

About this document

A research agenda on the complex issue of land use in the United States is unfolding through discussions like those held at the conclusion of the **Research Workshop on Land Use Problems and Conflicts**, February 21-22, 2002 at the Holiday Inn Select Airport, Orlando, Florida. Several research priorities identified during those discussions are summarized in this document. The workshop was organized by The Northeast Regional Center for Rural Development and endorsed by the National Association of State Universities and Land Grant Colleges (NASULGC), as well as the Transatlantic Partnership for Inter-University Cooperation in Education and Research for the Environment and Food Systems (TIC). The following individuals, representing both Extension and Research, participated in the workshop:

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In addition, this document draws from the publication, *Protecting Farmland at the Fringe: Do Regulations Work? Strengthening the Research Agenda* (The Northeast Regional Center for Regional Development, RDP No. 7, Dec. 2001), available at <http://www.cas.nercrd.psu.edu/Publications/index.htm> (Abdalla 2001). *Protecting Farmland at the Fringe* contains a summary of outcomes from a conference of the same title held in Baltimore, MD on September 6-7, 2001, and organized by L. Libby and C. Abdalla.

We thank Charles Abdalla for thoughtful comments on this document, and Lee Carpenter for technical editing. Additional comments are welcome. Please send them to sgoetz@psu.edu.

Rural Development Paper No. 10
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LAND USE PROBLEMS AND CONFLICTS IN THE U.S.:

A COMPREHENSIVE RESEARCH AGENDA FOR THE 21ST CENTURY

PREAMBLE

Conflicts over land use are escalating throughout the United States. Yet the debates over how land should be used are taking place without systematic, research-based knowledge about the values that citizens “assign” to open spaces and different land uses. Additionally, we lack detailed and comprehensive information about how alternative land uses affect local economies and the broader society over time.

Land use is a complex subject that involves economic, fiscal, social, psychological, health, and environmental factors. Land use-related conflicts and problems are so complex that individual disciplines cannot claim to have all of the answers. Developing the comprehensive decision support systems needed by communities to address these conflicts effectively requires collaboration among experts from numerous disciplines. Further, many of the relationships underlying land use – the causes and effects – have not yet been systematically measured or documented.

A comprehensive research agenda is urgently needed to enable more rational land use decision making in the 21st century. Such an agenda is outlined in this document.



Photo courtesy of DOE/NREL, Credit David Parsons.

EXECUTIVE SUMMARY

The development of land both at the urban fringe and in remote areas of the United States is causing a growing sense of unease. The outcomes of land use choices are increasingly viewed as undesirable and ultimately not sustainable. Such outcomes include increasing traffic congestion, adverse health impacts, loss of open space, and ecosystem destruction. Land conversions for housing and related residential or commercial development tend to be irreversible, which contributes to the growing sense of urgency surrounding urban development. Ultimately, there is no agreement over what should be done about land use problems, and little is known about what it is that people specifically value about land.

This document outlines a comprehensive research agenda designed to help us achieve a better understanding of the factors driving current land use decisions as well as the impacts of these decisions on key social, economic, environmental, and health variables. Four major research questions have been identified:

1. *What are society's goals for how land is used?* A bold new framework for understanding and promoting land use is needed. This new framework should incorporate the many services provided by land. It should also provide more precise definitions and measurements of what society in general, and different groups in particular, value about land use. More generally, what is the willingness of society to pay for a particular land use? What are public objectives for rural land conservation and development? Over the long run, questions of land use sustainability and irreversibility must be addressed.

2. *What characteristics do homebuyers seek in their choices of location of their homes and neighborhood attributes?* How do available housing choices match up with these characteristics? Are the desired bundles of housing services available to homebuyers; if not, why not? Do sprawling suburbs fully meet demand or would homebuyers rather live in other types of developments that are either not available or not affordable? Builders claim that they “are building what consumers want,” while critics counter that homebuyers have only limited choices when they search for a new home, including choices with respect to where and how they buy their groceries.

3. *What are the full benefits and costs of alternative patterns of development?* Benefits and costs include environmental or ecological, population health, social capital, and economic factors. Rigorous studies are needed to validate and quantify these factors and the underlying causes and effects at the county and sub-county levels. The magnitude and patterns of housing development, and their interactions, need to be studied systematically, along with other forms of land conversion.

4. *Which public policy objectives can be met by which portfolios of land use policies?* Once society's goals have been determined, how effective are different land use-related policy tools in meeting these goals? How effective are they in advancing longer-term societal goals? Researchers need to systematically assess incentives and regulations related to land use, in different states and regions. Which specific policies work well, and work well together? Which policies and policy portfolios produce unintended consequences? What are these consequences?

