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Understanding and measuring human vulnerability to climate change

Global climate change affects all aspects of human-environmental interactions, including water and energy use, food and fiber production, coastal living and development, human health and well-being, and many others. Impacts of climate change have highly variable patterns and intensities around the world because of the spatial and temporal variations in human vulnerability to climatic variability, hazards, and weather extremes. Vulnerability of human systems to climate change has at least three groups of determinant factors, associated with exposure, sensitivity, and adaptive capacity. They reflect the degree to which the local population is exposed to negative impacts based on location and terrain, how sensitive it is to climate hazards based on its socio-economic and demographic variables; and the existing capacity of this population to reduce harmful impacts through adaptations. Research on human vulnerability and adaptations to climate change reveals that non-climatic variables of human vulnerability, including demographic, social, economic, and institutional factors may determine local and regional vulnerability to climate change to a greater extent than biophysical variables. Development of effective adaptation strategies requires rigorous assessment of human exposure, sensitivity, and adaptive capacity to climate change. Their variables are scale-dependent, ranging from local to global and may have various temporal frames. Case studies from around the world illustrate the scale-dependent conceptual framework of vulnerability assessment that accommodates multiple hierarchical levels of measurable indicators of exposure, sensitivity and adaptive capacity to climate change.

Biography

Elena Lioubimtseva is a Professor of Geography and Planning and Director of Environmental Studies Program at Grand Valley State University. Her research focuses on human vulnerability and adaptations to climate change. She holds PhD from Moscow State University and previously conducted research at University of Oxford and University of Louvain. She served as an expert on Vegetation-SPOT International Users Committee of the European Union VEGETATION Program, FAO Consultations on Climate change and International Trade, Climate Resiliency Assessment of the City of Grand Rapids (MI), and other national and international projects. She is an author of more than 40 publications on climate and environmental change.

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