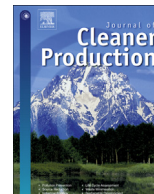




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Call for papers

Improving natural resource management and human health to ensure sustainable societal development based upon insights gained from working within ‘Big Data Environments’

Our natural resources evolved during millions of years before humans began using them. Those resources were rich in biodiversity and geo-diversity. Our society is totally dependent upon local, regional and global ecosystems.

The rapid growth of human populations, accelerated urbanization and industrialization processes, huge consumption of natural resources, large-scale mining and consumption of massive quantities of fossil-carbon fuels are resulting in smog problems and the broader negative effects of climate change, which are weakening eco-systems globally (Cherniwchan, 2012).

Mismanagement of natural resources has and continues to cause increasing risks to human survival. To address these challenges, this Special Volume (SV) is focused upon expanded and improved approaches to restoring and maintaining nature's dynamic ecosystems and to improving human health, which are essential for sustainable societal development (Schilling and Chiang, 2011; Sparling, 2014).

In the past thirty years, China's economy and society achieved significant development, and its share of the world economy increased significantly. However, that rapid economic growth, is causing China to pay heavily due to extensive destruction ecosystems and increasingly serious human health problems due to over-exploitation and severe environmental pollution. Those environmental and human health burdens have been externalized upon Chinese society during recent decades due to a narrow focus upon rapid economic development (Wong, 2013). For example, serious smog problems, which are mainly due emissions from coal-fired power plants, industrial processes and transportation related sources, have dramatically increased in the last two decades. In recent years, the smog problems have become more severe and widespread throughout most Chinese provinces (Wang et al., 2014). This is seriously threatening human health because particulate matter 2.5 (PM 2.5) can be absorbed through the lungs and causes asthma, lung diseases and heart attacks. These kinds of problems are also increasingly prevalent in India, Russia and other developing countries.

Climate change is one of the biggest medium to long term risks to global sustainable societal development. It is predicted that it will severely affect not only the diverse ecosystems upon which agriculture, forestry, fisheries are totally dependent, but also industry, commerce, personal residences, and transportation, upon which all societies in developing and developed countries are dependent.

Climate change is directly related to food insecurity, water insecurity and other demands upon eco-systems that are already

exceeding planetary boundaries. Thus, climate change related challenges are attracting increasing attention globally from research scholars, governments, businesses and society at large.

Recently, due to the accumulating negative impacts of environmental resources on human health, many countries' leaders have decided that they must implement ways of sustainably managing natural resources by systematically implementing cleaner production and sustainable consumption as well as accelerating improvements in labor-intensive sectors, which currently put human health at risk. As an example of such changes, Chinese leaders are increasingly are committed to develop and implement strategies of societal sustainable development, which ensure that the dynamic and sustainable eco-systems are managed in sustainable ways so as to fulfill the needs of the present and future generations of all life on the planet.

In this context, the evolving ‘science’ of **‘BIG DATA’** can potentially be used to help scientists, policy makers and city planners to develop policies, strategies, procedures and practices that will **internalize currently externalized environmental and human health costs on society**. This will help governments and societies to make more effective local, regional, national and global progress toward truly sustainable societies.

The importance of improved, sustainable natural resource management is being increasingly realized by policy makers as evidenced by inclusion of such emphases in research and policies (Stern and Coria, 2011). For example, many Chinese policies have been developed and implemented to improve the sustainability and effectiveness of natural resource management. For example, legislation such as the “Water Law of the People's Republic of China” which was passed on October 1, 2002, and in the “Property Law of the People's Republic of China” which was passed on March 16, 2007 are focused upon implementing sustainable natural resource management.

In summary, under the pressures of shortages of natural resources and of increasingly severe air quality threats, interest is growing in learning how **‘Big Data’** concepts and approaches may help China and other countries to learn how to prevent environmental and human health challenges through cleaner production, and by focusing upon prevention rather than primarily upon pollution control or pollutant treatment or pollutant dilution. This will result in improved effectiveness in sustainable natural resource management, and will help to reduce risks to human health, and negative impacts upon our eco-systems.

In these and other contexts, **‘Big Data’** can be used to help societies achieve improved input–output ratios and performance-

price ratios that are sustainable, while improving human and eco-system health. Considering that learning how to protect human and eco-system health by improving natural resource management is one of the most important research topics throughout the world, this Special Volume (SV) is focused upon ways **'Big Data'** can be integrated with other approaches to help to prevent or to solve ecological and human health crises and thereby maintaining sustainable and healthy ecosystems.