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INTRODUCTION

Land use, and how people live, is a complex subject and at the center of growing debate. Choices deemed sensible for individuals and their families, and businesses, can have less than desirable consequences when viewed in the aggregate. Researchers need to determine whether there is a middle ground in land use debates and, if there is, just where it may be found. The fact that many current land use choices have irreversible effects has added a sense of urgency to this subject; at the same time, there is no consensus about what actions to take regarding land use in different regions, let alone the nation. Additionally, very little is known about the values assigned by individuals – and society in general – to different land uses.

Increases in the U.S. population mean that more homes (and retail stores) have to be built to accommodate community growth. Land use discussions about housing development and sprawl often neglect to mention that individual families would be worse off if they were prevented from moving into the new subdivisions developing around metro areas. The “opportunity” costs associated with restricting housing development must be considered in discussions of the subject as well.

What is at stake? What will happen if the proposed land use research agenda is not carried out? One principal result of not carrying out the proposed agenda is continuation of current land use trends. These include the rising costs of traffic congestion and subsequent health concerns. (The impact on air pollution will depend on industry development

and consumer purchases of new car engines.) Individual communities will continue to experience great difficulty in balancing the needs of newcomers with those of long-time residents. In addition, fragile ecosystems will be further fragmented, endangering certain species. Farmland and green space will continue to be lost at rapid rates.

FOUR LONG-TERM RESEARCH PRIORITY AREAS

This document lays out four critical research questions that should be studied and answered to ensure rational consideration and decision-making in land use problems and conflicts.

1. What are Society’s Objectives for How Land Is Used?

More precise definition and measurement are needed of what society in general, and different groups in particular, value about land use (“value spheres”) and the various services provided by a piece of land. What is the willingness to pay for a particular (public) land use? More specifically, what are the public objectives of rural land conservation and development and whose preferences are counted under which circumstances? How are public sentiments towards rural

...confusion abounds with regard to the central question of what, where, and how to save or to use land resources.

Paul W. Barkley
Protecting Farmland on the Fringe Conference, September 2001

land use related to interest groups or socio-demographic characteristics? Again, some information is available from selected states, but more systematic and multidisciplinary studies are needed on a national scale. In addition, the public's preferences and willingness to pay for alternative land uses must be communicated more effectively.

These research results will drive the development of a new framework for public policy education on land use issues and decision-making. This framework must be able to (a) separate market uses of the land from public uses; (b) elicit consumers' preferences and willingness to pay for alternative land uses; (c) reconcile competing objectives through consensus building; (d) turn abstract ideas about possible land uses into real uses of land; and (e) account for interregional dependence and spillovers.

In the long run, questions and concerns about the irreversibility of land conversions must be addressed, especially if past decisions prove to be shortsighted. Examples of such shortsightedness include building the "wrong" housing stock, facilitating the "wrong" patterns of development, allowing long-term food security to become an issue, or destroying species that could have beneficial uses in the future.

2. What are Homebuyers' Residential Preferences and How Do They Compare With the Actual Residential Choices Available?

Current patterns of development available to homebuyers need to be inventoried, categorized, and formally described, recognizing potential regional differences. Patterns of development include urban in-fill, new urban



Photo courtesy of City of Philadelphia.

ism-type development, planned development (e.g., Seaside, Florida), cluster development, development on quarter-acre lots, development on one-acre lots, country estates, farmettes, etc. While potentially appealing to many homebuyers, modern planned developments tend to offer only relatively high-cost housing. The different possible patterns of development are shown in Figure 1. The amount of land consumed per person increases from the urbanized to the frontier/natural landscape (i.e., from pattern of development no. 1 to no. 9), while population density falls accordingly. Conversely, the amenity value of land increases from pattern no. 1 to no. 9.

