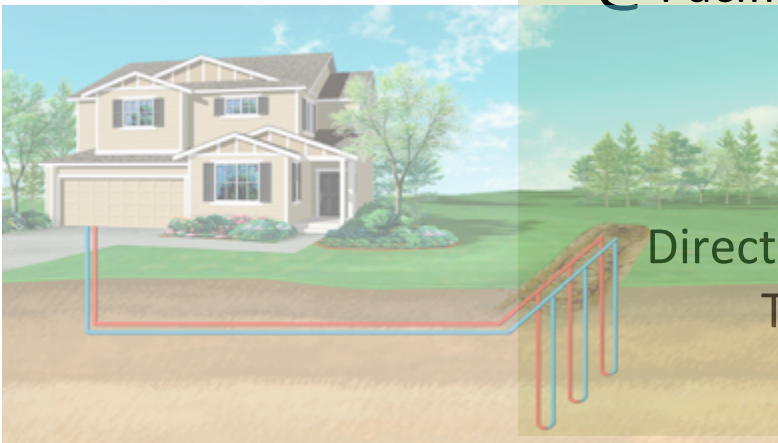




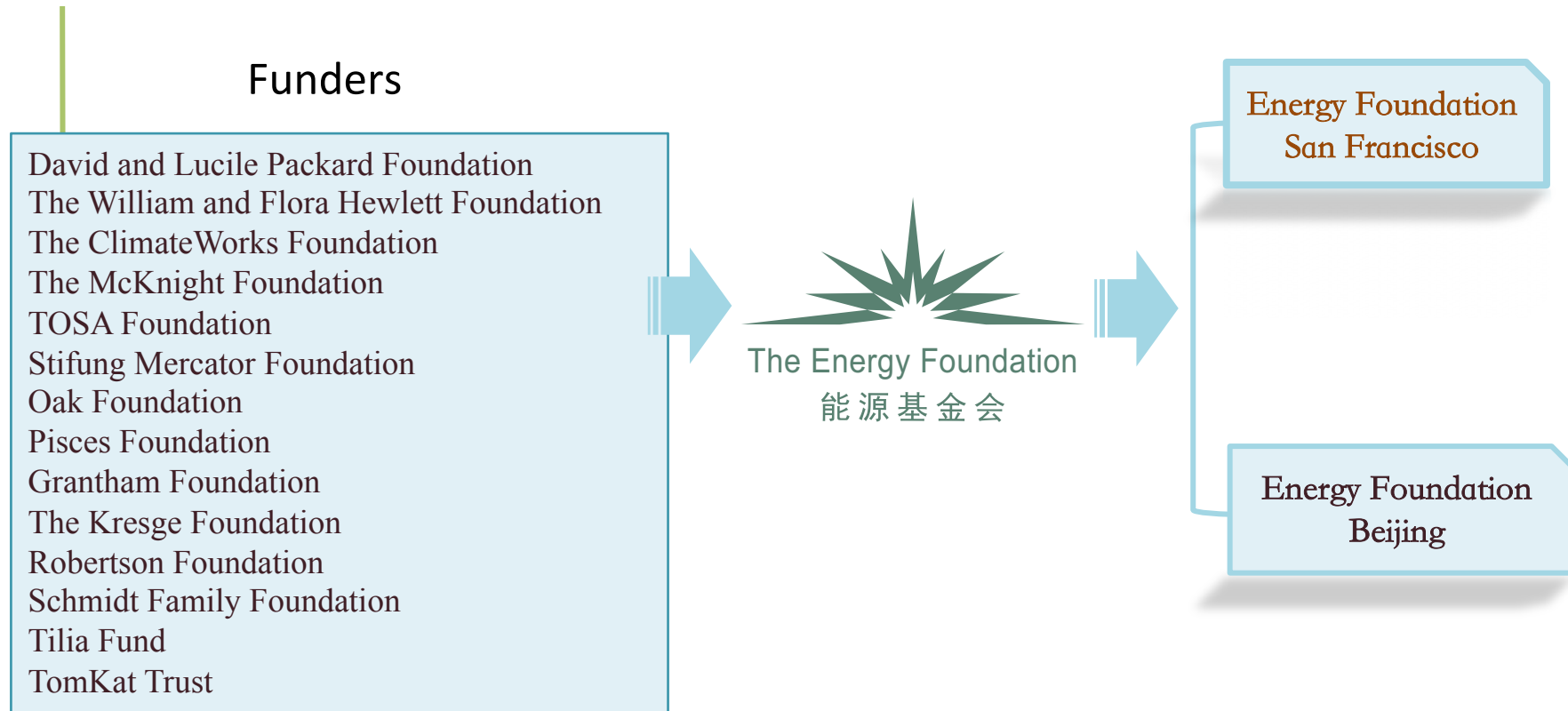
## Scale up Sustainable Buildings in China

