



IHDP Open Meeting 2009

7th International
Science Conference on the
Human Dimensions of
Global Environmental Change

26-30 April 2009
World Conference Center Bonn
UN Campus
Bonn, Germany

The Social Challenges of Global Change

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Time: Monday 27 April, 16:00 - 17:30. Session: A040

Drivers of Change: Patterns and Processes of Urbanization in Developing and Developed Areas

Location: World Conference Center Bonn, Room C

Convenors: Darla Munroe, Ohio State University, United States, Jane Southworth, University of Florida, United States

The United Nations estimates that 51.3 percent of the world's population will be urban in 2010. With over 87% of the earth's land cover modified due to human activity, the world is experiencing unprecedented impacts of urbanization, infrastructure changes and development on the global environment. In each region, urban development takes a unique form as a result of interactions among local, regional and international policies, traditions of conservation and global trends of economic growth, resulting in area-specific spatio-temporal configurations of urbanization and development. In addition to the land cover impact, the environmental "footprint" can greatly exceed the land area, due to the far-reaching material and social connections among urban systems, and between urban systems and rural areas. This special session aims to fill a crucial gap by bringing together research from multiple contexts, to provide a systematic study of the patterns and processes and environmental implications of land use/land cover change in developing regions, urban areas and their hinterlands. The presentations contained here are inherently comparative, with examples from different ecological, social and institutional contexts ranging from North and South America to the Amazon and South Asia. These presentations provide us with an opportunity to understand how the human dimensions of urban change vary over time and space in different parts of the world, from areas just beginning their processes of development and infrastructure changes, to regions of complete urbanization over much longer time frames.

Narratives of power, climate change and urbanization in the Mexican Caribbean

Presenter: David Manuel Navarrete, King's College, London., United Kingdom

Authors: Michael REDCLIFT (1)

King's College, University of London, London, United Kingdom (1)

Some social and geographical spaces, such as Quintana Roo in Mexico, are "simultaneously emptied and filled... (they are) tropes of blankness and emptiness (that) are used to denote social emptiness and a location outside his-



tory” (G.Bridge 2002, 759).

This paper examines the narratives of space and nature in the Yucatan and the ‘discovery’ of its natural resources by successive waves of travellers and expeditionary forces. It explores the shifting currents of land use and land cover through an analysis of syncretic and hybrid meanings. The research is based on close familiarity with the region over a number of decades and traces the histories through forest extraction of hardwoods, chicle (for commercial chewing gum) and, latterly, the development of global tourism. It argues that we need to see globalisation as a process which is both inclusionary and exclusionary, and one which draws on narratives of nature in its legitimation. The research forms part of an ongoing ESRC project [2007-2010] on local governance and human security on the urbanised Caribbean coast of Mexico.

The Balance Between Urban Deforestation and Rural Reforestation in the Midwest United States

Presenter: Tom Evans, Indiana University, United States

Authors: Tom Evans (1), Burnell Fischer (1), Catherine Tucker (1), Sean Sweeney (1)

Indiana University, Bloomington, IN, United States (1)

The Midwest United States experienced net reforestation during the 20th century following the period of dramatic deforestation that occurred during frontier settlement in the 19th century. The reforestation that occurred has broadly followed a pattern consistent with the Forest Transition Theory, where areas that are marginal for long-term agricultural production are abandoned following initial settlement and clearing, resulting in a conversion from agricultural land uses back to forest. The proportion of land converting from agriculture to forest is now being counter-balanced by areas that are converting from forest to urban-suburban land uses. This tension between rural reforestation and urban/sub-urban deforestation may potentially switch the Midwest United States into a state of net deforestation in the near future.

