



# Long term urban and transport policies assessment in Wuhan

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CIRE D

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# Background

- Understanding the mechanism of urban expansion helps better govern the city
- Future urban growth scenarios will allow us to design appropriate policies and measures to tackle urban pollution, UHI, urban sprawl, and climate vulnerability (floods, heat wave, storm...)
- Implications for agricultural land use change and biodiversity degradation

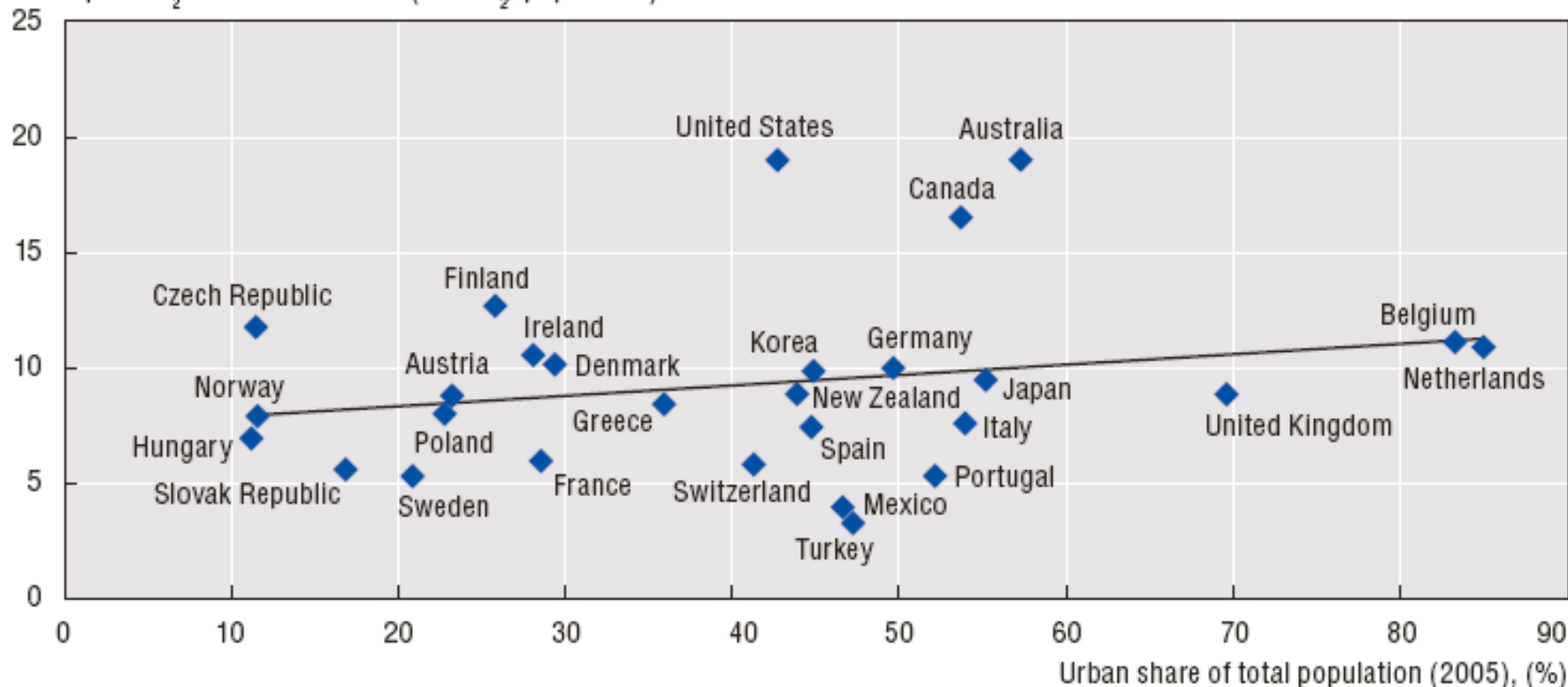
# Cities and climate change

- Cities use more energy service provisions than rural
- Substitute fossil fuels to biomass-fuel switch (typically in DCs like India and China)
- Increased energy demand due to rise in income (recall the rural-urban income gap)
- How the city will grow matters for transport infrastructure development and energy and environmental policies