Homeowners clearly vote with their incomes (and their feet) as they move into sprawling



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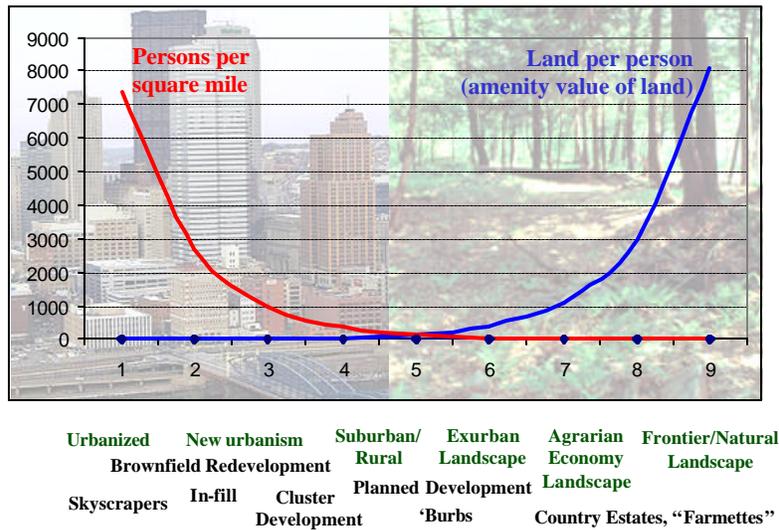


Figure 1: Alternative Patterns of Development and Land Use or Availability
 Source: Adapted from Bergstrom 2001.

subdivisions. More information is needed, however, about whether consumers' housing preferences and desires are being met. Are the desired bundles of housing services available to homebuyers and, if not, why not? Do sprawling suburbs fully meet their demands or would they rather live in other types of developments that are either not available or not affordable? Builders claim that they "are building what consumers want," while critics counter that homebuyers have only limited choices when they shop for a new home. Once different housing options or bundles have been delineated, we need to better understand how consumers choose among these options, such as commuting an additional 25 minutes by car in exchange for a larger lot.

A subset of questions relates to why homeowners move where they move, and whether their actual housing choices are consistent with their stated preferences in terms of patterns of development. Are they seeking green living environments, or are they moving to escape perceived high taxes, crime

and poor educational systems? Surveys conducted in states such as California and Oregon (e.g., Holtzclaw 1997), have gathered information on homeowners' preferences, but such surveys have not yet been replicated systematically in other parts of the country to determine whether residents in other regions have similar preferences.

3. What Are the Full Benefits and Costs of Alternative Patterns of Development?

What benefits and costs are associated with different patterns of development across the nation? These can include environmental or ecological, population health, social capital, and economic benefits and costs (meeting of consumer demands). The full range of impacts of different land uses and patterns of development, including supply and demand factors, is shown in Figure 2. Patterns of development (nos. 1-9) are the same as those outlined in Figure 1. These patterns – and the magnitude and amount of development – have varying impacts on government finances,

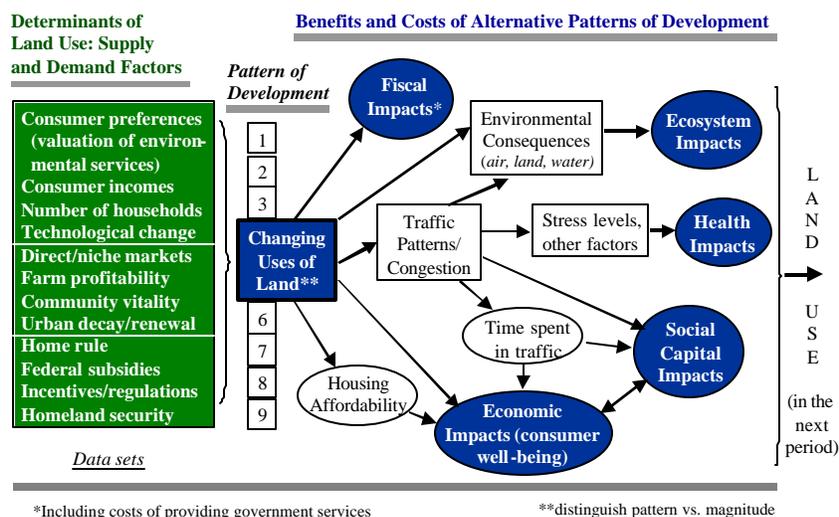


Figure 2: Determinants and Impacts of Alternative Land Uses
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ecosystems, population health, as well as economic and social conditions.

Many of the links shown in Figure 2 are only hypotheses at this time, although they have been analyzed in simulation studies (e.g., Rodier and Johnston 1997). Rigorous qualitative and quantitative studies are needed to affirm and quantify these links at the county and sub-county levels of government. In particular, we need a much better understanding of how land supply and demand factors interact to produce different patterns of housing development (see also Abdalla 2001). It is important to consider not only the type (pattern) but also the magnitude or amount of housing development.

