



城市改变中国——2008 “CPN中国周”

中國發展與規劃國際論壇

China Planning Network, CPN

中国发展与规划国际论坛官网：www.Chinaplanningnetwork.org

中国城市交通门户网站：www.Chinaurbantransport.com

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Perspectives of Urban Transportation in China

Ralph Gakenheimer
Massachusetts Institute of Technology
Urban Studies and Planning

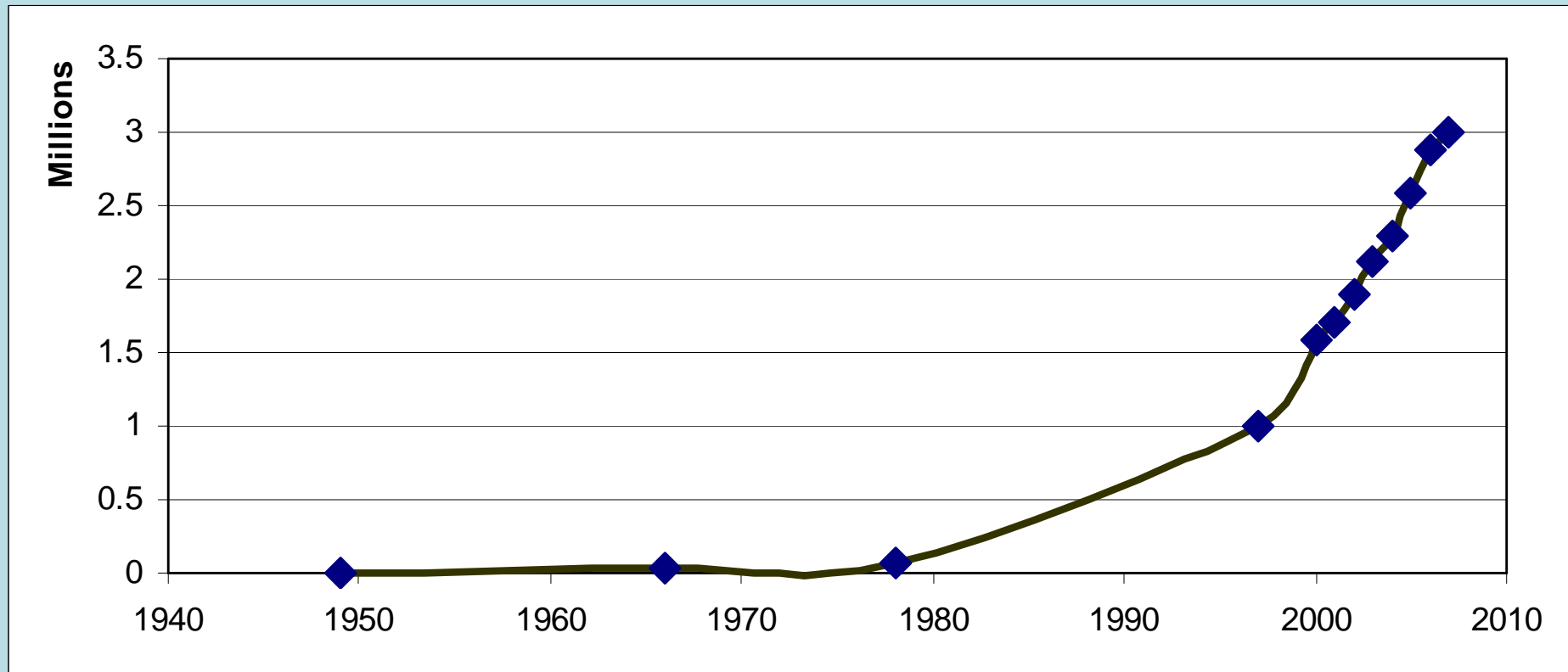
Jiawen Yang
Georgia Institute of Technology
City and Regional Planning