**Figure 1.21. Urbanisation and carbon emissions**

Urban population shares and CO<sub>2</sub> emissions

Per capita CO<sub>2</sub> emissions in 2006 (t of CO<sub>2</sub>/ population)



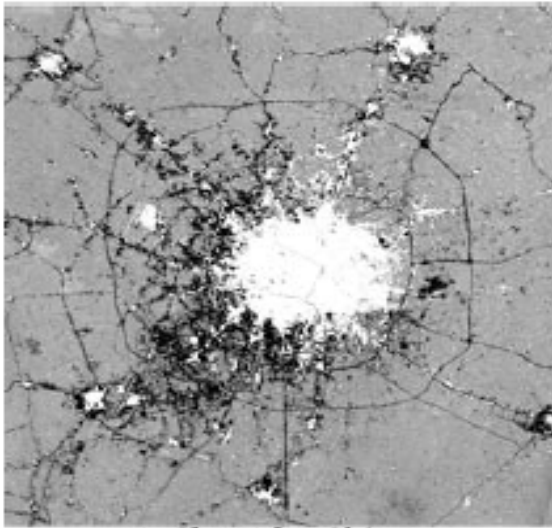
Notes: Urban shares were calculated on the basis of predominantly urban areas. Finland, Norway and Sweden were taken out of the sample as they were considered outliers. Iceland and Luxemburg were not included in the sample as the OECD Regional Database identifies no predominantly urban regions in those countries.

Source: Own calculations based on data from the OECD Regional Database and IEA (2008), *CO<sub>2</sub> Emissions from Fuel Combustion*, © OECD/IEA, Paris, pp. 37 and 49.

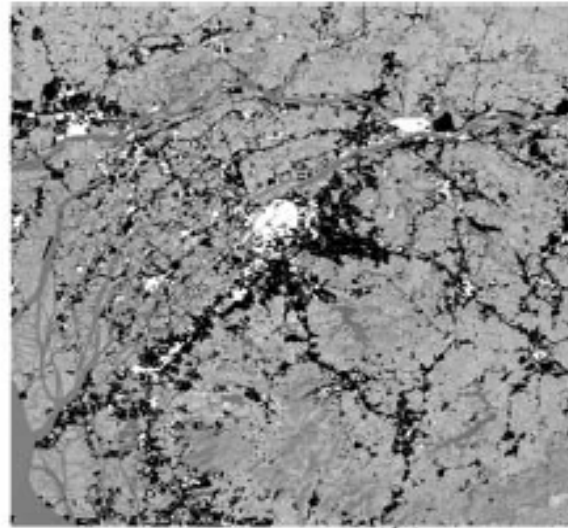
# Why study the city of Wuhan

- A large economic powerhouse in central China with more than 9 m inhabitants
- A conurbation of three adjacent *towns seperated by rivers Yangtse and Han*
  - transports plan and development complicated by the rivers
  - Historical process of distribution of local residents and employment
- Dramatic growth of urbanised area since 1990s
- Wuhan local government is keen to develop low carbon city in the 12<sup>th</sup> FYP

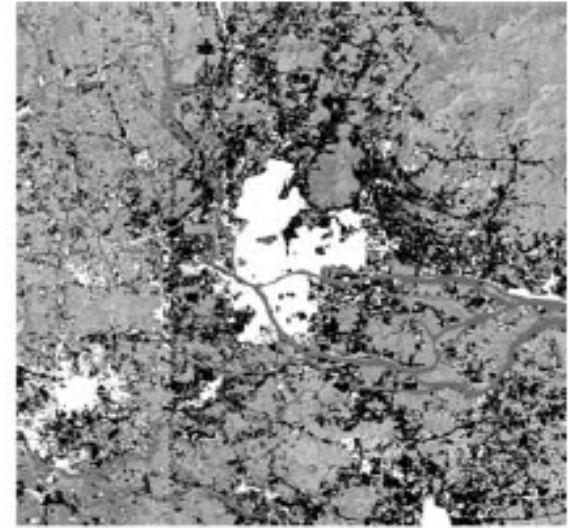
# Historical spatial evolution 1990-2000



