Sustainability Linkages

Challenges & Opportunities

Land Use, Built Environment, and the Great Lakes Regional Economy

The National Academies, Sustainability Linkages in the Federal Government
February 9, 2012 / Seattle, WA

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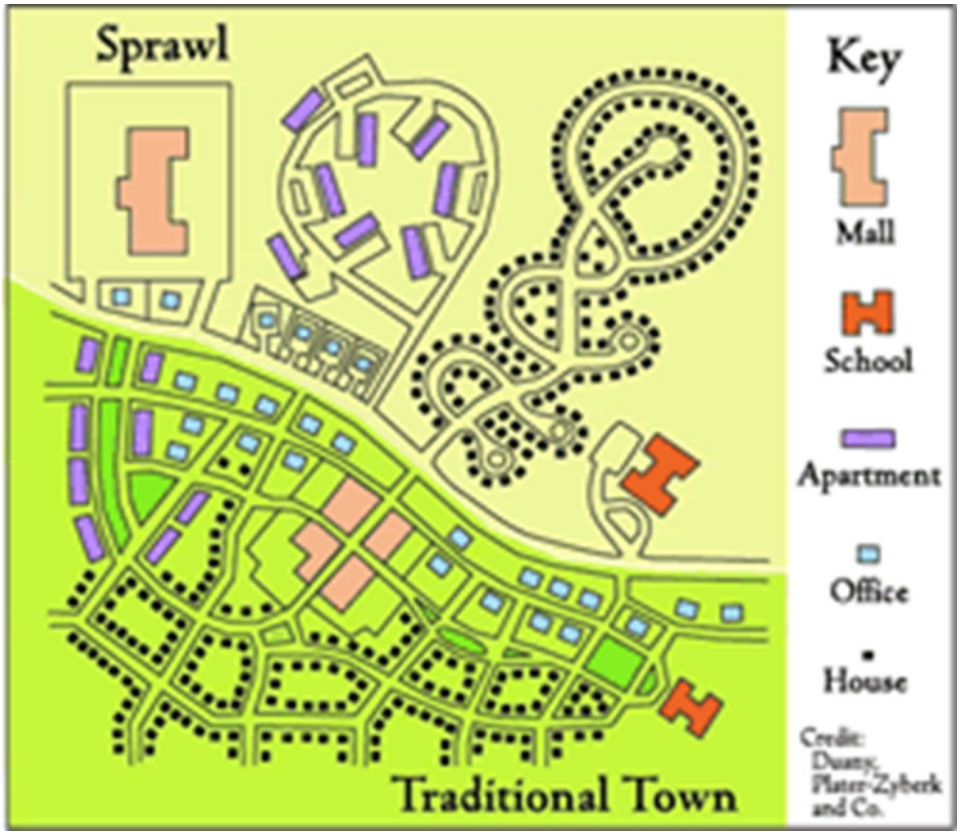
I. Public policies shape the built environment

and **STRUCTURE** (morphology) affects **FUNCTION.**

(e.g., energy consumption, air & water pollution, economic opportunity, public health, ecosystem services).

Post-WWII

Pre-WWII



"For too long, federal policy has actually encouraged sprawl and congestion and pollution, rather than quality public transportation and smart, sustainable development…"

-- President Obama, July 13, 2009

Source: Duany, Plater-Zyberk & Co.

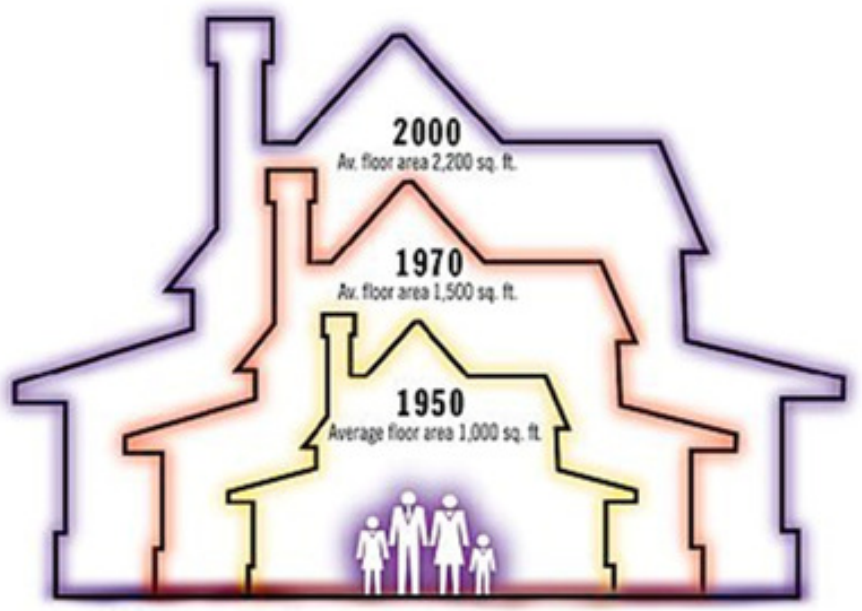
Challenge: Paradigm Change

Reduce or eliminate subsidies* and other government practices that encourage SPRAWL**

* e.g., highways, fossil fuels

e.g., subsidies* distort housing markets

Home #1



5,376 s.f., 4 BR, 4.5 Bath, 3-car garage

Home #2

*** e.g., income tax deductions for mortgage interest & property taxes on 1st and 2nd homes**

Yet, demographics have changed since 1950.