China Planning Network
July 18-19 Beijing, China

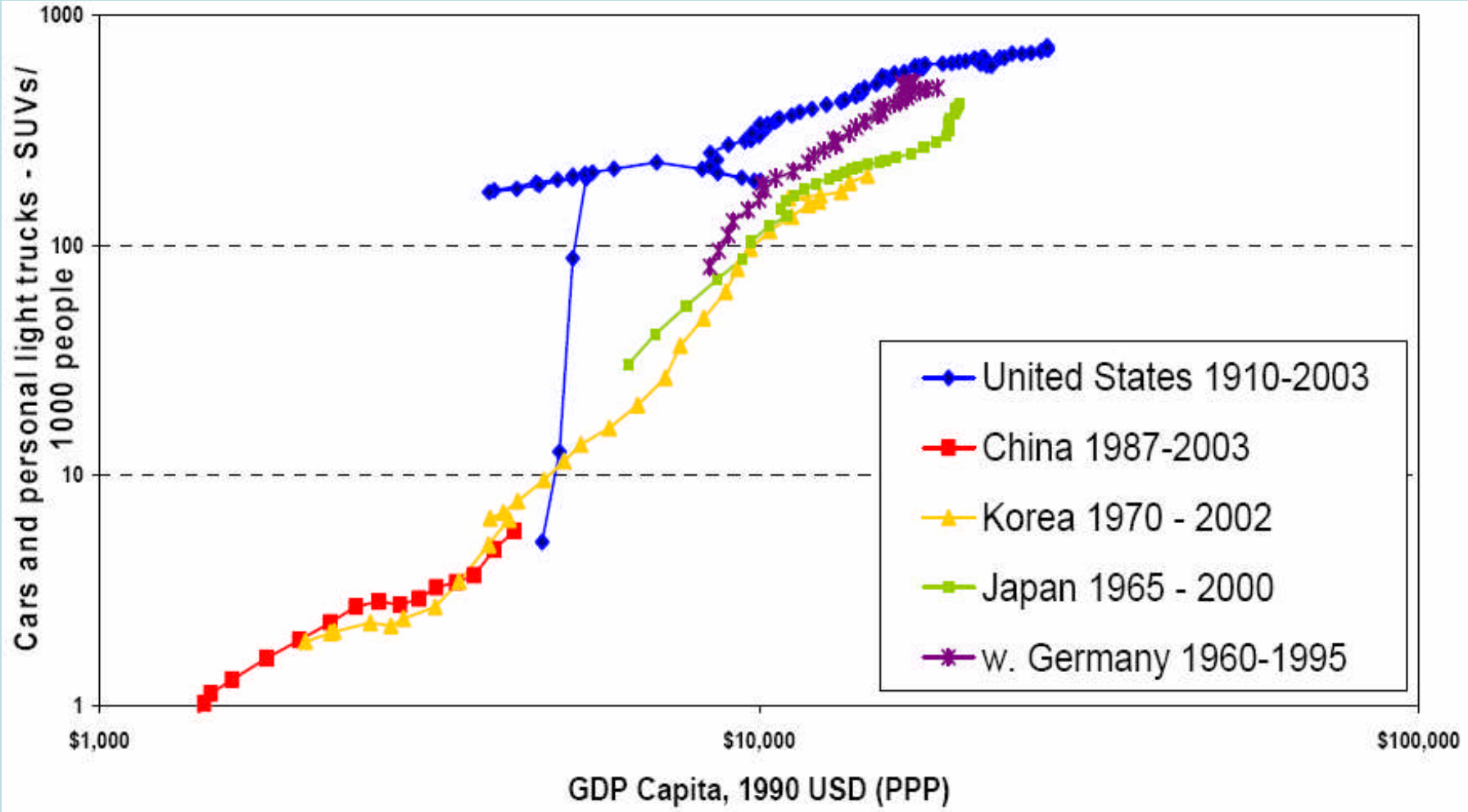
Items

- Predicting motorization
- Analyzing demand
- Dealing with mode priority
- Evaluating spatial/land development
- Creating planning procedures

