Demography’s Role in Sustainable Development

IN PREPARING FOR THE RIO+20 EARTH Summit, the world community must acknowledge that population trends interact strongly with economic development and environmental change at local and global levels. The International Institute for Applied Systems Analysis (IIASA) recently convened leading experts to consider how demographic factors promote or impede sustainable development. The panel concluded that human beings—their numbers, distribution, and characteristics—are at the center of concern for sustainable development (I). The evidence is clear that demographic differences fundamentally affect people’s contribution to environmental burdens, their ability to participate in sustainable development, and their adaptability to a changing environment. The developmental challenges are by far the most significant where population growth and poverty are the highest, education is the lowest, and vulnerabilities to environmental change are the greatest. Within families, women and children are most vulnerable.

As members of this panel, we put forward five action implications: (i) Recognize that the numbers, characteristics, and behaviors of people are at the heart of sustainable development challenges and of their solutions. (ii) Identify subpopulations that contribute most to environmental degradation and those that are most vulnerable to its consequences. In poor countries especially, these subpopulations are readily identifiable according to age, gender, level of education, place of residence, and standard of living. (iii) Devise sustainable development policies to treat these subpopulations differently and appropriately, according to their demographic and behavioral characteristics. (iv) Facilitate the inevitable trend of increasing urbanization in ways that ensure that environmental hazards and vulnerabilities are under control. (v) Invest in human capital—people’s education and health, including reproductive health—to slow population growth, accelerate the transition to green technologies, and improve people’s adaptive capacity to environmental change.

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Reference


TECHNICAL COMMENT ABSTRACTS

Comment on “Lévy Walks Evolve Through Interaction Between Movement and Environmental Complexity”

Vincent A. A. Jansen, Alla Mashanova, Sergey Petrovskii de Jager et al. (Reports, 24 June 2011, p. 1551) concluded that mussels Lévy walk. We confront a larger model set with these data and found that mussels do not Lévy walk: Their movement is best described by a composite Brownian walk. This shows how model selection based on an impoverished set of candidate models can lead to incorrect inferences. Full text at www.sciencemag.org/cgi/content/full/335/6071/918-c

Response to Comment on “Lévy Walks Evolve Through Interaction Between Movement and Environmental Complexity”

Monique de Jager, Franz J. Weissing, Peter M. J. Herman, Bart A. Nolet, Johan van de Koppel

We agree with Jansen et al. that a composite movement model provides a better statistical description of mussel movement than any simple movement strategy. This does not undermine the take-home message of our paper, which addresses the feedback between individual movement patterns and spatial complexity. Simple movement strategies provide more insight in the eco-evolutionary analysis and are therefore our model of choice. Full text at www.sciencemag.org/cgi/content/full/335/6071/918-d