- Population 
- Urban proportion 
- Household size 
- Household residential preferences (% singles, % with school-age children)

Post-WW II:

Driveable Suburban

- wide streets (36+ feet)
- widely separated land uses
- low densities (Floor/Area Ratio ≤ 0.3)

Supply >> Demand

Pre-WW II:

Walkable Urban*

- narrow streets (28 feet or less)
- mixed land uses
- medium densities (Floor/Area Ratio = 1.0 to 10.0+)

Demand >> Supply

* C. Leinberger – "The Option of Urbanism"

II. Advancing Sustainability: Essential Elements

Grand challenge: Develop the SCIENCE and ART of planning, (re)engineering, and managing the built environment.

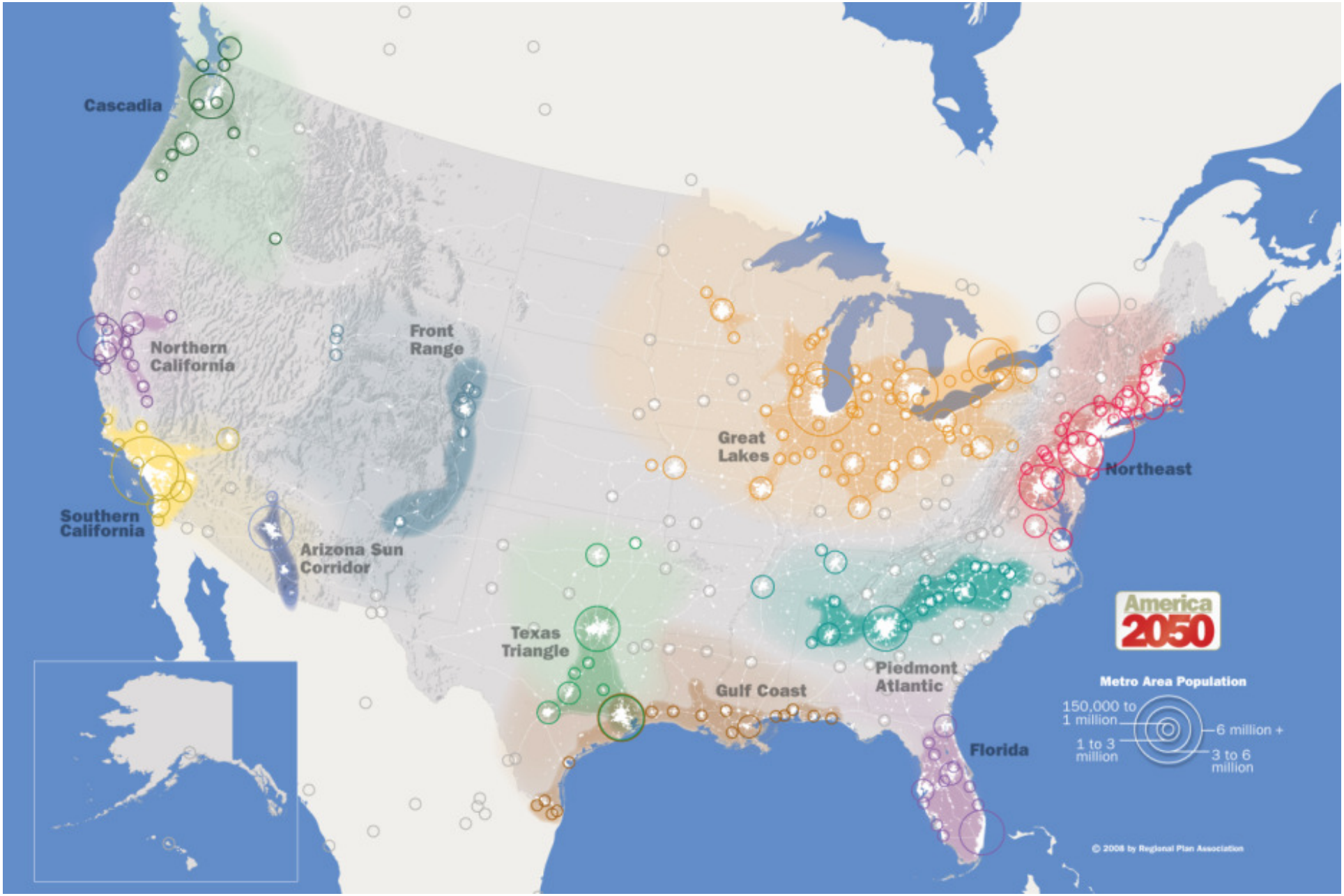
1. Process *matters*

- Context-responsive (analysis)
- Comprehensive & integrated (planning)
- Then, project design & engineering

2. Location *matters*

Location Efficiency:

Places that require less time, money, and greenhouse gas emissions for residents to meet their everyday needs.



