



Improving sustainability science to promote social and environmental change on a global scale

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DESCRIPTION

Global warming, ocean acidification, biodiversity loss, environmental pollution, deforestation, and land-use change are a few of the global environmental issues that are currently showing up on a planetary scale. The rising socioeconomic trends that have led to these Anthropocene epoch traits include population increase, various consumer and economic growth indicators, urbanisation, telecommunications, and other facets of globalization. Science has been essential in assisting civilization in recognising and comprehending the breadth and depth of global environmental changes. Additionally, it has aided in directing behaviours and policies that address sustainability issues on both a local and global level. Global issues have grown in importance in recent years.

The systems approach to environmental issues has been primarily supported by global-change research. This strategy has centred on the connections and interactions between the atmosphere, biosphere, hydrosphere, cryosphere, and soils and investigates how human activities affect them. The idea of planetary boundaries, the idea of tipping points, and the concept of the Anthropocene were all born out of an awareness of how human influences on Earth system processes. The perils of carrying on with business as usual and development as usual have been well expressed using these scientific metaphors (Boda, 2016). Strong economic mechanisms, such as globalisation, marketization, and financialization, which are based on the traditional way of conducting business and fostering economic growth, are what cause and perpetuate the great acceleration.

Companies and other organisations aggressively appropriate as much value as they can from nature and society in order to promote growth and maximise profit,

externalising the costs to human groups, including future generations, and natural ecosystems. The dominant economic model encourages competition and consumerism while ensuring that human and societal activities will keep pushing ecosystems' carrying capacities beyond various planetary limitations. The functionality of our global life support system is no longer guaranteed as a result of the existing economic paradigm. We need an immediate course correction because the functional Earth system and the world economy are on a collision path that will ultimately have devastating effects on people and the environment. However, current research paradigms are not able to do this challenge (Berkhout, 2002).

Complex issues involving environment, culture, institutions, and human behaviour, as well as the co-creation of knowledge with stakeholders, should be the main focus. Higher levels of research funding as well as a deeper understanding of the financing dynamics are necessary to achieve this for sustainability science and its stakeholders. We must change the existing research ecosystems if sustainability science is to have an impact. Although sustainability practises and policies must be local and situation-specific, they are a part of much bigger systems that are connecting more quickly and frequently. Replicating this achievement across scales and worldwide is actually difficult, despite the fact that breakthroughs in inter and Trans disciplinary research over the past few decades have produced significant success at local levels in agriculture, development, and other fields. It is necessary to negotiate changes to social, economic, and institutional systems at various sizes (Feller, 2002). The disparity between locally based solutions and challenges on a global scale has not been bridged by sustainability science research. In a connected world, we still don't know how to scale up solutions.

Power dynamics in globalisation

Power dynamics, private interests, and social and cultural norms have always had an impact on social-ecological systems. However, in today's worldwide economy, many social norms have been moulded by market-based capitalism and consumption, and controlling the dynamics of winners and losers is becoming more difficult due to the rates and distributed degree of change. For instance, oil riches in one region of the world may be used to fund projects that counteract sustainability initiatives in another. Finding and changing the nature of power connections can be challenging at a time when there is a need to increase engagement at all levels of society (Freeman, 1996).

Cultural change

It will be necessary to develop a new and evolving story about human-environment linkages in order to integrate sustainability sciences and practises on a global scale. New cultural narratives about the voyage of humanity in the universe across geological time are required, according to research on the persuasiveness of narratives. The current myth that views people as a unique, privileged species doomed to rule nature is seriously erroneous, and it has fueled interest in technological solutions like reengineering. Cultural shifts must take into account research on how the humanities, arts, and aesthetics can help repair the emotional separation between people and nature that is the cause of the current environmental disaster. More and more people are realising the importance of artists and art-

based approaches in achieving sustainability. Through social movements, non-governmental groups, and citizen involvement, many global environmental changes are being addressed outside of academia. Instead of only studying or witnessing these activities, sustainability science may be driving some of them (Moore, 2015). However, in order to exercise such leadership, scientists must admit that when it comes to sustainability, science is not only a neutral, objective pursuit of knowledge.

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