Topical areas

This "Call for Papers" (CfPs) for a SV of the Journal of Cleaner Production (JCLP) provides opportunities for scholars, practitioners, governmental officials, and industrialists to cooperate in improving the environmental management of natural and human resources. Prospective authors are challenged to investigate and evaluate the current situation in the decline in quality and quantity of natural resources and to explore how management can be improved to make it more sustainable by using the latest approaches of working with **'Big Data'** to address those challenges/opportunities. This SV was designed to attract authors who wish to build upon the application of innovative concepts and frameworks, policies, methods and results that improve sustainable management of a country's natural resources and which protect human health. Papers may be based upon comprehensive literature reviews or upon theoretical and empirical investigations with national and/or international foci.

Potential topics for this SV may include, but will not be limited to, the following topics:

1. Natural Resource Utilization and Management

Natural resources have complicated inter-relationships. The reduction and disappearance of one natural resource may directly or indirectly result in the reduction and disappearance of other resources. **'Big Data'** is an all-encompassing term for any collection of data sets, which are so large and complex that they are difficult to process using traditional data processing applications (Ohlhorst, 2012; Hampton et al., 2013; Tien, 2013). **'Big Data'** is an emerging area for scholars and practitioners, to use to investigate the complex inter-relationships among multiple elements of a system (Russom, 2011; Gijzen, 2013). This approach can be used to study relationships among alternative approaches for the sustainable management of natural resources and can help policy makers, scientists and industrialists to develop and implement policies and strategies to protect and to sustainably manage natural resources. These opportunities encourage authors to apply **'Big Data'** approaches to explore and test ways to make improvements in sustainable management of all natural resources including human resources in the short and long-term.

2. Evaluation of Sustainable Natural Resource Management

Due to recent, rapid increases in human demands for natural resources, it is increasingly clear that scarcity of both non-renewable and renewable resources requires new ways to reduce waste of resources and degradation of the eco-system's capacities to provide the essential services for human health and sustainable societal development. Improvements in management are needed to reduce resource waste, to produce more sustainable products and services, and to obtain sustainable societal benefits for the short and long term. The use of **'Big Data'** with other approaches may help societies to find better ways to make needed improvements. This topic is designed to encourage authors to prepare manuscripts based upon the results of using innovative ways for

evaluating and improving natural resource management to support sustainable societal development.

3. Natural Resource Allocations and Utilization

A central focus of 'natural resource allocation' is to make suitable choices among competitive utilization strategies. 'Natural resource allocation' is a method by which nations/enterprises adjust their strategic and daily management. Optimizing the allocation of natural resources must be based upon making trade-offs to seek to obtain optimal local, regional and global solutions. Whether natural resource allocation is reasonable or not has a critically important influence upon national economic development within the context of sustainable eco-systems. 'Big Data' approaches may prove to be instrumental in achieving better natural resource allocation and management planning within and among nations.

Authors are invited to address this set of challenges by providing effective frameworks, positive policies and innovative methods for natural resource allocation and management within and among nations on the short and long-term basis in order to help to ensure truly sustainable management of all resources.

4. Pollution Prevention, Treatment and Environmental Efficiency

Due to dramatic increases in air, water and solid waste pollution, increasing attention is being given on how to prevent the production of pollutants and on how to treat the pollutants by converting them into useful products. Some policies have been designed to limit pollutant emissions or to close facilities in the paper, leather and textile production sectors because of their inefficiency and excessive pollution.

Within this context, in order for companies to improve their image they must develop and implement integrated management approaches that are built upon the cleaner production of cleaner products with zero or low pollutant emissions. However, simply limiting pollution is not enough, companies must also reduce the consumption of resources and energy as they improve product quality, worker health and safety and consumer protection, while improving environmental efficiency. **'Big Data'** approaches integrated with other new managerial approaches have been applied to industrial pollution reduction and pollutant treatment, improved health care and in other applications. (Cao, 2014; Maughan et al., 2014).

Authors are invited to submit papers about documented results, in which **'Big Data'** approaches have resulted in improvements in environmental, materials and energy efficiency. Papers based upon the combined roles of pollutant discharge permits, pollution discharge fees, corporate environmental responsibility combined with 'Big Data' approaches are also welcomed.

5. Natural Resource Related Policies and their Effects

Because countries have developed and implemented natural resource related policies, including energy policies, it is crucial to measure and to analyze the positive and negative effects of these policies. This will help country leaders to develop, implement and monitor the impacts of new generations of more holistic policies. Michael and Miller (2013) emphasized that **'Big Data'** approaches can be used to perform the kinds of comprehensive analyses that are needed to support the development of improved policy regime-based systems. Papers on this topic should address how sustainable natural resource management related policies are developed and how their effects on resource utilization are currently measured. Authors are invited to investigate how the processes have changed,

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