Mega-regions: Interlocking economic systems, shared natural resources and ecosystems, and common transportation systems. -- www.america2050.org/

3. Design *matters*

<u>STEM and Non-STEM</u>
disciplines & professions

- Urban Planners
- Landscape Architects
- Architects
- Civil Engineers

Delray Neighborhood
Alexandria, VA

Smart Growth 1.0

Mixed-use, moderate densities, transit-served, pedestrian-friendly (i.e., “complete” neighborhoods).

Smart Growth 2.0
"Green" BUILDINGS

Retrofit existing buildings

Source: Melanie Stetson Freeman

Smart Growth 2.0
"Green" SITES

Investing in nature's infrastructure

Multipurpose open space systems (e.g., "daylighted" underground stormwater sewer, Thornton Creek, Seattle)


Smart Growth 3.0
Retrofitting Downtowns
Strategic infrastructure investment AND high quality, amenity-rich urban design.
Millenium Park, Chicago

Smart Growth 3.0

Retrofitting Transit Corridors & Greyfields

Buildings + Transportation Networks + Open Space Systems

Fairfax County, Northern Virginia (Comstock Companies, LC)

III. Evidence from the Great Lakes Region

1. Targeted (Catalytic) Public Investment

August 30, 2010

Infrastructure Investments in New York State to be Consistent with Smart Growth Principles* (*Smart Growth Public Infrastructure Policy Act)

December 8, 2011

Western New York Named Best Regional Plan Awardee: RECEIVES $100.3 MILLION FOR IMPLEMENTATION

Investing in Smart Growth Infrastructure:

e.g., $4 million to strategically connect five downtown districts of Buffalo. The project will reestablish **high quality multi-modal transportation corridors**.

http://www.governor.ny.gov/assets/documents/CFAAWARDSBooklet.pdf

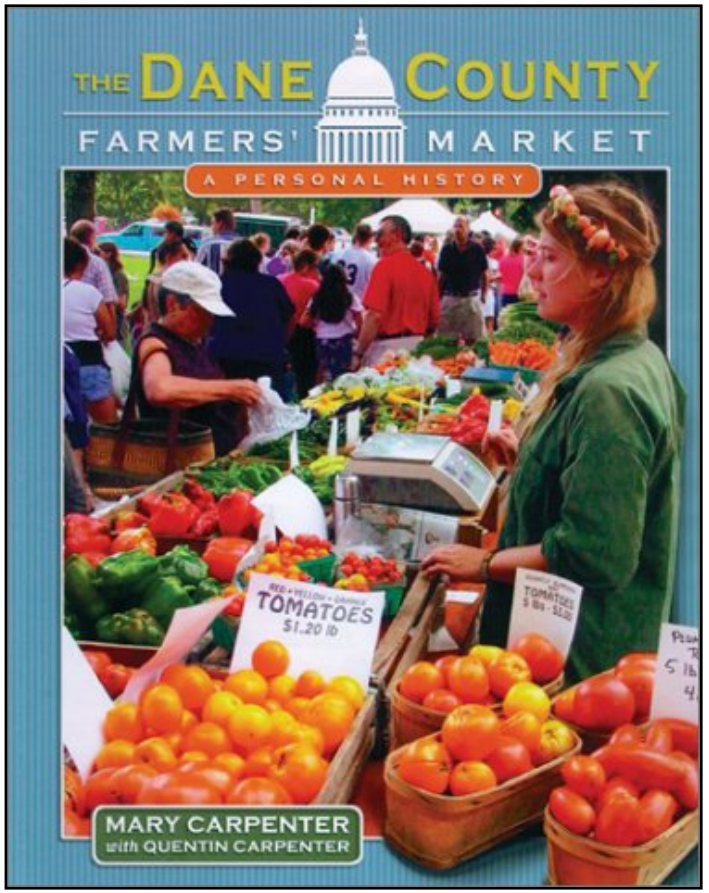
2. Coordinated Sustainability Planning

Interagency Partnership for Sustainable Communities
(HUD-DOT-EPA)

Dane County (WI) Regional Sustainability Planning & Implementation Grant ($2 million)
34 consortium partners

