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ECOLOGICAL RESEARCH PROGRAM

BUILDING A SCIENTIFIC FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS

Future Midwestern Landscapes: A Planned Evaluation of Landscape Change and Ecosystem Services in the Midwestern United States

**Presented by
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to
NAS Sustainability R&D Forum
October 17-18, 2007**

Dimensions of Sustainability* and Ecosystem Services

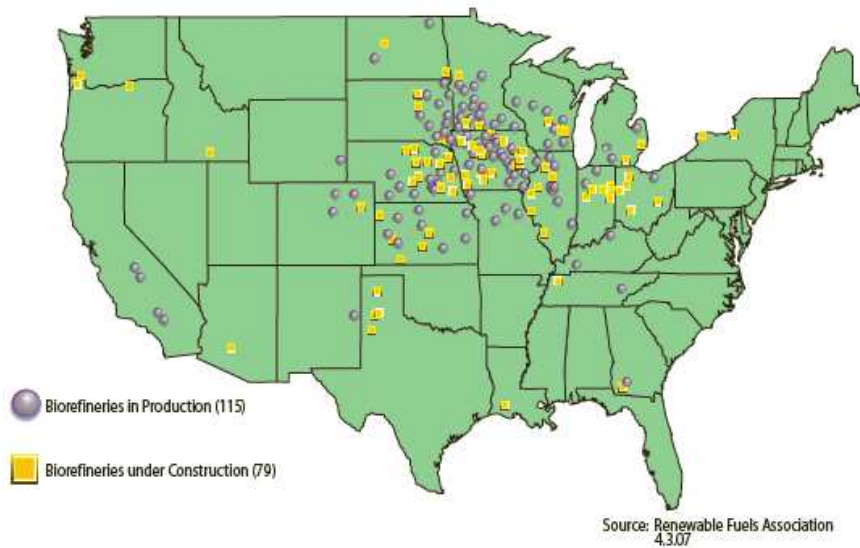
- **Efficient allocation**
 - Do benefits outweigh losses? (Necessary, but not sufficient)
 - **Are service losses accounted for in BCA?**
- **Sustainable scale**
 - Can the whole weight of economic activities be borne by the ecological support system?
 - **Examine sufficiency/ nonlinearities/ collapse of services**
- **Fair distribution**
 - Are 'losers' justly compensated?
 - **Who receives the services?**

FML Study Goals

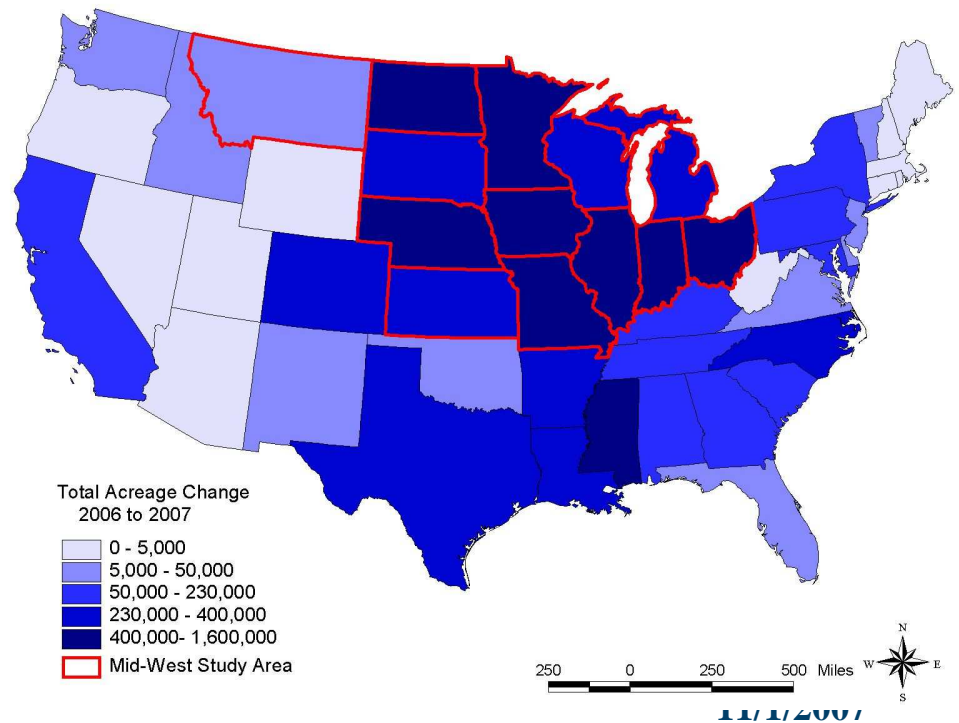
- Understand how current and projected land uses affect the **ecosystems services** provided by Midwestern **landscapes**
- Provide **spatially explicit** information that will enable EPA Regions and Programs to articulate sustainable approaches to environmental management
- Develop **web-based tools** depicting alternative futures so users can evaluate trade-offs affecting ecosystem services