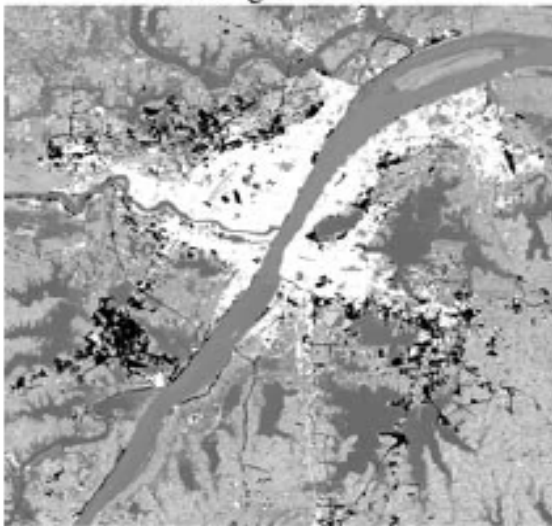
m. Chengdu, China



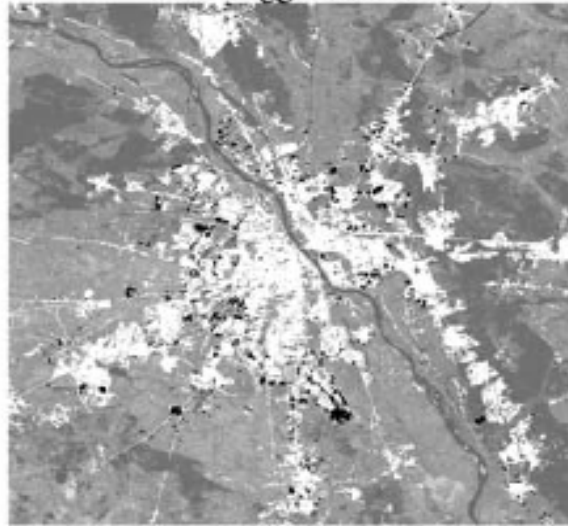
n. Dongguan, China



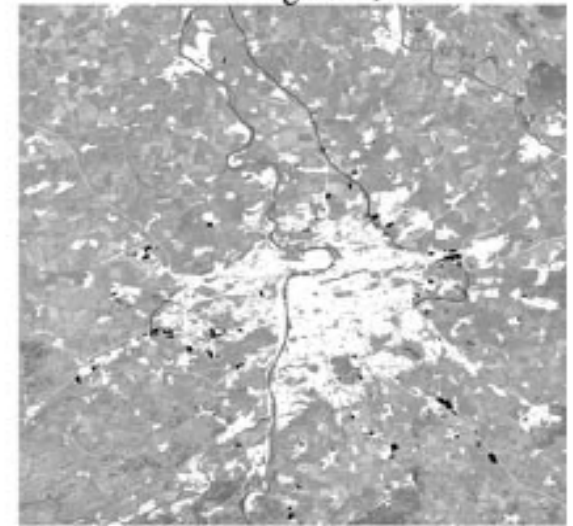
o. Guangzhou, China



p. Wuhan, China



q. Warsaw, Poland



r. Prague, Czech Republic

# How we see the future matters

- Long term vision of the evolution of supply of and demand for transport services
- How the city is going to expand?
- Where the new urbanised areas will be located? residents, firms, services and other facilities etc.
- What will be the modal shift of urban inhabitants for home-work commuting and leisure purposes?
- What implications for land use policy and transport infrastructures? And of course the GHG emissions and climate vulnerability (floods, UHI)

# Research proposal

- Robust analyses are necessary to advise decision makers
- Model is a powerful tool for scenario analysis to draw insightful conclusions
- Application of NEDUM model in Wuhan to inform local authority in terms of climate change mitigation and transport planning
- Developing methodology for quantifying urban transport related GHG emissions and financial support in collaboration with domestic and international stakeholders