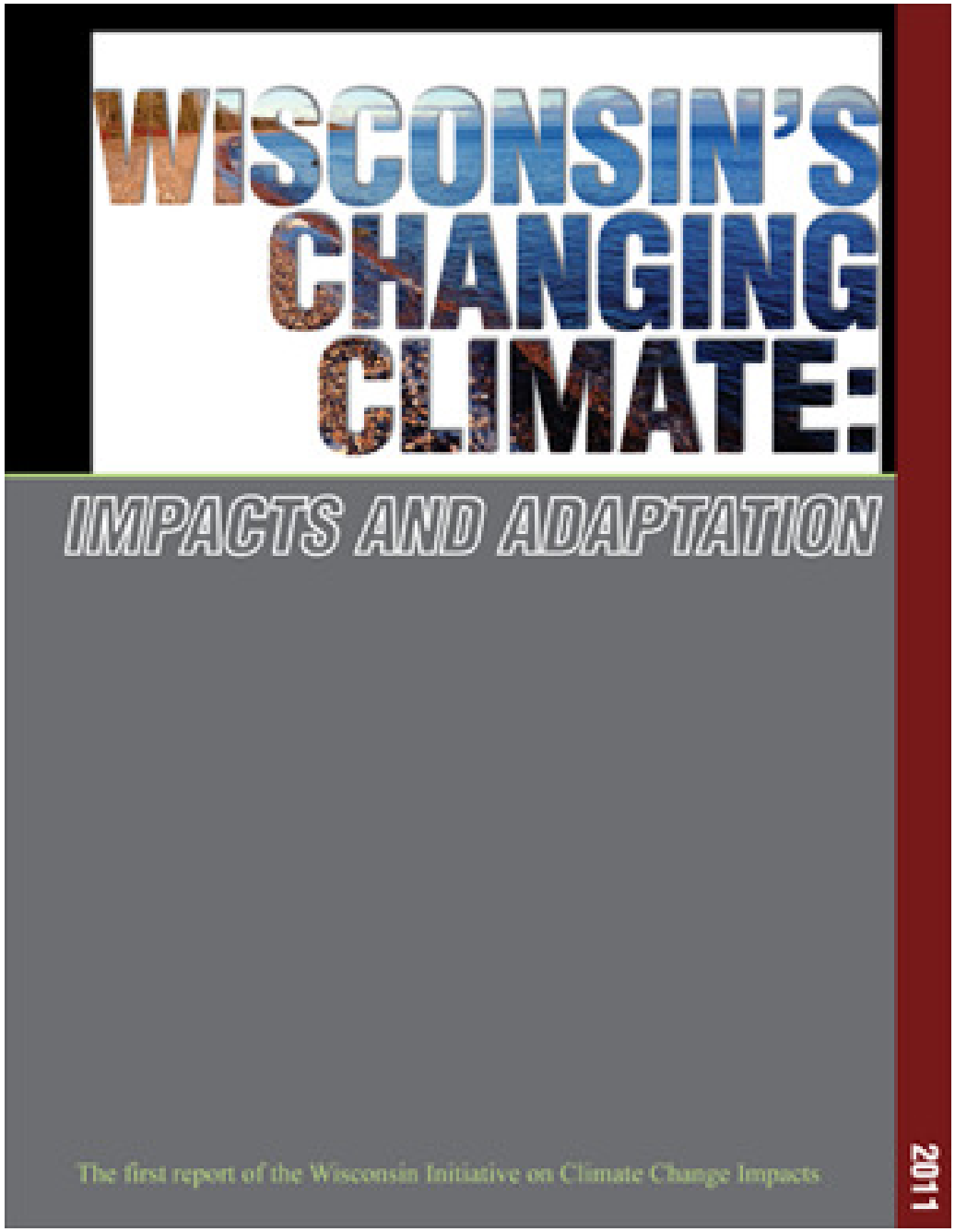
Local Catalytic Projects

- Sustainability Commerce Center
- 100 Percent Stormwater Capture for High-Density Transit-Oriented Development (TOD)
- Fresh Vegetable Packing House
- Local Fresh Food Market in Low-Income "Food Desert"



3. University/Government Partnerships

- Science Council
- Working Groups
- Communication & Outreach



Key Partners:

- University of Wisconsin-Madison
- WI Department of Natural Resources

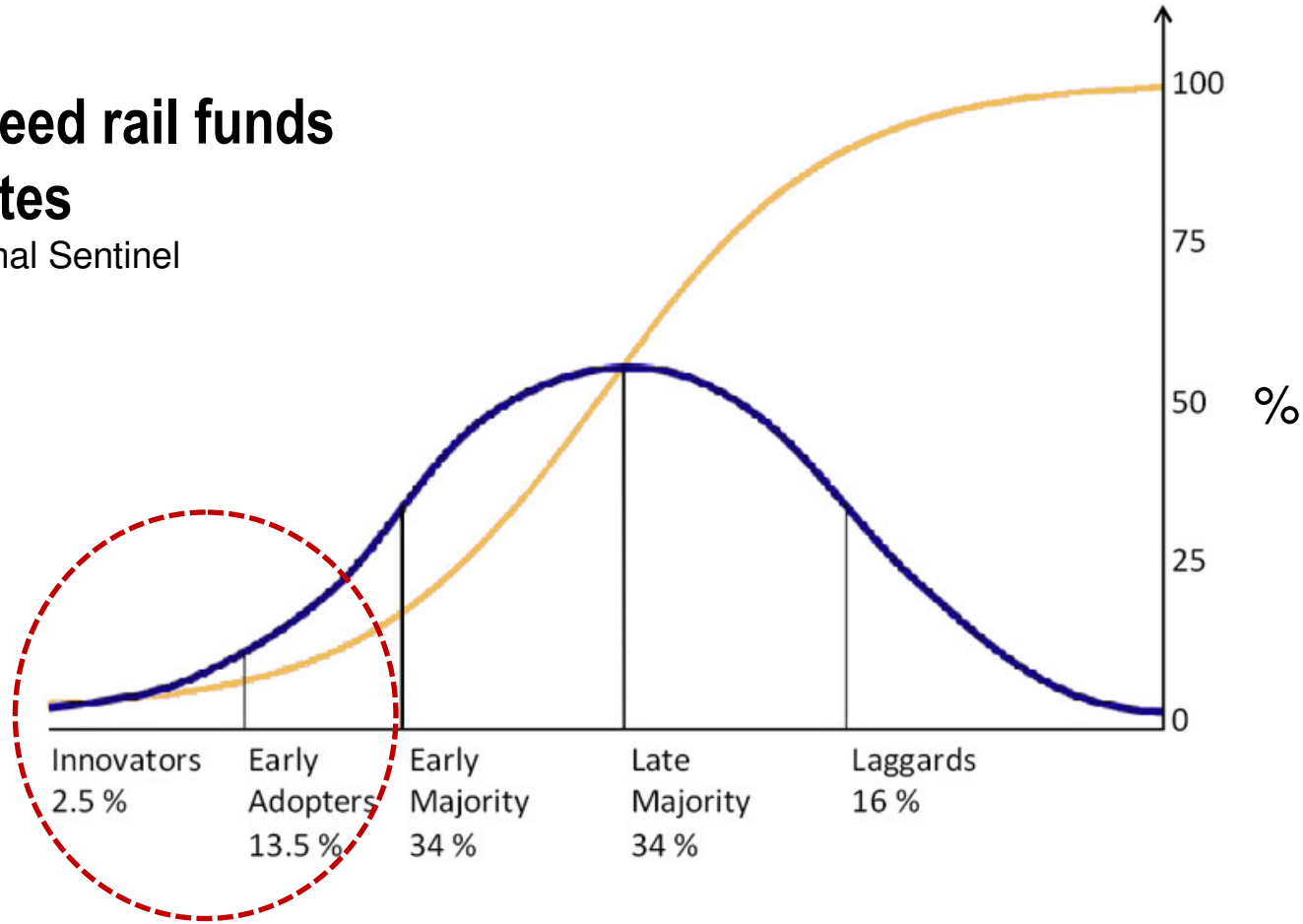
4. Missed Opportunities

Walker kills project to convert power plant to burn biofuels

RON SEELY | rseely@madison.com | 608-252-6131 | Posted: Friday, January 21, 2011 10:45 am

Wisconsin High-speed rail funds scatter to other states

By Larry Sandler of the Journal Sentinel
Dec. 9, 2010



Rogers, E. 1983. *Diffusion of Innovations*. NY: Free Press.

IV. Shaping the Future (i.e., 21st century)

Multiple Opportunities for Coordinated Research, Education, and Infrastructure Investment