Motor vehicles in Beijing



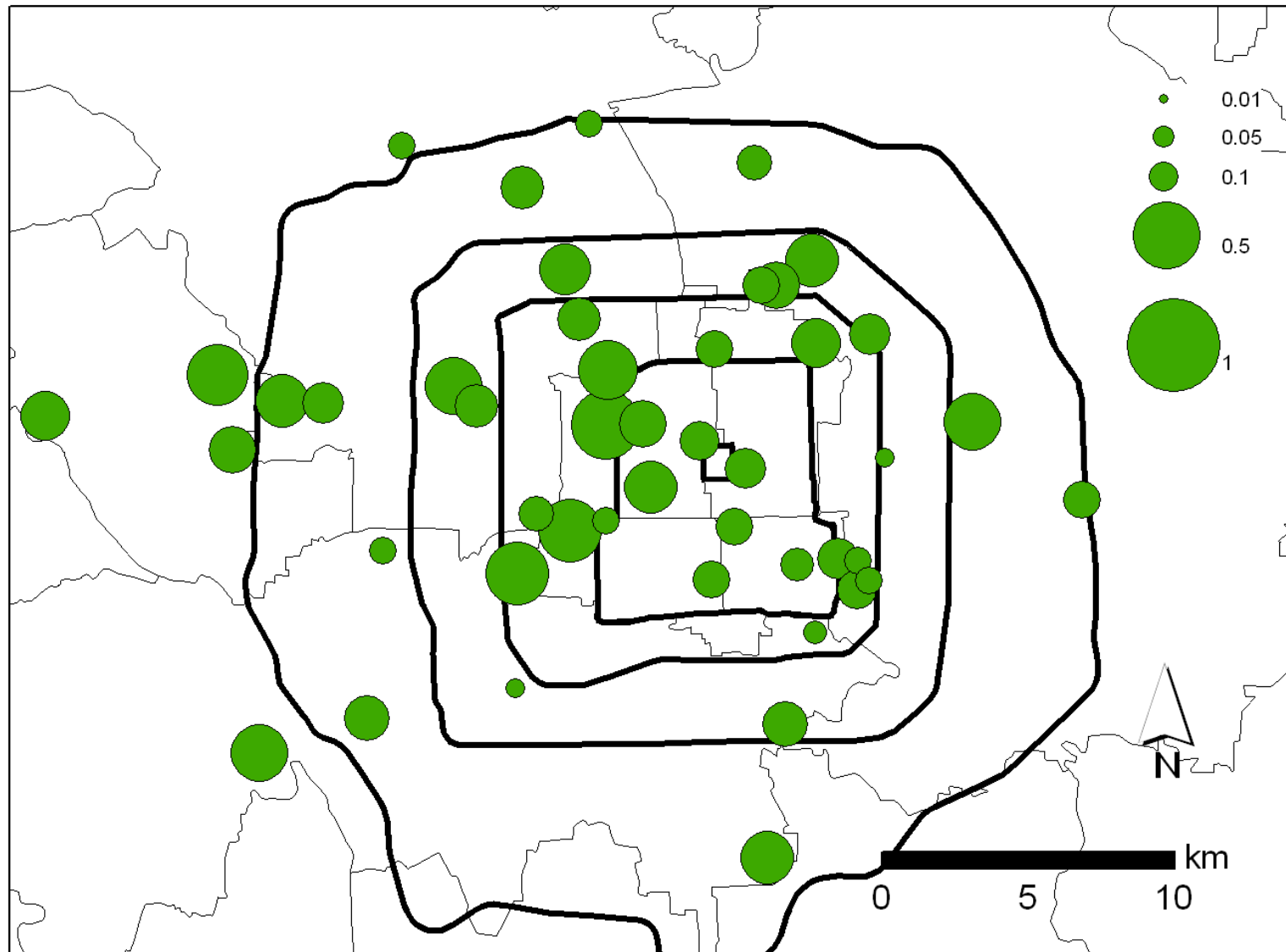
Motorization in China and other nations



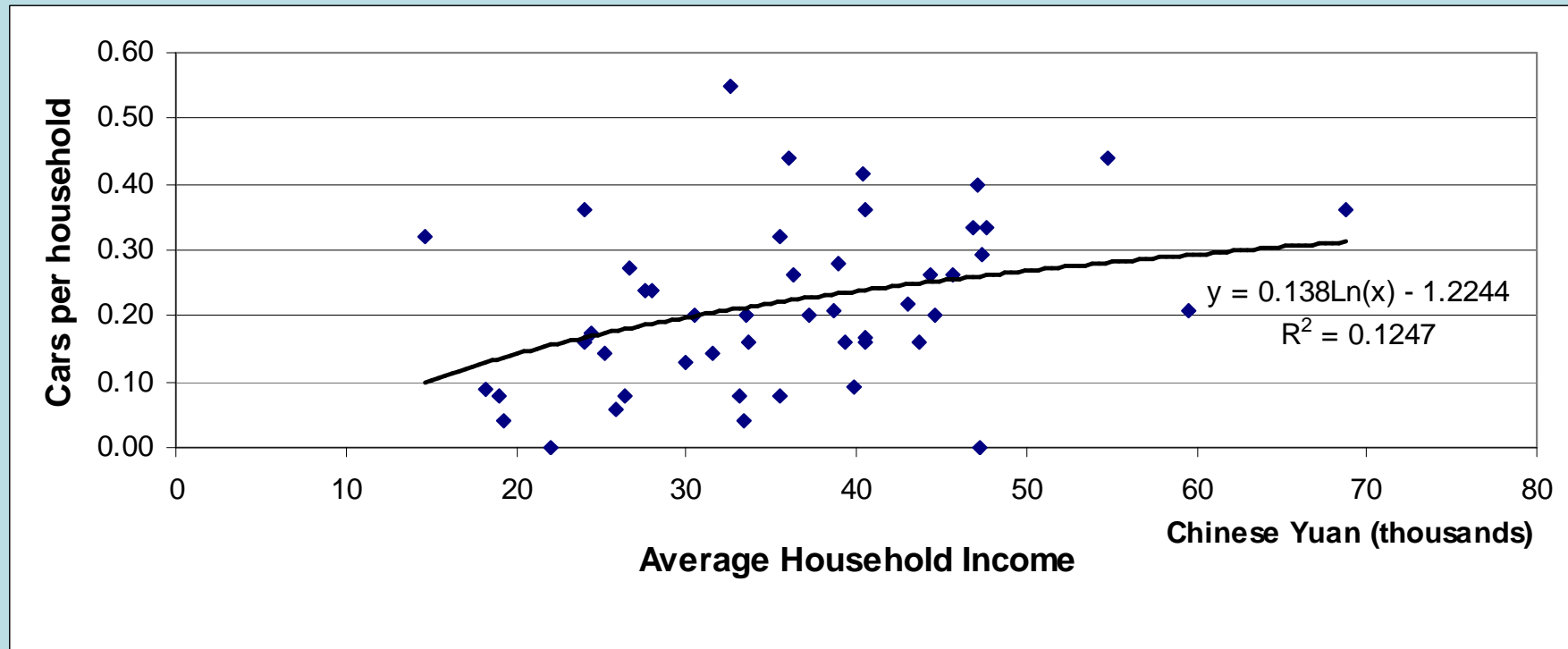