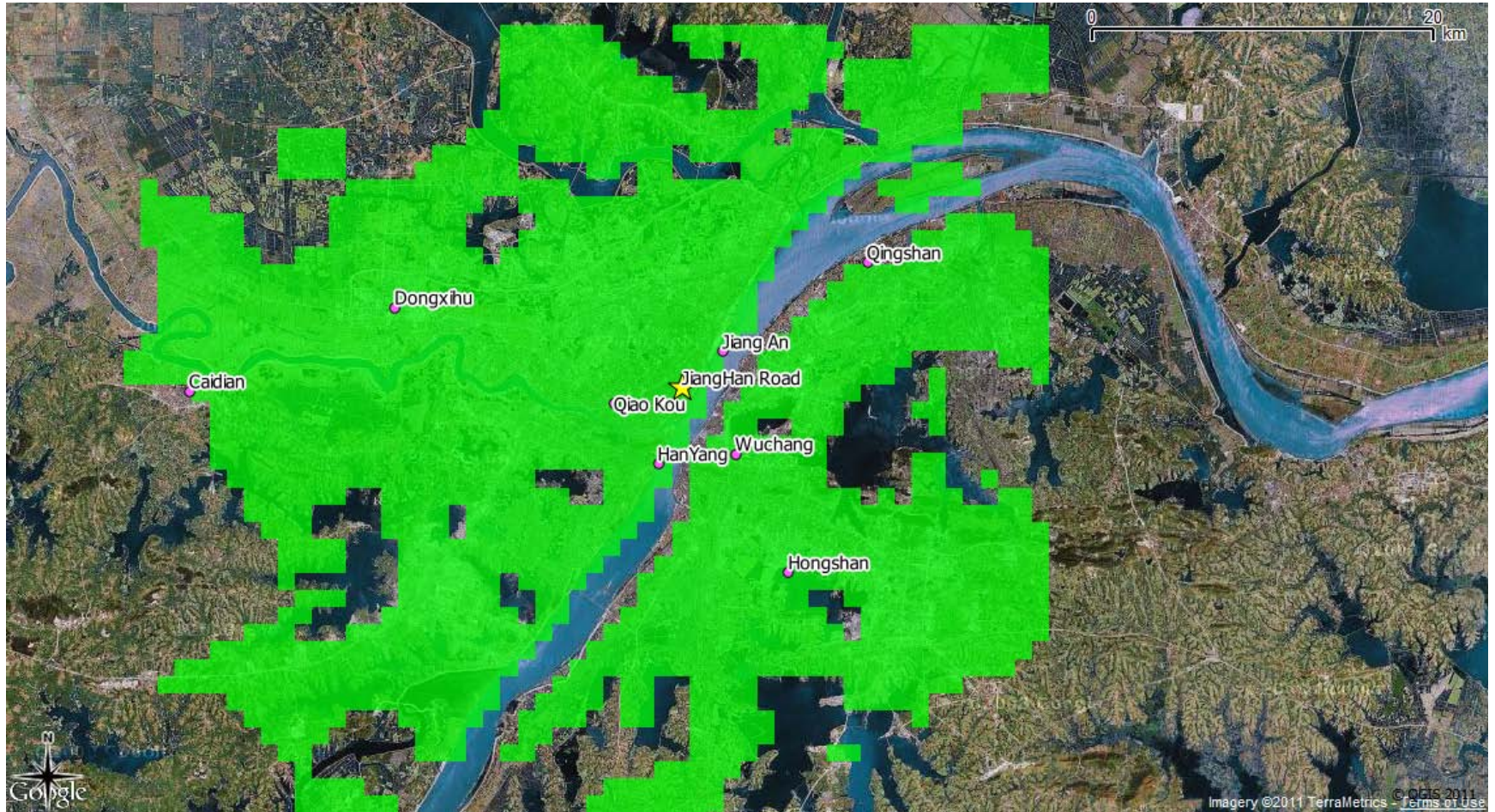


# Wuhan

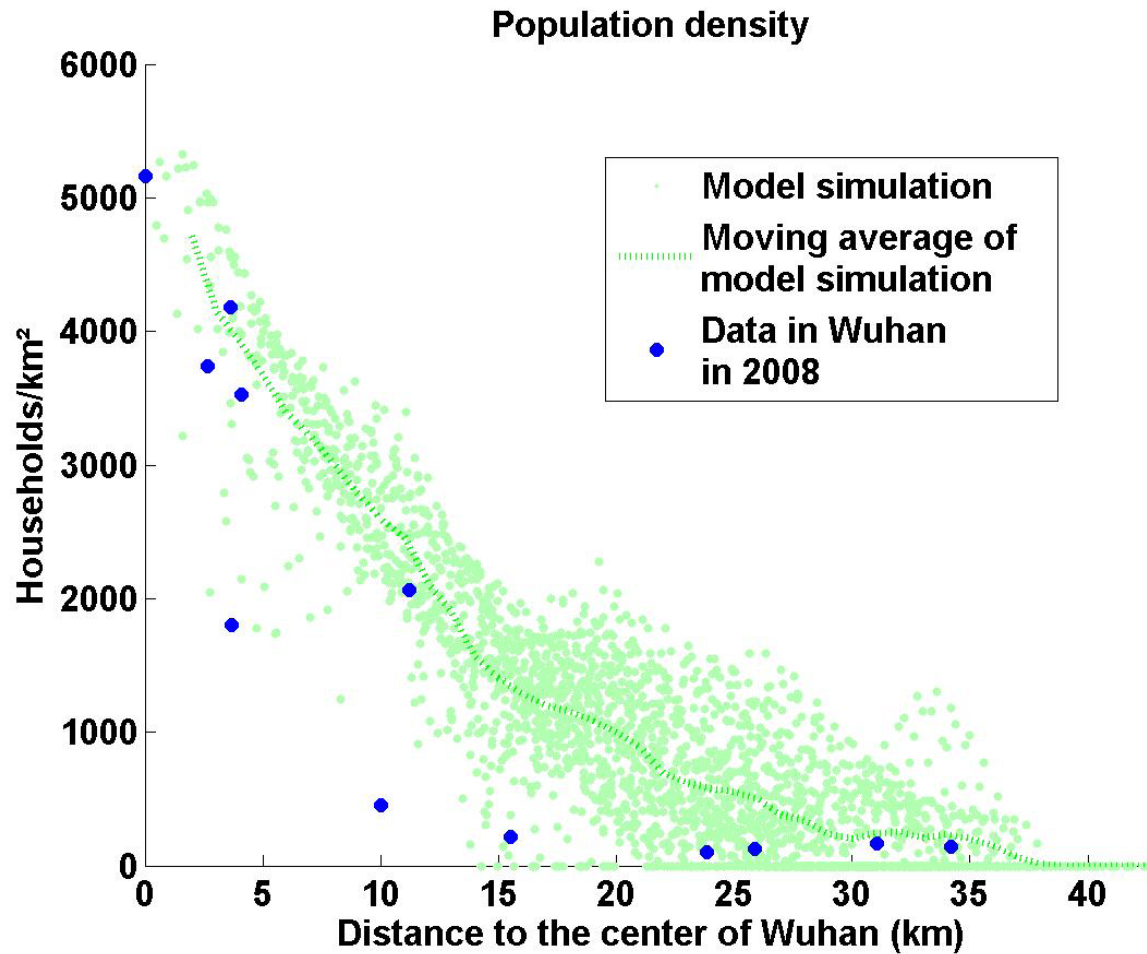




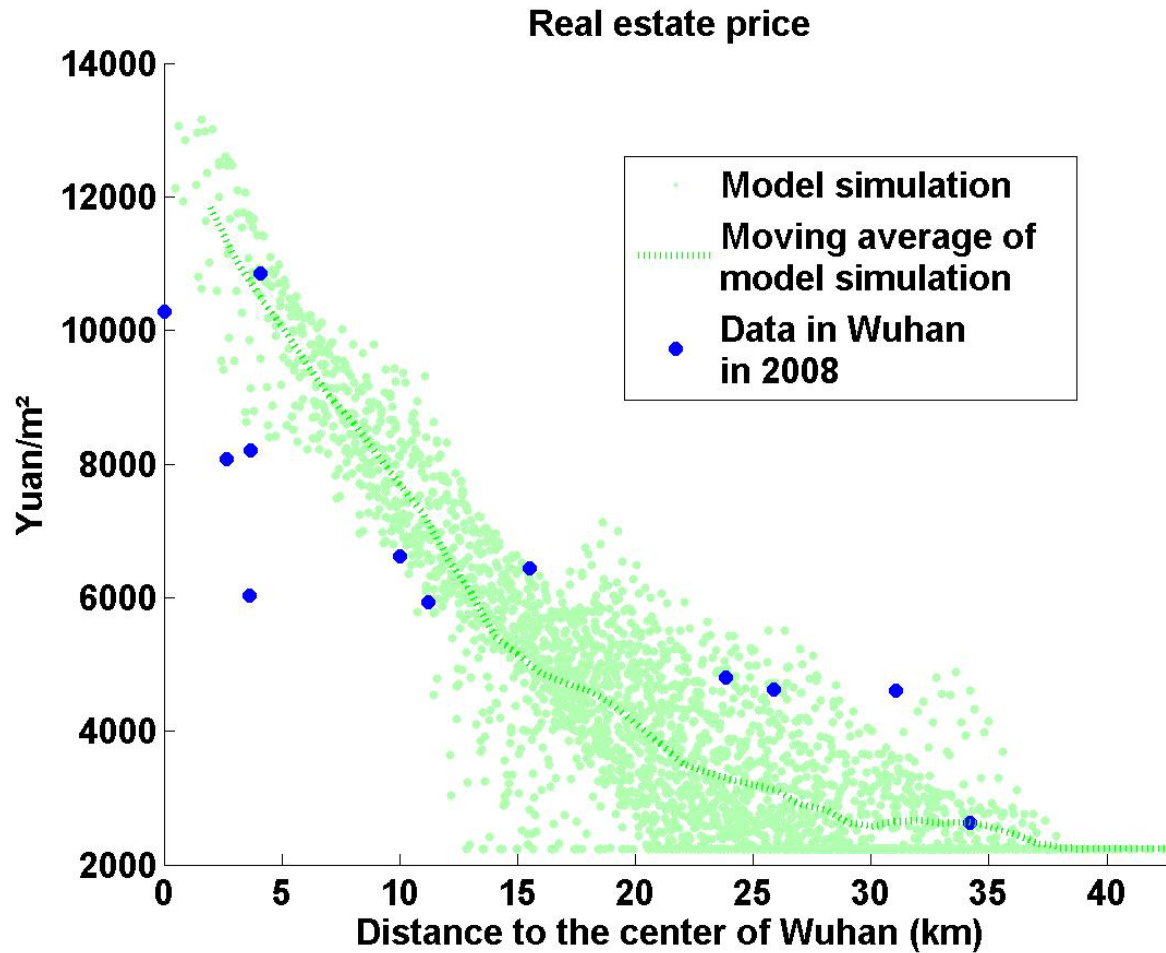
# Wuhan



# Population density



# Real estate prices





# Urban and transport development guidelines