Spatial Scope

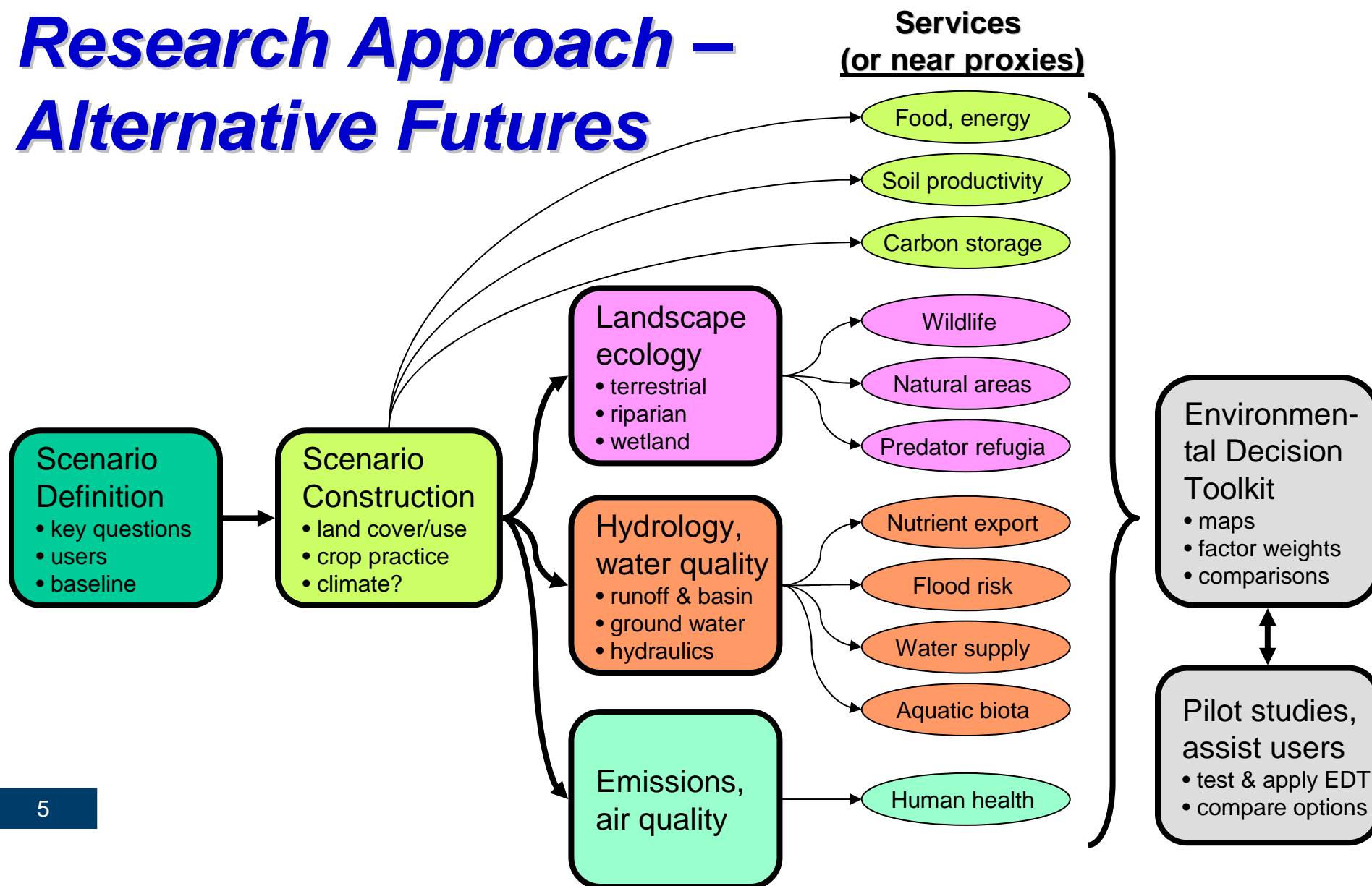
U.S. Ethanol Biorefinery Locations



Increases in corn plantings for 2007 (and proposed ecosystem services study area)



Research Approach – Alternative Futures



Ensuring outcomes

- Engage stakeholders
 - USDA economists
 - Biofuels industry
 - Growers
 - EPA regulators
 - Extension
- Ensure future scenarios are relevant
- Present analytical methods in form of user-friendly, web-based tools