Source: Lee Schipper and Wei-Shiuen Ng, 2007

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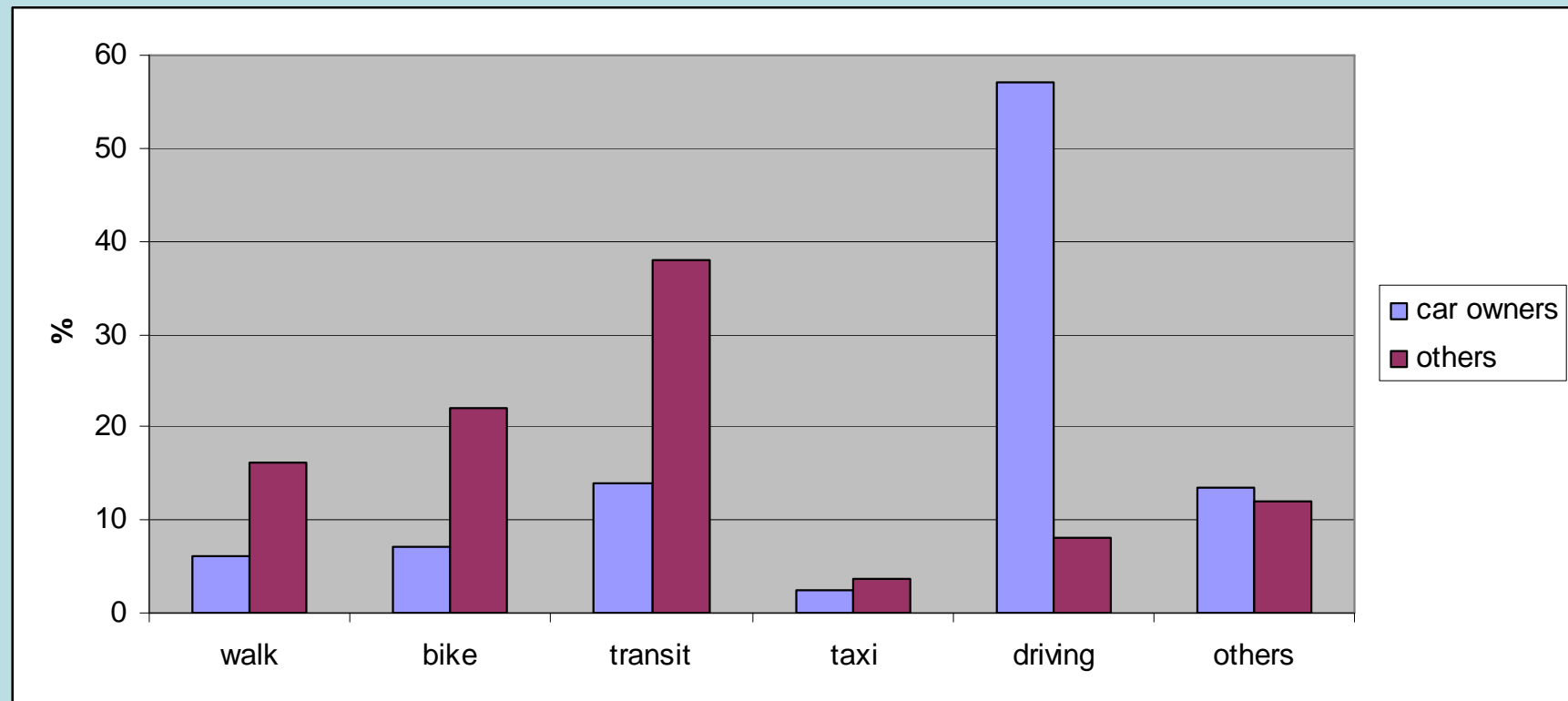
Cars per household