for future development

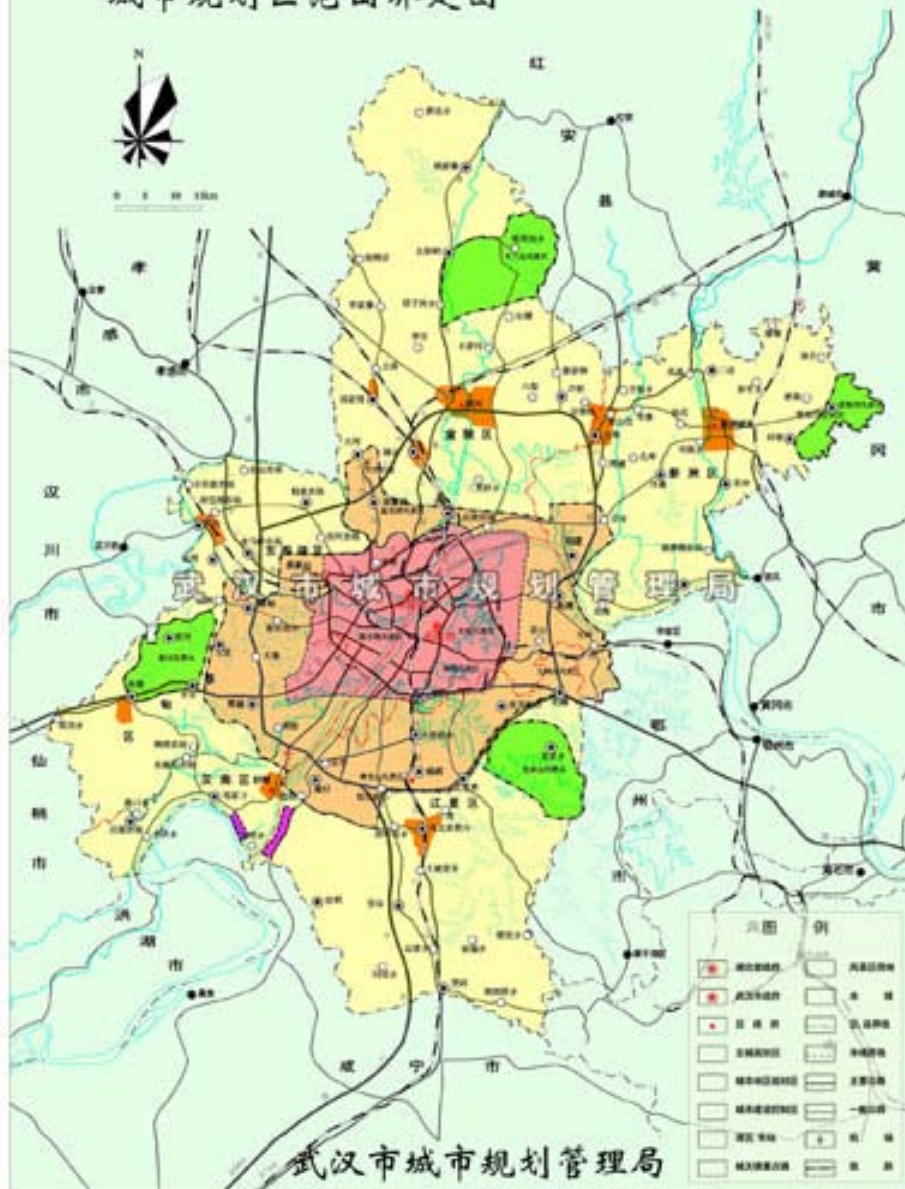
- 武汉市城市总体发展战略规划 Comprehensive strategy for urban development
- 武汉市城市总体规划（1996-2020年） Master Plan : 武汉市行政辖区，总面积为**8494**平方公里
- 武汉市城市轨道交通近期建设规划(2010-2017年) Rail transport planning
- 《武汉市国民经济和社会发展的第十二个五年总体规划纲要》 12<sup>th</sup> FYP of municipality of Wuhan

# Target in the Master plan

- 常住人口Pop: 11.80 m by 2020
  - 城镇人口 Urban area : 9.912 M
  - 主城区人口 Inner-city districts: 5.02M
- 城镇化Urbanization : ~84% in 2020
  - **2010年**, 市域城镇建设用地面积控制在**795**平方公里以内
  - **2020年**, 市域城镇建设用地面积:**1030**平方公里以内, 人均城镇建设用地面积为**104**平方米

# 武汉市城市总体规划 1996-2020

## 城市规划区范围界定图



### 武汉地铁2017年

#### 规划完成地铁线路示意图

根据发改委批准的武汉轨道交通近期建设

规划 (2010-2017) 制作

制作日期: 2011年5月25日

制作者: howchou@ditiezu.com

