the twentieth century—"is that we need to integrate environmental protection and development in both its social and economic dimensions rather than rely on environmental degradation as part of the price of progress," he said. "I think a resilience only perspective or a resilience primarily perspective puts us in a fairly bad place. Here's why: Even in a time of rapid and nonlinear climate change, we still need to satisfy human needs," he said. "My argument is: we need to intensify our effort to achieve sustainability and not to end it." E. Donald Elliott, senior of counsel at Covington & Burling LLP and former assistant administrator and general counsel of the U.S. Environmental Protection Agency, said that he favors both resilience and sustainable development but is

unconvinced that resilience thinking should substitute for sustainable development as an overwhelming framework. He said that resilience is an important and useful strategy and an important "toolbox" of environmental law "because we are not going to be able to manage natural systems perfectly." "I do think that there are major nonlinearities and that there are major inadequacies in current policies. But I don't think that any have to do with sustainable development not being a coherent way of thinking about our obligations to future generations," Elliott said. "The idea of sustainable development gives a moral and philosophical foundation to what our obligations are to future generations in a way that I think resilience does not. I think that resilience is a very important tactical tool to achieve sustainable development, but it's not as clear as [to] what our obligations to the future are."

(Source:— RANDY SHOWSTACK, Staff Writer, Eos, Vol. 95, No. 29, 22 July 2014; For more information, see <http://www.eli.org/events/end-sustainability>)

Wise managers will try to avoid crossing tipping points whenever possible; they should attempt to maintain the system within a familiar range of variability but be ready for drastic adaptation if excess human exploitation drives the system beyond some threshold or the system's natural developmental cycle takes it there. From this perspective, sustainability implies avoiding critical boundaries and maintaining the combined socioeconomic system within its historically viable stability domain, i.e., an operating range compatible with reasonable human demands. Resilience then becomes a theoretical construct for sustainability that: a) guides against breaching unknown systems boundaries; b) suggests that continuous changes in certain driving variables is inherently dangerous (e.g., continuously increasing fishing pressure, escalating greenhouse gas emissions, or constant material growth) and; c) warns that surviving the breach of a major tipping point, whether human induced or natural, will require unprecedented levels of investment, cooperation and other forms of institutional and societal adaptation. Human-induced climate change will almost certainly validate all these assertions. In short, resilience thinking is a complement to sustainability, not a substitute.

(Source: William E. Rees, originally published by Resilience.org | Jul 16, 2014)

LIVING WITHIN ENVIRONMENTAL LIMITS: BASIS FOR SUSTAINABILITY

To achieve a "Green" Economy and long-term sustainability, human society has to adapt to living within the constraints of the global life support capacity that ecosystems provide. This does not mean no use, but rather appropriate use based on a more thorough and accurate assessment of costs and benefit. Forests, grasslands, freshwater, marine

and other natural ecosystems provide a range of services that are not recognized in economic accounting systems, but are vital to human welfare, including water flow and water quality regulation, flood control, pollination, decontamination, carbon sequestration, soil conservation, nutrient and hydrological cycling. These are all public goods and services. The challenge is therefore to devise an economic and policy framework whereby ecosystems are either appropriately valued in monetary terms or a comparable system of value is devised to more appropriately measure the ramifications of ecosystem degradation. In reality, a mix of approaches is more feasible and likely to achieve goals for long term sustainability. Given the multitude of ecosystem types, human cultural connections with them and the complexity of inter-relationships within and between ecosystems (over time and spatial scale), a single solution is unlikely. Instead, solutions need to be developed that are tailored to the particular issue, guided by local and national communities and priorities, but based on global level objectives. Developing policies and economic strategies that place ecosystems and the services they provide at the center of future economic development and climate change mitigation and adaptation efforts will result in multiple positive benefits to all people globally. An ecosystems approach is an essential part of the 'tool kit' to tackle climate change and to progress towards long-term economic sustainability. The greatest challenge for governments and global leaders is to adjust national and international economies in line with mitigation and adaptation efforts whilst maintaining financial and social stability. Use of the climate regulation capacity and other life support services of ecosystems can help economies, financial institutions and societal behavior to make those adjustments in a transition towards a sustainable economy. Embracing this agenda will provide the enabling conditions to release this local potential, in partnership with national and global efforts, to succeed in crafting their own solutions to the environmental challenges we all face today.

(Source: <http://www.cbd.int/doc/press/2010/pr-2010-10-29-cop-10-en.pdf>)

The Role of Ecosystems in Developing a Sustainable 'Green Economy')

CONCLUSIONS

We cannot come to any conclusion, reading the well-articulated arguments for and against sustainability. However, it is clear that in the rapidly changing ecosystem we need to be always alert to face unexpected challenges, and for such preparedness one should have resilience. At the same time if our approach is always aimed at having defensive strategies it becomes difficult to step forward. While aiming to have sustainable development, we need to fix boundaries, and our initiatives should not lead to

the obliteration of these boundaries, for this would lead to irreversible consequences to the environment and to the well-being of present and future generations. The best approach, therefore, may be to aim at achievable goals and meet them by carrying out midcourse corrections with resilience in mind.

In summary, it is not the terminology that is important. What we need is a concerted effort by the human race, as a single entity, to circumvent the problems faced by Man, Flora and Fauna. We have had a number of high-level multinational meetings and interactions, for the last decade and half, starting with the Kyoto conference. Unfortunately, nothing has emerged that can root out the basic problem faced by the human race. Unless a long lasting solution is found in the next decade we will be not only suffering, but also be affecting significantly the welfare of future generations. The question every intellectual should be asking revolves around how to bring together radically divergent societies. Since we believe in the famous saying....Nothing is unachievable, let us first select a common goal and strive hard to reach it by following the path of sustainable development or by increasing our resilience. For such a healthy future all the stakeholders need to chip in understanding local, regional and global needs and limitations in meeting those needs.

In case of India and other SAARC countries, we need to first take steps to contain population explosion, as our resources are fast depleting and a day may arise when we have to fight wars for basic needs—water, air and food. We do have better resilience power, as suffering has become a daily experienced chore by more than 75 % of the population. It is time we convert this resilience capacity in to environmental friendly facilities that can bail us out from never ending setbacks due to ecosystem degradation. Let us not waste our energies in copying western culture, as we are not tuned to have such a way of living. If this is understood, especially by the young intellectuals, we can conserve our resources and develop needed technology that suits our climate and environment. My perceptions may differ with those of others but I do believe that we all have a common goal—save our future generations. Let us resolve to put in to practice such actions that are easily adoptable. It is time we open our eyes and see the reality—none will come to our rescue, if the present anarchy goes on unabated.

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