Income vs. car ownership

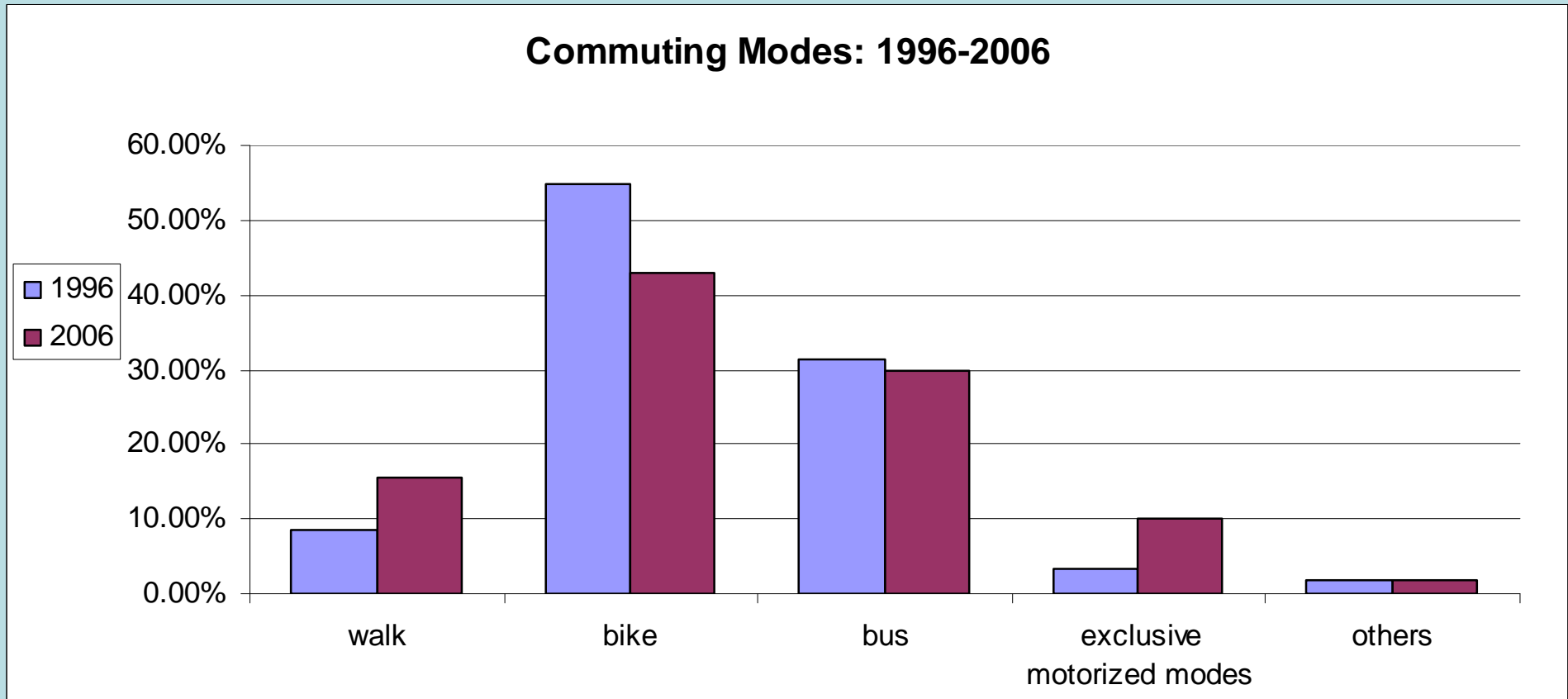


Mode split: car owners vs. others

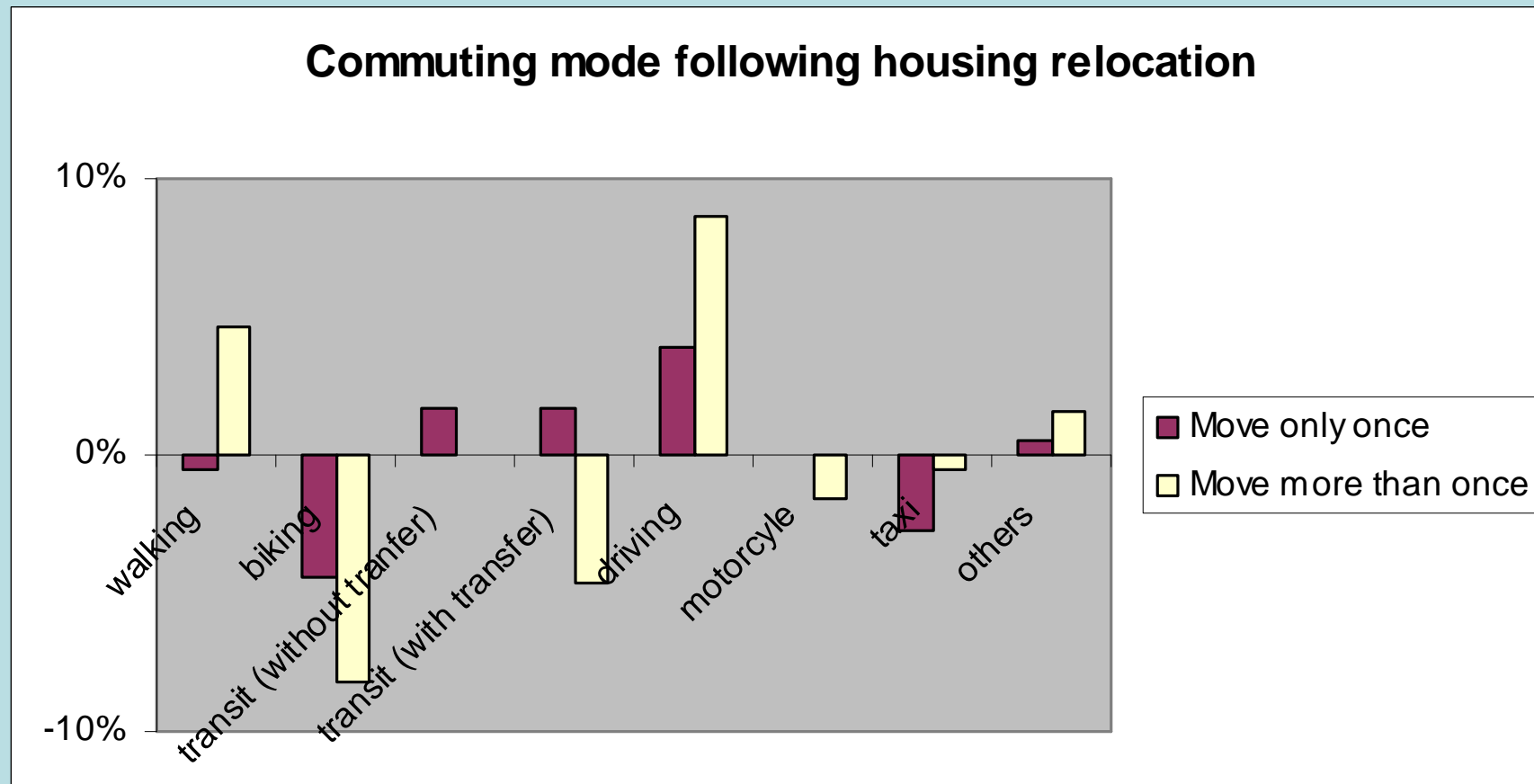


Adapted from Jingxia Wang, 2006

Commuting mode change



Location dynamics and transport





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Examining strategies by outcome