This paper examines the relationship between urban deforestation and rural/exurban deforestation in the state of Indiana located in the Midwest United States. A spatial analysis is presented to identify at-risk forest areas in urban/suburban/exurban areas of Indiana. This urban analysis is integrated with an analysis of rural areas to examine the potential for urban deforestation to exceed current and future potential trajectories of reforestation. This analysis is performed in the context of the ‘right-hand’ side of the forest transition curve. Spatially explicit scenario-based models are used to identify regional areas where forest cover is likely to be stable, decreasing or increasing and the social and biophysical drivers that may be responsible for specific net land cover change trajectories.

Evolving urban networks in the Amazon: Socio-environmental implications of multi-level urban hierarchies

Presenter: Sandra Costa, Universidade do Vale do Paraiba (UNIVAP) and ACT Indiana University, Sao Jose dos Campos, Brazil

Authors: Sandra Costa (1), Gilvan Guedes (2), Eduardo Brondizio (3)

Universidade do Vale do Paraiba (UNIVAP) and ACT Indiana University, Sao Jose dos Campos, Brazil (1), CEDEPLAR - Universidade Federal de Minas Gerais (UFMG) and ACT Indiana University, Belo Horizonte, Brazil (2), Indiana University, Bloomington, United States (3)

We discuss the evolution of regional urban network patterns in the Amazon and its implications for environmental change. We look at the hierarchical formation of urban settlements from rural villages to cities interconnected at different levels. Using census and survey data we test, empirically, Browder and Godfrey's (1997) proposition of 'disarticulated urbanization' in Amazônia. Our analysis supports the disarticulated nature of urbanization at the macro-regional level, but indicates subregional patterns of urban hierarchy defined in terms of population (growth, density, movement), access and centrality (settlement-road network), and infrastructure (health, education, services). We analyze the spatial-temporal influence of subregional networks on deforestation (using INPE-PRODES data). We use multivariate fuzzy-cluster (GoM) and spatial pattern analyses to compare determinants of relative urban importance at the level of the region (Brazilian Amazon), state (Pará state), and subregionally (Transamazon-Br-163-Amazon river triangle). We consider date of emancipation, urban density, migration flow and pendulum movement, health and education services, and the presence of surrounding conservation and indigenous reserves. At the regional and state level we use district, household and individual level census data for 760 and 172 municipalities, respectively; at the subregional level we use survey data for 400 rural-communities and 12 municipalities. These analyses allow us to define clusters of hierarchical subregional urban networks and their projected vectors of expansion. We argue for the importance of understanding urbanization processes at the subregional level and their implications for regional development and conservation in forthcoming decades.

Drivers of US Peri-Urban Agricultural Adaptations: The Role of Place, Space and Scale

Presenter: Jill Clark, Ohio State University, United States

Authors: Jill Clark (1), Darla Munroe (1)

Ohio State University, Department of Geography, Columbus, Ohio, United States (1)

Recent global shifts in the commodification, vertical integration, and division of labor have influenced structural change in the agricultural industry. In the ever-sprawling US peri-urban areas, the forces at play are more complex and concentrated, partially as a result of the dynamics of land use, such as competition for land, increases in land prices, landscape fragmentation and other urbanization pressure. Therefore, peri-urban areas have the most intense post-productivist activity resulting in the greatest variety of socio-economic modes of production. Agricultural modes of production are diversifying to address these place, space and scale pressures and opportunities.

As peri-urban agricultural production is literally forced into US urban systems, a systematic exploration of the



changing landscapes is needed to better understand the future of urban food systems. To date, empirical studies examining the role of place, space and scale influences on farmers' survival strategies have been very few, particularly studies comparing across several regions.

Utilizing farmer surveys from five distinct farming regions in the US states of Georgia, Oregon, Michigan, Kentucky, and Maryland, adaptation strategies are investigated. The focus is on three scales of influences, the agent/farm household (e.g., availability of a farm successor and farmer health), the local conditions (e.g., land policy, land prices and urbanization pressures) and more global conditions (e.g., climate and product pricing). The results of the survey analysis seek to provide a foundation for better understanding the role of place, space and scale in farmer survival strategies.