@Pacific Cities Sustainability Initiative  
Annual Forum

Dr. Kevin Mo  
Director, China Buildings Program  
The Energy Foundation  
02/19/2013

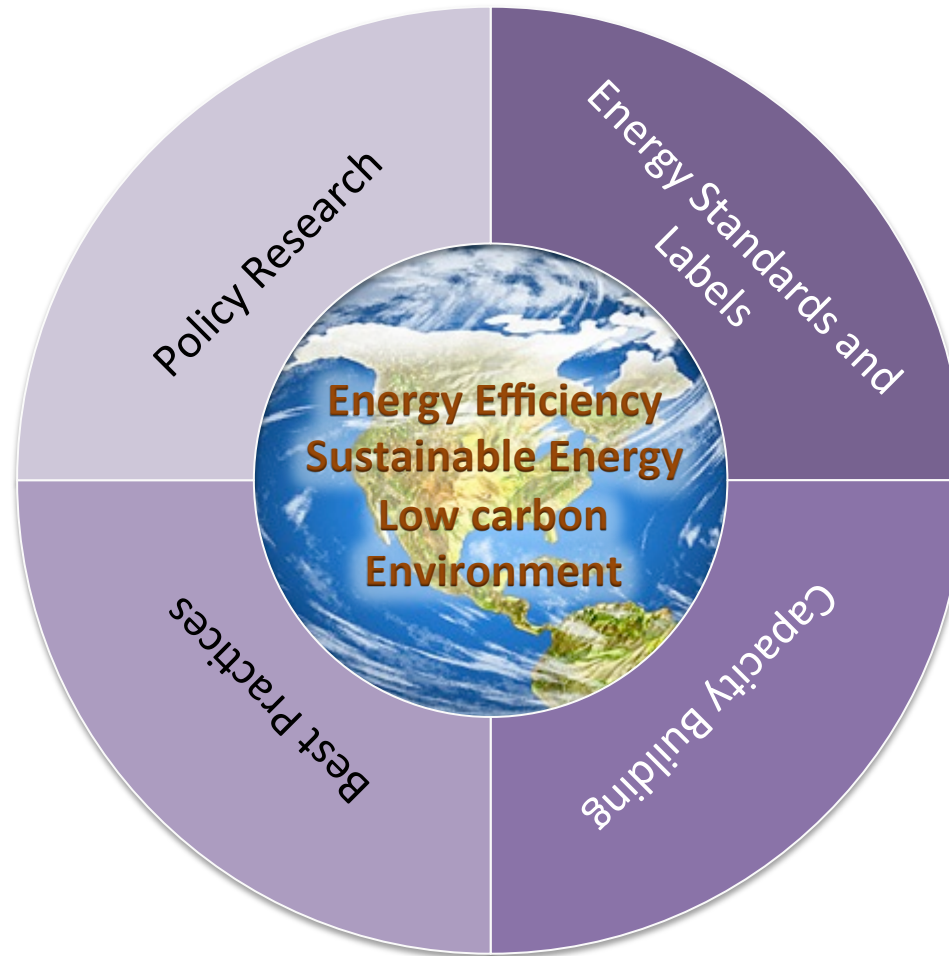


# Energy Foundation China



- Established in 1991, funded by a collection of private charity foundations
- Focuses on energy, environment and climate change
- The Beijing office was established in 1999
- Officially registered with Ministry of Civic Affairs, China