Transportation Facilities and Services in Urban Areas

Items	1990	1995	2000	2002	2003	Annual increase rate (%)
Urban Land Area (sq km)	12856	19264	22439	25973	28308	6.26
Floor Areas (billion sq meters)	3.98	5.73	7.7	13.18	14.09	10.21
Housing floor area (billion sq meters)	2.0	3.1	4.4	8.2	8.9	12.20
Road Length (thousand km)	95	130	160	191	208	6.21
Road Area (billion sq meter)	0.89	1.36	1.9	2.77	3.16	10.24
Vehicles for Public transportation (thousands)	62	137	226	246	264	11.79
Taxi (thousand)	111	504	825	884	903	17.50

Source: China Urban Development Statistics (2004)

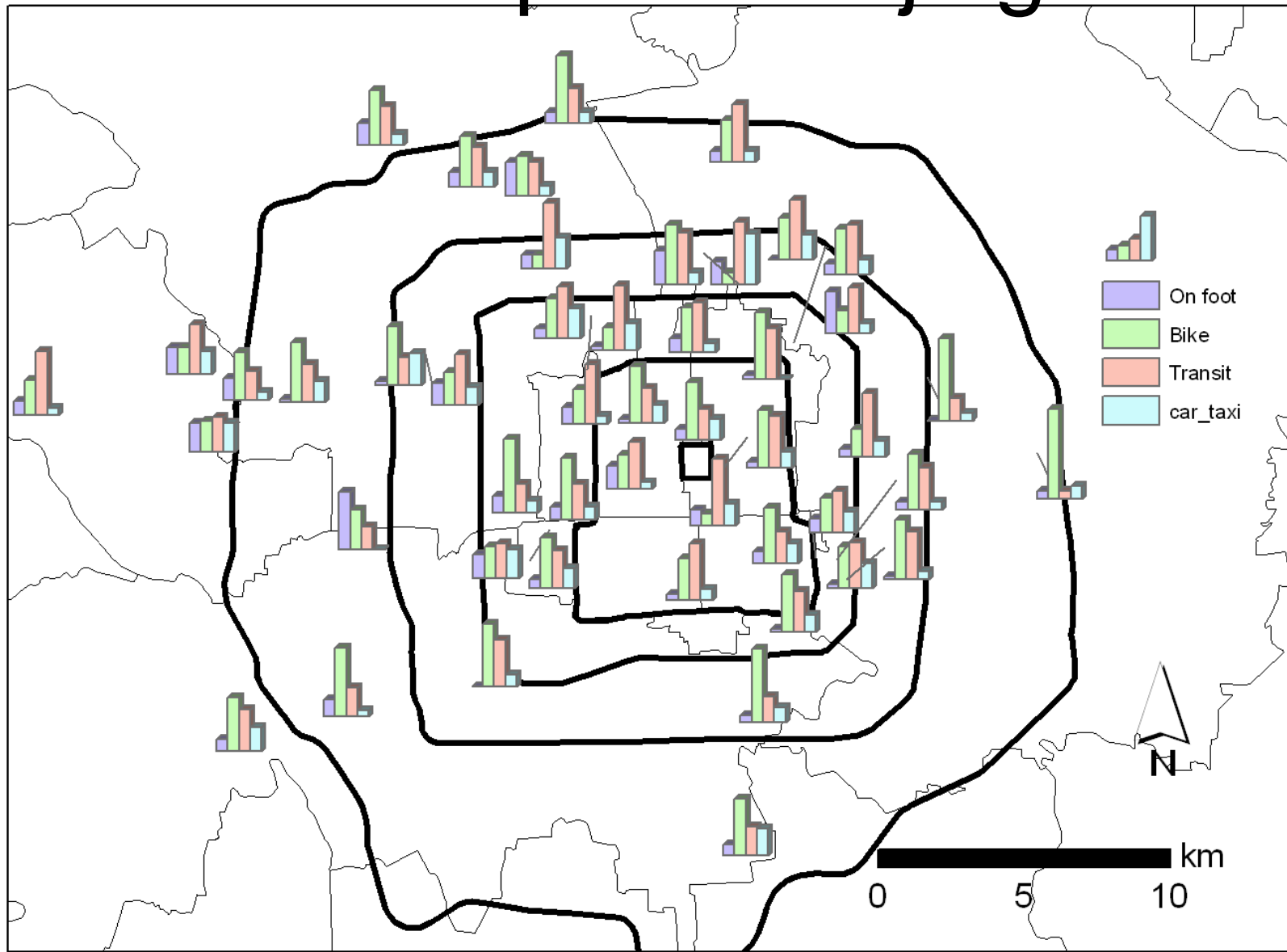
Urban rail

Route Length of Urban Rail Transport in China (km)