4. Which Public Policy Objectives Can be Met by Different Portfolios of Land Use Policies?

Once public land use objectives have been determined, we need to identify which public policies will allow us to meet these objectives. Determinants of land use that can and cannot

be influenced by public policy are shown in Figure 2. For example, increases in consumer incomes translate into purchases of second homes; there is little the government can do to stop this short of outlawing second home ownership. Likewise, continued growth in the U.S. population and the number of households affects land use. The National Association of Home Builders forecasts that 1.2 million new single-family units will have to be built each year between 2001 and 2010 to accommodate growing demand from new households.

In this context, how effectively are different land use-related policy tools meeting stated goals? How effective are they in advancing longer-term societal goals? A systematic assessment is urgently needed of incentives and regulations related to land use, in different states and regions. Which specific policies work well, and work well together? Which policies and policy portfolios produce unintended consequences? What are these consequences?

What policies or decision-making procedures can better limit the opportunities for rent-seeking by private parties through the land-use policy and growth-control system? Potential opportunities for rent-seeking arise whenever the government intervenes in the market for land. Where are the gaps between good policy structure (theory) and poor policy implications (for example, Transferable Development Rights)?

CONCURRENT PRIORITIES AND ACTION STEPS

Three concurrent activities must be carried out as these long-term research priorities are being implemented.

1. Improve Databases and Decision Support Systems Related to Land Use

Centralized archives of comprehensive and consistent (using the same standards) data across jurisdictions are needed if we are to get a better handle on land use problems and conflicts. These data sometimes exist within individual communities, but they are not at a scale that may be used by researchers in public policy analyses. The current national data collection system is not sufficiently detailed or reliable in the area of land use and conversion. Specifically, we need to compile spatially-referenced, GIS-type data that represent variables and information from multiple disciplines.

Regional (multi-state) research is needed, and cooperation among rural, urban, and transportation economists and sociologists, as well

as political scientists, environmental psychologists, and planners, is essential. Land use conflicts and problems are so complex that no single discipline has all of the answers, or can develop the comprehensive decision support systems needed by communities. So-called endogeneity issues must be addressed analytically, and this is an area in which economists have considerable experience. For example, traffic congestion often leads to more road construction, which leads to more congestion; poor environmental conditions lead to stricter regulations, which can influence environmental conditions in subsequent time periods. More generally, the human or social sciences dimensions of land use problems need to gain greater prominence in existing land use simulation and other studies.

2. Land Use Projections and Longitudinal Studies

Future land use outcomes, along with policy mechanisms, need to be forecast through build-out and other analyses. This includes a retrospective evaluation of policies: did the policies have their intended effects, and what are their distributional (equity) consequences? New policy structures need to be designed that facilitate feedback from evaluation to contemporaneous policy. In addition to the need to produce immediate results to improve our knowledge and policy performance, longer-term, forward-looking research that supports the updating of policies and addresses newly realized public objectives of rural land conservation and development are urgently needed. This work should be carried out in collaboration with researchers from the natural and planning sciences, through longitudinal studies on focused issues.

3. Coordinated Research with European Land Use Experts

As part of this broad research initiative, formal collaboration with European researchers is essential to evaluating the full range of possible land use outcomes. While substantial differences exist between European and U.S. approaches to private property rights and the valuing of land, transatlantic collaboration is likely to significantly benefit land use research efforts in the United States.

CONCLUSION

Unlike other past and current research efforts on land use, the agenda outlined here is comprehensive. It addresses socioeconomic, ecosystem, and population health impacts of land use, including the distributional consequences. In addition, the heavy research focus on individuals' valuation of different land uses is novel. These broad perspectives are critical to fully understanding the causes and effects of current land development practices.

Two key factors motivate the urgently needed and targeted research agenda developed in this document: (1) land use problems are getting worse, and (2) most of the decisions made today cannot be reversed in the future. Answers to the questions included here will help in addressing many of today's concerns about land use.

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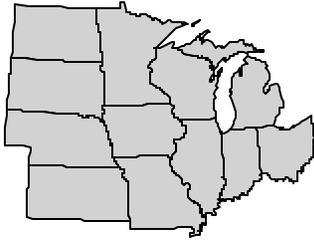
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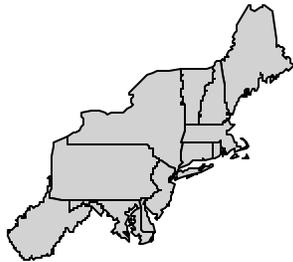
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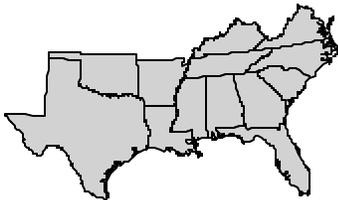
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