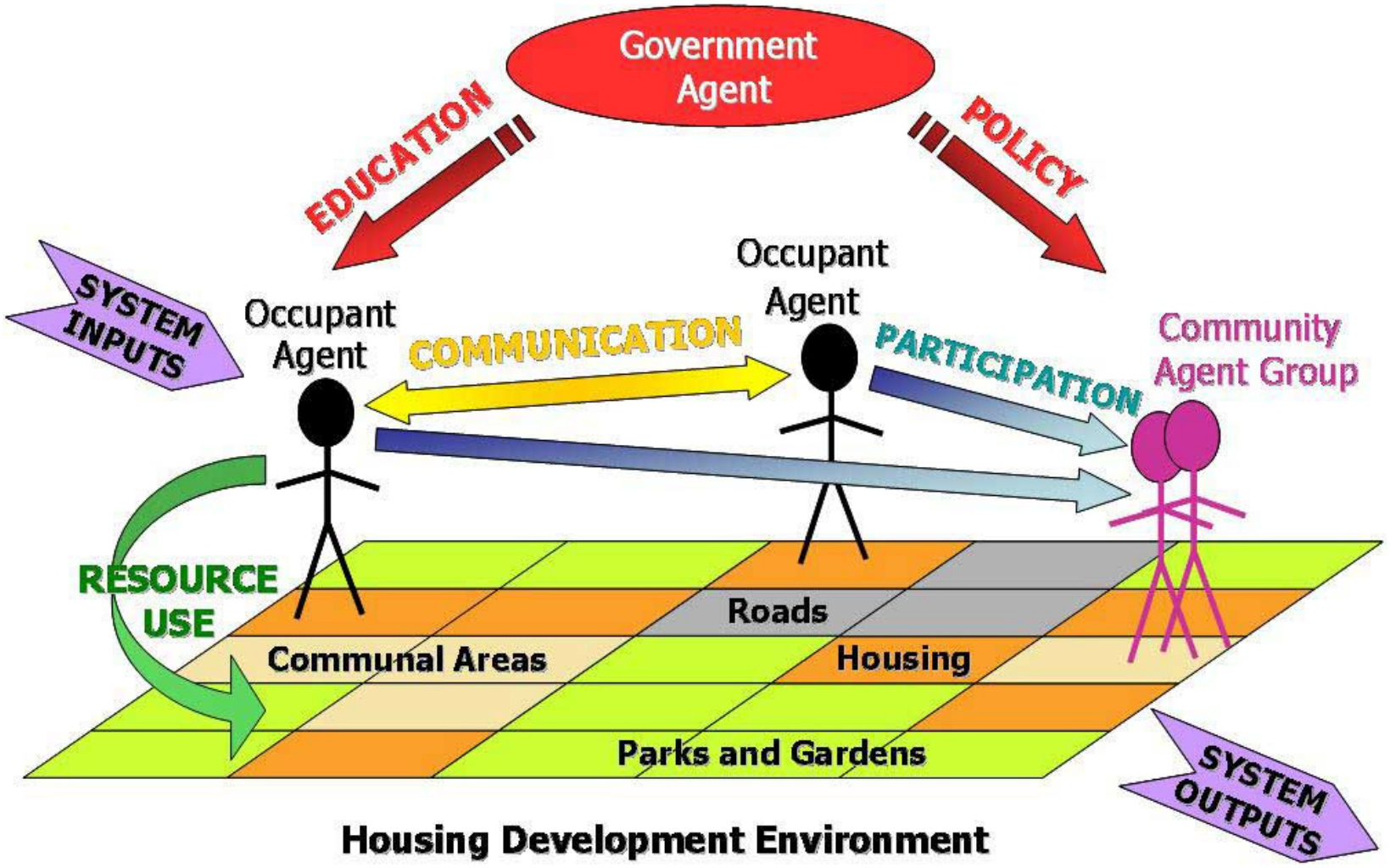
- Smart growth (EPA, DOT)
- Livability (EPA, DOT, HUD)
- Healthy communities (CDC, NIH, USDA, EPA)
- Climate mitigation & adaptation (NOAA, EPA, DOE)
- Sustainability (NSF, DOD, DOE, EPA…)