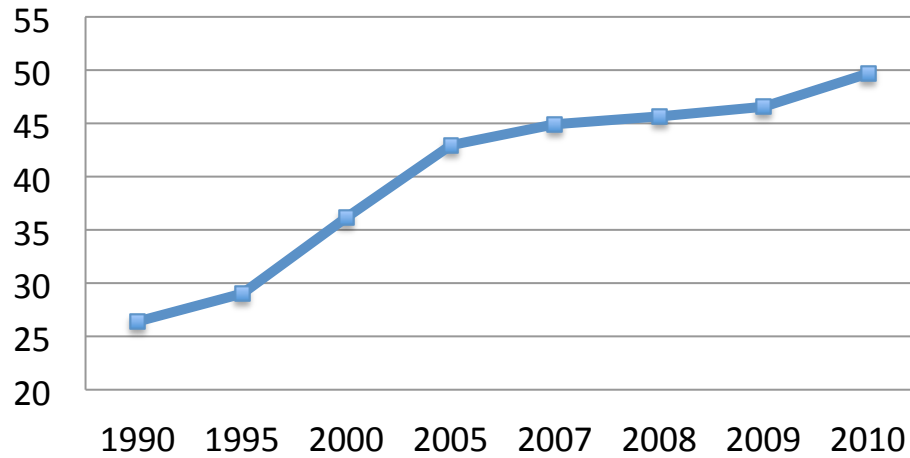
# Four areas



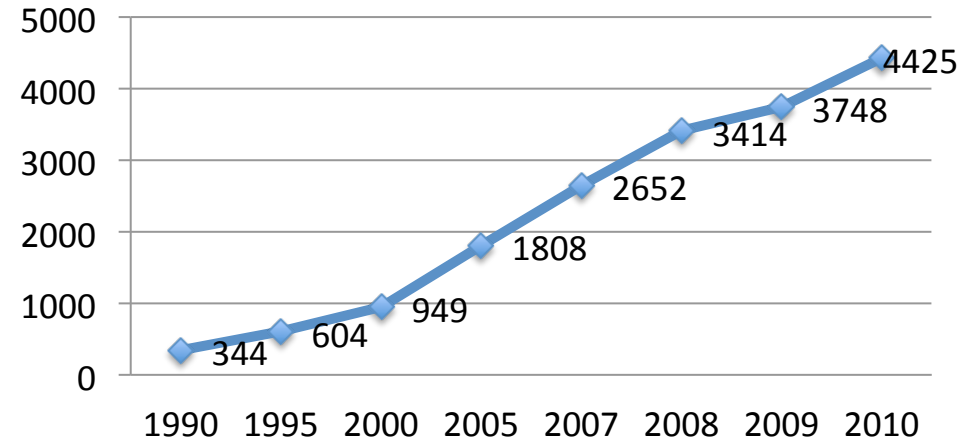


# Why Is China's Building Energy Use Increasing?

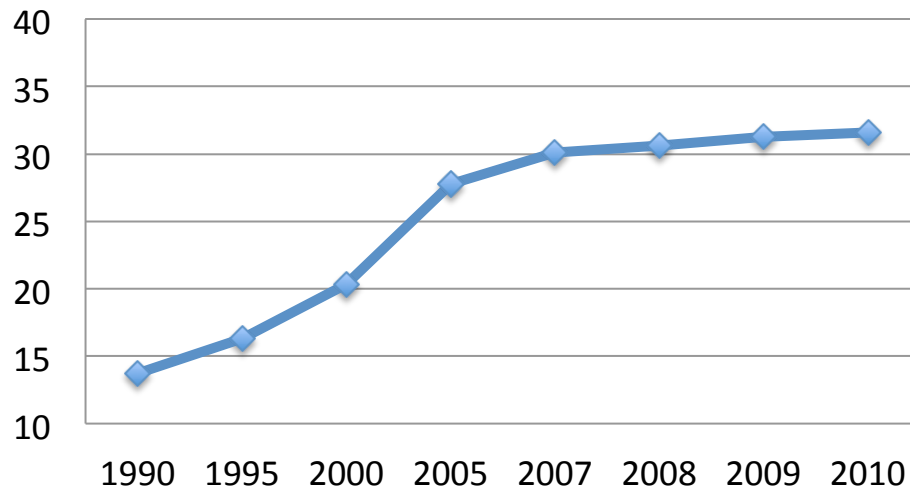
**Urbanization Ratio (%)**



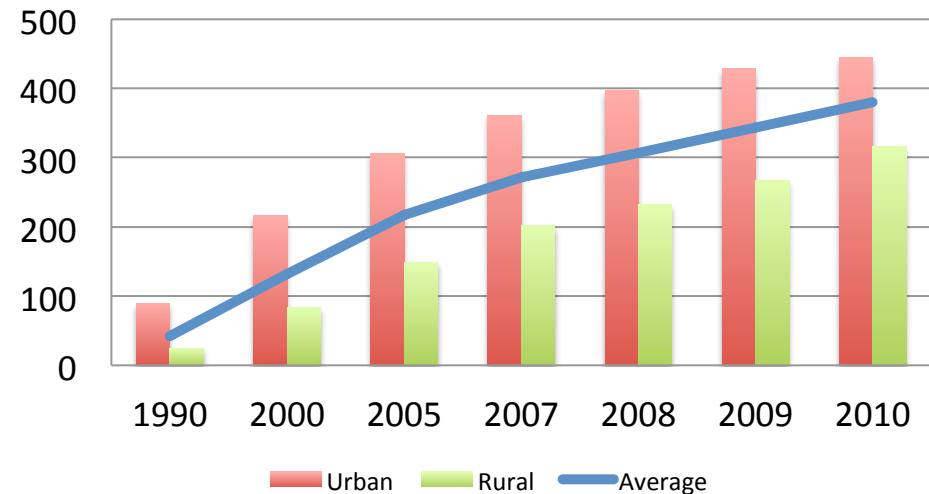
**GDP per capita (\$)**



**Urban building floor area per capita(m2)**

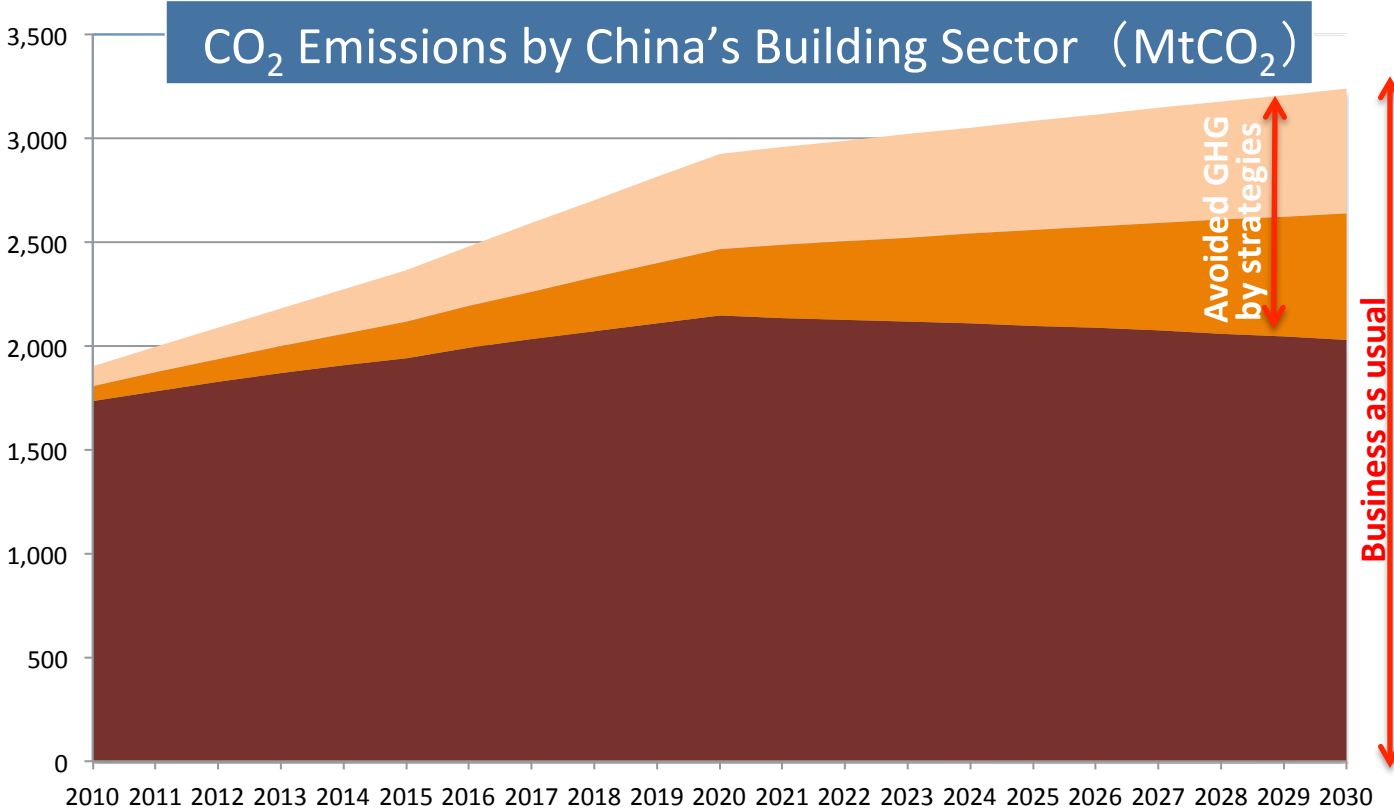


**Residential building energy consumption per capita (kWh)**



Source: 2011 Energy Data, by Qingyi WANG

# Our Strategies to Cut Carbon Emissions



1. Building Codes
2. Existing Building Retrofits
3. Green Buildings
4. Renewable Energy
5. Appliance

Carbon emissions avoided by the energy efficiency strategy (building codes for new buildings + existing building retrofits)

Carbon emissions avoided by additional strategies (renewable energy + green building)