	In Operation	Under construction	Listed in Transportation Improvement Plan	Total when Completed
Beijing	114	85	158	357
Shanghai	94	115	313	522
Tianjin	45	34	115	194
Guangzhou	57	50	146	253
Chongqing	14	5	103	122
Shenzhen	22	85	35	142
Changchun	15		34	49
Dalian	47			47
Wuhan	10		54	64
Nanjing	22		42	64
Hangzhou			83	83
Suzhou			47	47
Chengdu			54	54
Ha'erbing			46	46
Shenyang			41	41
Xi'an			50	50

Adapted from Jingxia Wang, Overview of China's Urban Transportation Strategies, 2006

Mode Split in Beijing



Mode competition

Correlation between different modes

	Walk	Bike	Transit	Exclusive Motorized Modes
Walk	1			
Bike	-.378(**)	1		
Transit	-0.110	-.707(**)	1	
Exclusive Motorized Modes	-0.149	-.432(**)	0.210	1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Spatial Development

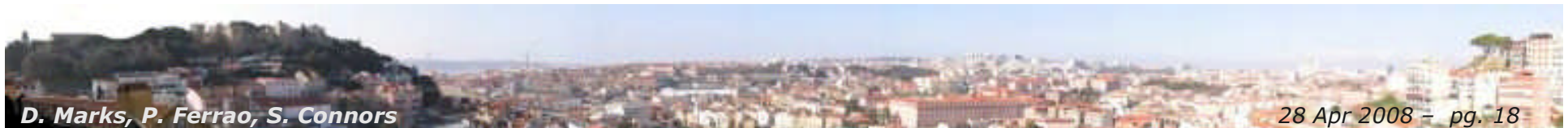
- De-densification: Will it work?
- Which one should lead: transportation or land?
 - Build transport to support land development or control land development to tolerate the mis-managed transport system?

Planning Procedure for Transit Priority

- Who should participate?
- What should be the planning goal?
- What are the working themes?
 - Traffic management
 - Pricing policy
 - Project evaluation
 - Land use policy
 - Institutional arrangement

Regional Sustainability
The "Green Islands"
Cross-Cutting Program

**Part of the Alliance for Global
Sustainability (MIT ETH Chalmers
Univ . Tokyo)**
Urban Futures Program



Motivation

- Industry and Government see the need for developing new technologies and partnerships that allow us to get on a “new path” towards energy and environmental sustainability.
- Identifying such cost-effective and implementable pathways requires new and greater *systems* level approaches that marry top-down and bottom-up (e.g. local and regional) methodologies, and integrate technological, social science/policy and regulation, and management/organizational approaches.



Basic Elements

- Academic (Research)
 - » New Methodologies: Design and assessment of technologies, systems and policies for moving regional/local areas to more sustainable energy and environmental pathways
 - » Will use this to build Portuguese as well as MIT capabilities
- Industry and Government (Outreach/Partnering)
 - » Market/Industry/Business Development and “Vision”
 - » Demonstration of Innovative Technologies
 - » Strengthen interactions among industry, government, academia and the public



Candidate Case-Studies

- Islands
 - › The Azores
 - São Miguel, Flores, Graciosa, others...
 - › Madeira and Porto Santo
 - › Cyprus
- Island Cities
 - › Lisbon
 - › Masdar, others
- Other Regions?
 - > China, Hainan Island?



Research Components

- Scenarios and methods for the design and evaluation of systems/sustainable strategies
- Monitoring, information and acquisition
- Sectoral Sub-Components
 - » Sustainable Buildings > New and Existing Building Stocks
 - » Alternative and Local Energy Resources/Supplies
 - » End-Use Efficiency
 - › Demand Modification/Smart Demand (e.g. Energy Box)
 - › Smart Buildings, Microgeneration, etc.
 - » Smart Energy Networks
 - › Pervasive renewables and responsive loads
 - › Distributed and Dynamic Energy Storage (e.g. Vehicles to Grid)
 - » Integrated Transportation Networks (People & Packages)