Challenges

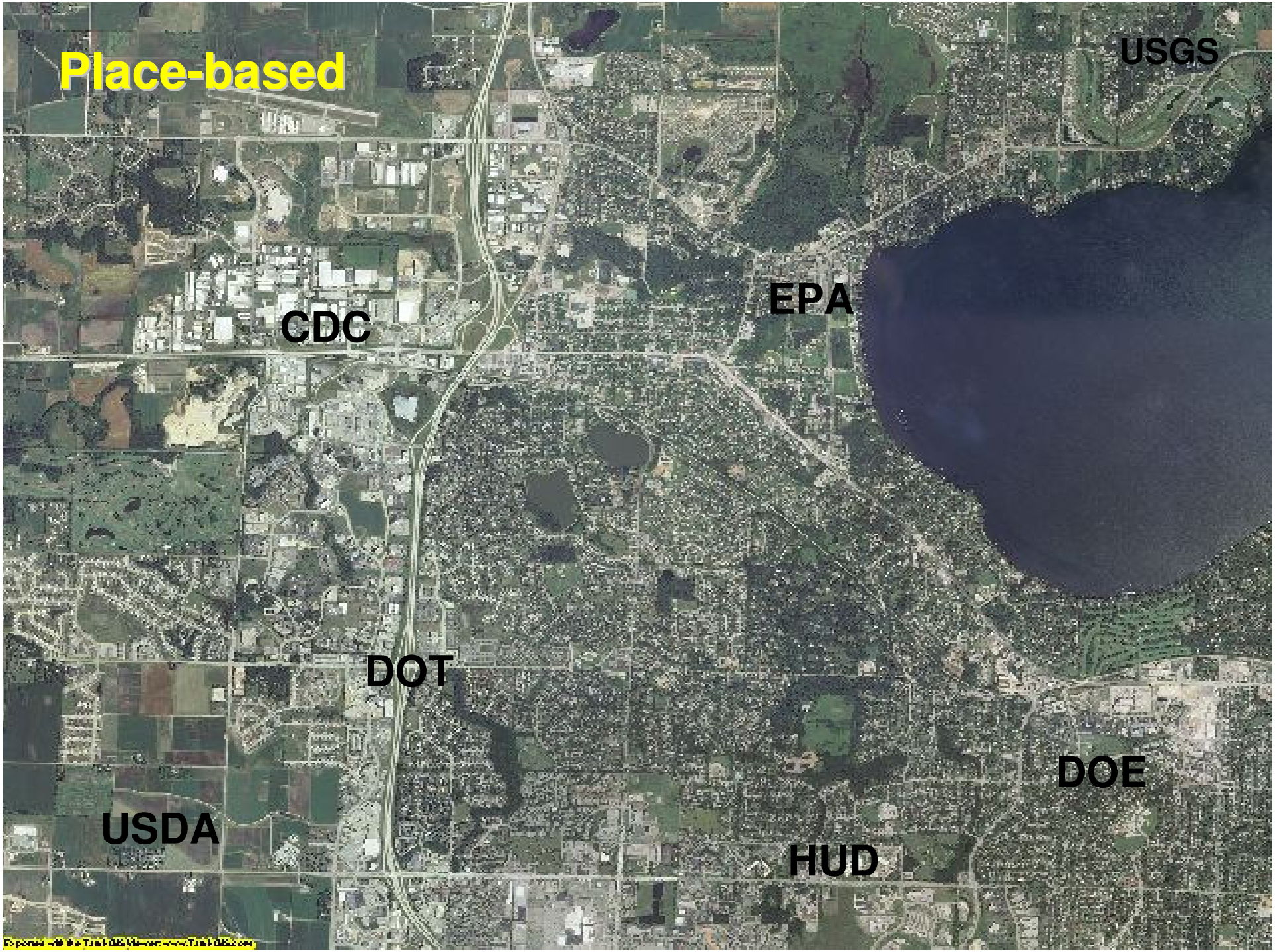
- COE, FEMA, DOT

Holistic

Complex Adaptive Systems (coupled human-natural systems)



Source: Complex System Science Program, CSIRO, Canberra, Australia

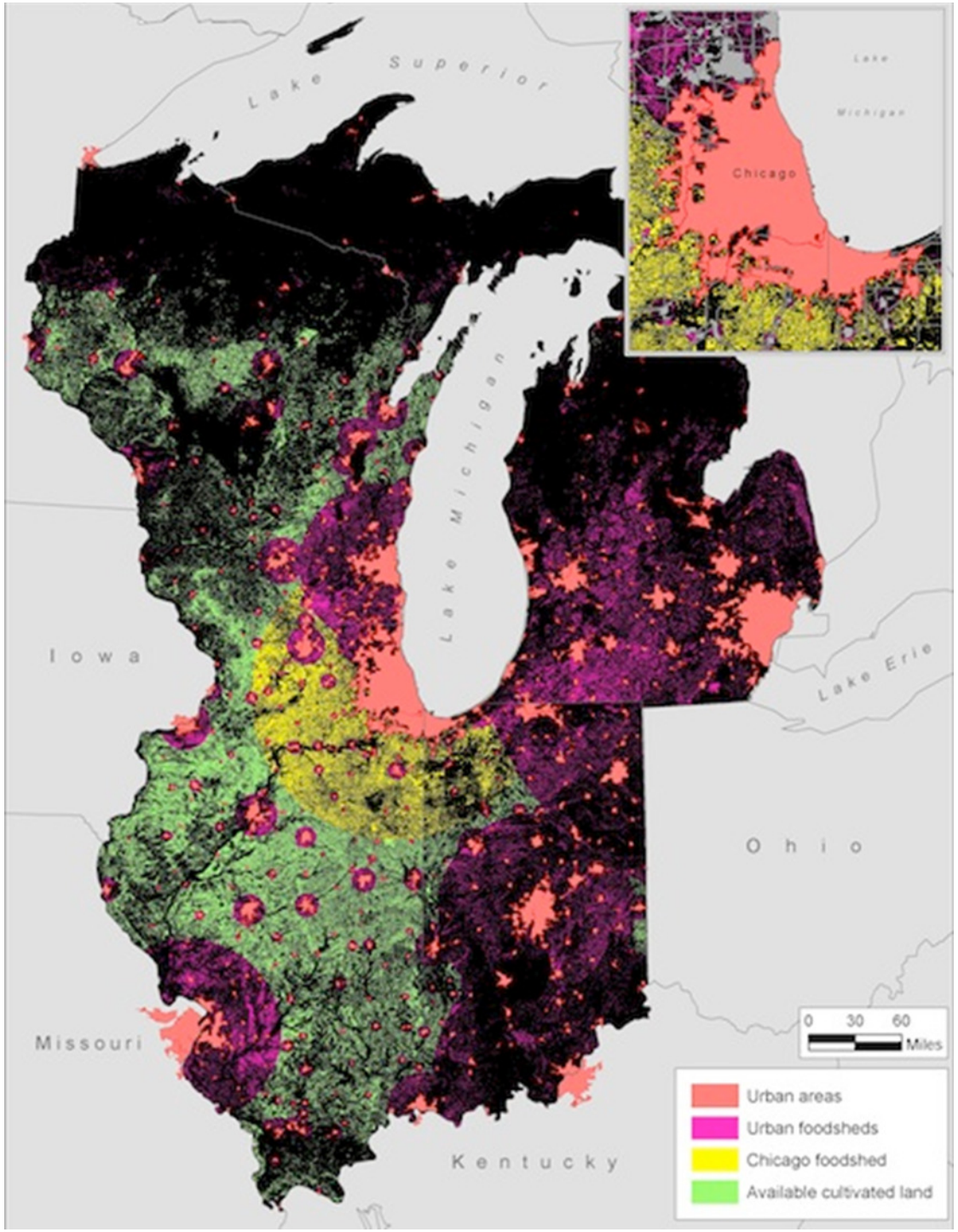

Place-based
USGS
EPA
CDC
DOT
DOE
USDA
HUD

Spatially explicit

e.g., regional assessments of trends in food-, water-, energy-, commuting-, and other "sheds"

