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## Editorial

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### Soumyananda Dinda

Department of Economics and International Development,  
University of Bath,  
Bath, UK  
E-mail: sdinda2000@yahoo.co.in  
E-mail: sdinda@gmail.com  
E-mail: s.dinda@rediffmail.com

**Biographical notes:** Soumyananda Dinda is a Faculty at the Department of Economics and International Development, University of Bath, UK. Previously, he was Faculty at S.R. Fatepuria College, Beldanga, Murshidabad, under the University of Kalyani. He was a Guest Lecturer in the Department of Economics, Presidency College, Kolkata. He was also a Guest Lecturer in the Department of Economics, University of Calcutta. He was a Research Fellow at Economic Research Unit, Indian Statistical Institute since 1997. He has published papers on *Ecological Economics*; *Economics and Human Biology*; *Journal of Socio-Economics*; *Indian Journal of Agricultural Economics*.

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Economic development through industrialisation brings higher incomes and well-being; this seems to act as a *magnifier* of environmental degradation. A concept crystallising in the development and environmental economics literature is the notion that Environmental Quality (EQ) indicators follow certain predictable paths associated with growing per capita income. This *Special Issue* explores the issue of whether environmental degradation follows a country's development path, which has critical implications for policy, particularly for sustainable development issues.

Economic development through rapid industrialisation and growing environmental consciousness together has generated a heated debate on how economic development is linked with environmental degradation. The linkage of EQ with economic development evoked much discussion in the last decade (i.e. in 1990s). Earlier studies assert that initially environmental degradation increases, reaches at maximum level and after that declines as an economy develops. This systematic inverted-U relationship has been called as the Environmental Kuznets Curve (EKC) following the work of Kuznets (1955), who postulated a similar relationship between income inequality and economic development. Still the EKC debate continues to explore the untouched and uncovered part of the world with multidimensional way and strengthen the long run development policy. The EKC relates to the issue of the impacts of economic development on environment and question of sustainable development. To understand why and how economic developmental issues get linked to concerns about environmental degradation requires a careful study. In fact, detailed studies are needed to understand the specific nature and the shape of EKC, which helps to adopt relevant policy towards sustainable development. Reexamination of the relationship between EQ and economic development thus remains an open issue.

The EKC results suggest that Economic Growth (EG) could be compatible with environmental improvement provided appropriate policies are taken. On the other hand, effective environmental policies may be implemented when income grows. However, before adopting a policy, it is necessary to understand the exact nature of the relationship between economic development and EQ. Here empirical evidences of the link between income and environmental degradation have been searched while the desirability of development is universally recognised, recent years have witnessed rising concern about whether environmental constraints will limit development or whether the ongoing process of development will cause serious environmental damage. Thus, the causal relationship between economic activity (viz., consumption and production) and EQ deserves to be explored carefully to bring out explicitly the linking economic development/growth to EQ change.

The inequality of the income distribution may be an important determinant of the extent of environmental degradation and more specifically, income redistribution may reduce the inequality by affecting the society's demand for better environment. Knowledge of the pattern of distribution of emissions and intertemporal choice may also help to formulate appropriate environmental policy.

This Special Issue of the *International Journal of Global Environmental Issues* contains a set of papers related to economic analysis on EKC and sustainable development. The objective of this Special Issue is to provide a collection of papers in order to answer some basic questions related to EKC and sustainable development. This issue mainly focuses on analysis, evidences and policy.

The themes of the papers can be classified into

- reexamination of the EKC modelling
- sustainable development and EKC
- policy for sustainable development
- review the development thesis
- climate constraint and energy policy
- distribution pattern
- technology for sustainable development.

The aim of this Special Issue is to explore the relationship between EG and environmental degradation emphasising multidimensional aspects of EKC towards sustainable development. Authors of this Special Issue identify a number of measures that could improve the sustainability. These contributors highlight a number of policy issues, particularly the evaluation of environmental and R&D policy, environmental management issues, etc. Some papers emphasise on water quality of the emerging economies – China and India. This Special Issue also sheds light on untouched aspects of EKC and sustainable development like distributional pattern of pollutants, technological innovations and future of human security.

Briefly, there are three major parts of this study. The first part examines the EKC hypothesis for different pollutants and EQ index that are supported by the available data set(s) in different countries in the world, analyses and provides explanation of the empirical results obtained. The second part investigates the nature and possible measurements of sustainable development in the context of EKC and critically

evaluates it. Finally, distribution, human security and technological progress towards sustainable development issues are discussed tangentially. The results are hoped to give valuable insights into the important and growing concern about interrelationship between environmental changes and economic development.

This Special Issue contains 11 papers. We provide a brief overview of the papers, which appear in this Special Issue.

Kaneko, Managi, Fujii and Tsurumi examine the EKC in China using regional level data of waste water, air pollution and solid waste over the period 1992–2003. They have applied the non-parametric techniques and support the EKC for solid waste.

Mukherjee and Chakraborty examine the EKC using EQ data for 14 major Indian states during 1991–2004. This study explores the uncovered relationships among EQ, Human Development (HD) and EG. Authors suggest that Indian states should adopt environmental management practices based on their local environmental information.

Barua and Hubacek test the EKC using water quality data for 16 states of India over the period 1981–2001. They use the GLS and GMM techniques and did not find evidence in support of EKC.

Tsurumi and Managi test the EKC using globally representative large sample of local and global pollutants, and natural resources. They apply non-parametric estimation of local polynomial regression. This study supports the EKC for CO<sub>2</sub> damage, energy and mineral depletion, PM10 and particulate emission damage. This study also shows the deterioration of environment and natural resource with economic development.

Dinda provides a comparison between static and dynamic EKC model for global CO<sub>2</sub> emission using panel data. Tunytsya analyses the EKC for Ukraine and other European countries. Dinda points out how climate change becomes a constraint for economic development and future uncertainty of humanity. The results suggest that economic development is the cause of environmental degradation in developing countries while reverse causality in developed countries.

Morse critically reviews the application of post development analysis to sustainable development. He analyses the EKC using Environmental Sustainability Index (ESI) for 146 countries. The derived EKC from ESI is the target for post development critique. He critically reveals how theory is translated to practice.

Dinda evaluates the pattern of distribution of emission and their movement over time. In this context, he also examines the convergence hypothesis, which is important for effective policy prescription that depends on the actual position of the economy. This study is to search for the evidence of the linking of EG and environment. These studies provide a holistic idea about the trends and distribution of global emission. In the last paper, using historical events, Dinda tries to argue for technological innovation towards sustainable development in long run.

Certainly, all these results are important for effective policy prescription towards sustainable development.

I could not have done this by myself and I totally appreciate the support and efforts of all who were involved in making this Special Issue possible, which includes the authors, referees, Chief Editor of Inderscience, editorial staff of *IJGEnvI*. The Guest Editor gratefully acknowledges the assistance provided by Chief Editor and other editorial staff and the referees who reviewed the manuscripts for this Special Issue.