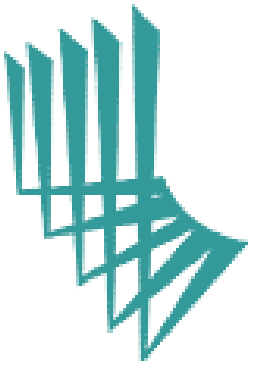
food•shed [\'food,shed\] - noun: a region or area from which a population draws its food

www.feedingthecity.uchicago.edu/



Leveraged partnerships

- Non-Government Organizations (NGOs)
- Universities (research & "engaged")
- Local & State Governments



ULSF

Association Of
UNIVERSITY
LEADERS
FOR A
SUSTAINABLE
FUTURE

ICLEI
Local
Governments
for Sustainability
USA

Mayors' Institute on City Design

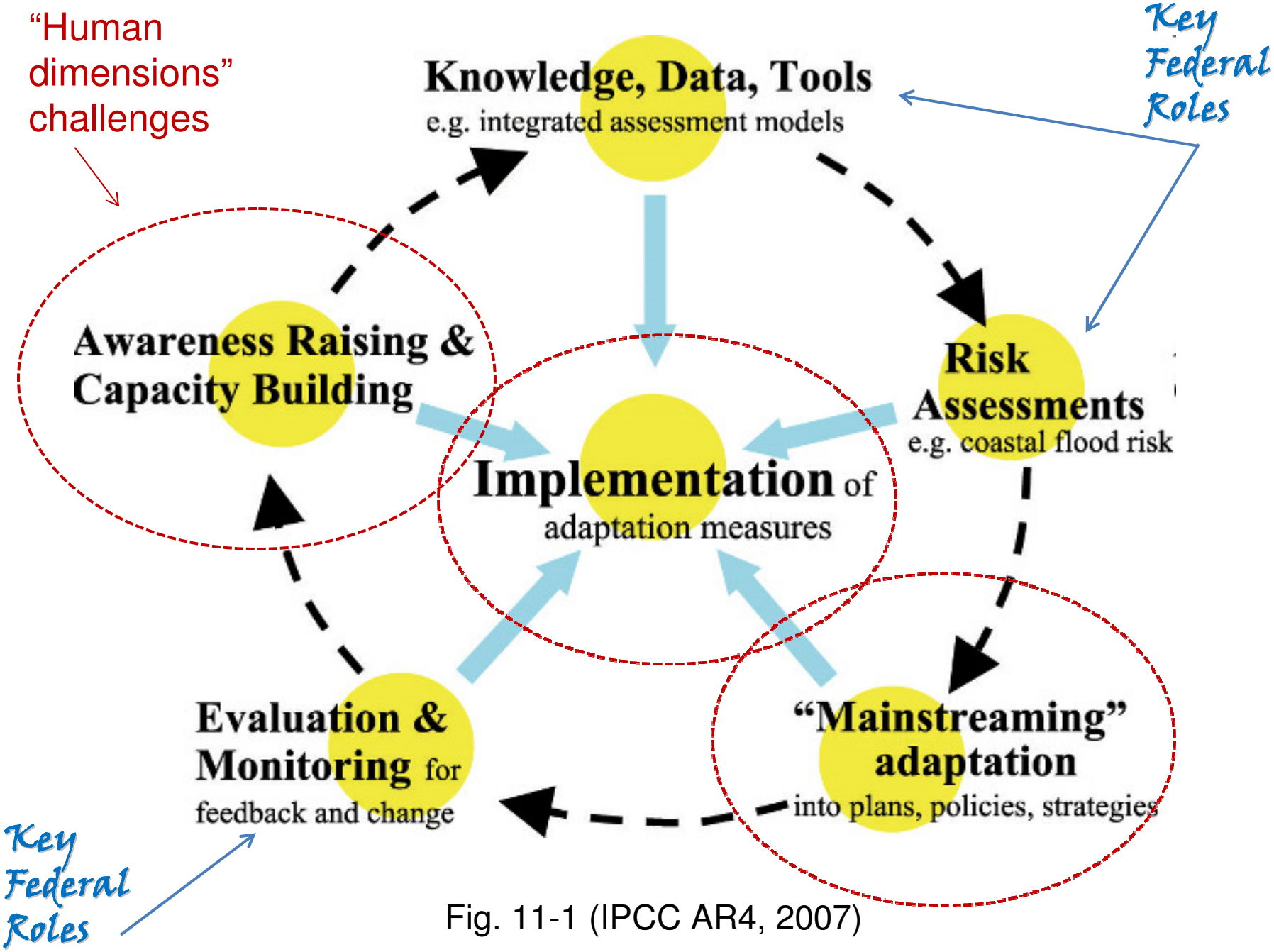


Fig. 11-1 (IPCC AR4, 2007)