Projected carbon emissions by the building sector resulted from the two strategies

# Incremental Cost of GB (RMB/square meter)

- 500+ certified buildings by 2012
- Surveyed 50+ certified green buildings
- Used a consistent cost analysis method
- Verified local market data

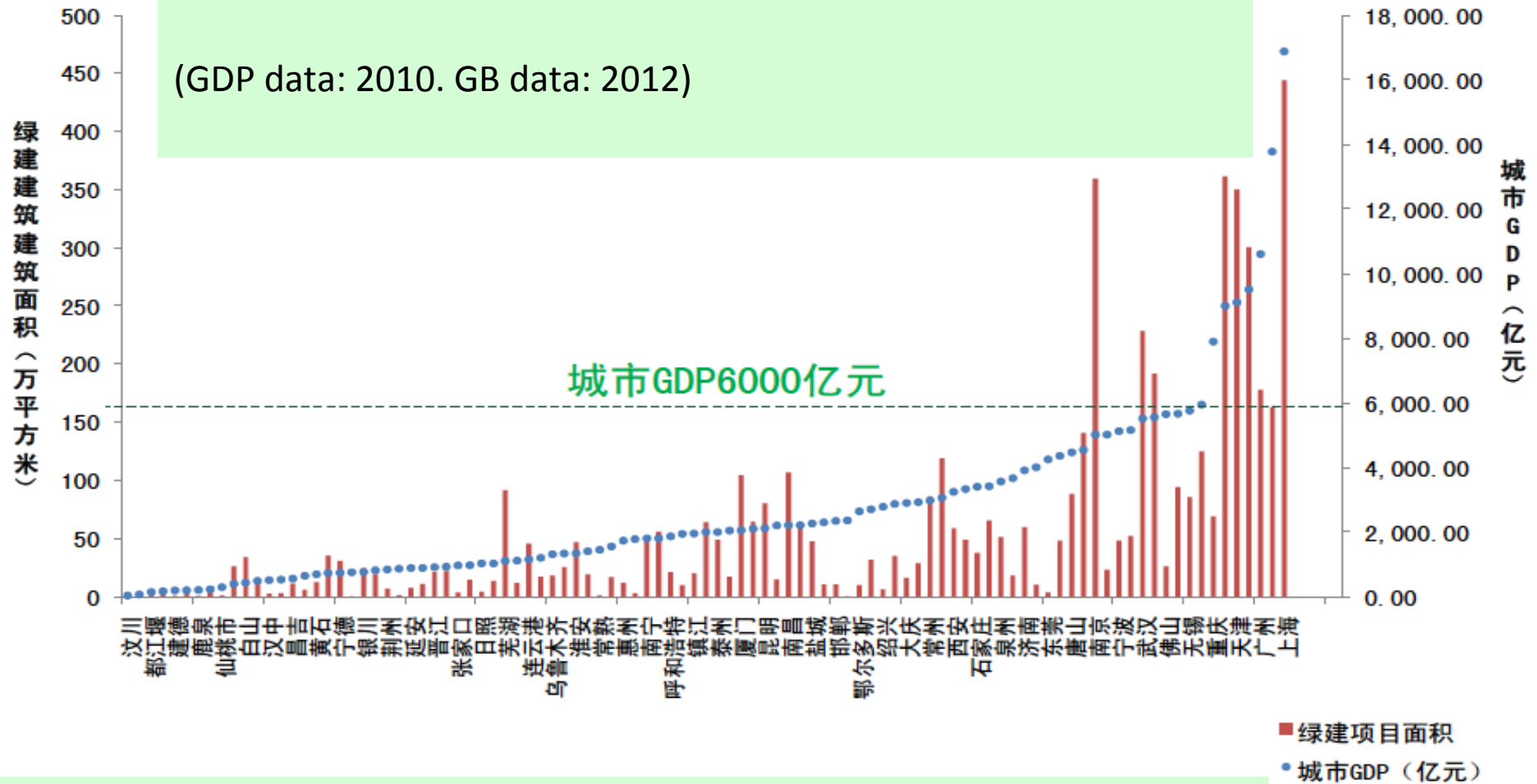
	Star Level	Surveyed Cost	Reported Cost
Residential	One star	15.98	54.23
	Two star	35.18	60.85
	Three star	67.98	120.82
Commercial	One Star	28.82	64.9
	Two star	136.42	165.71
	Three star	163.23	159.97

Source: Center of Science and Technology of Construction, MoHURD. Funded by EF

# GB Market vs. Local Economic Development

When a city's GDP reaches 600 billion RMB (US\$95 billion), GB is likely to take off.

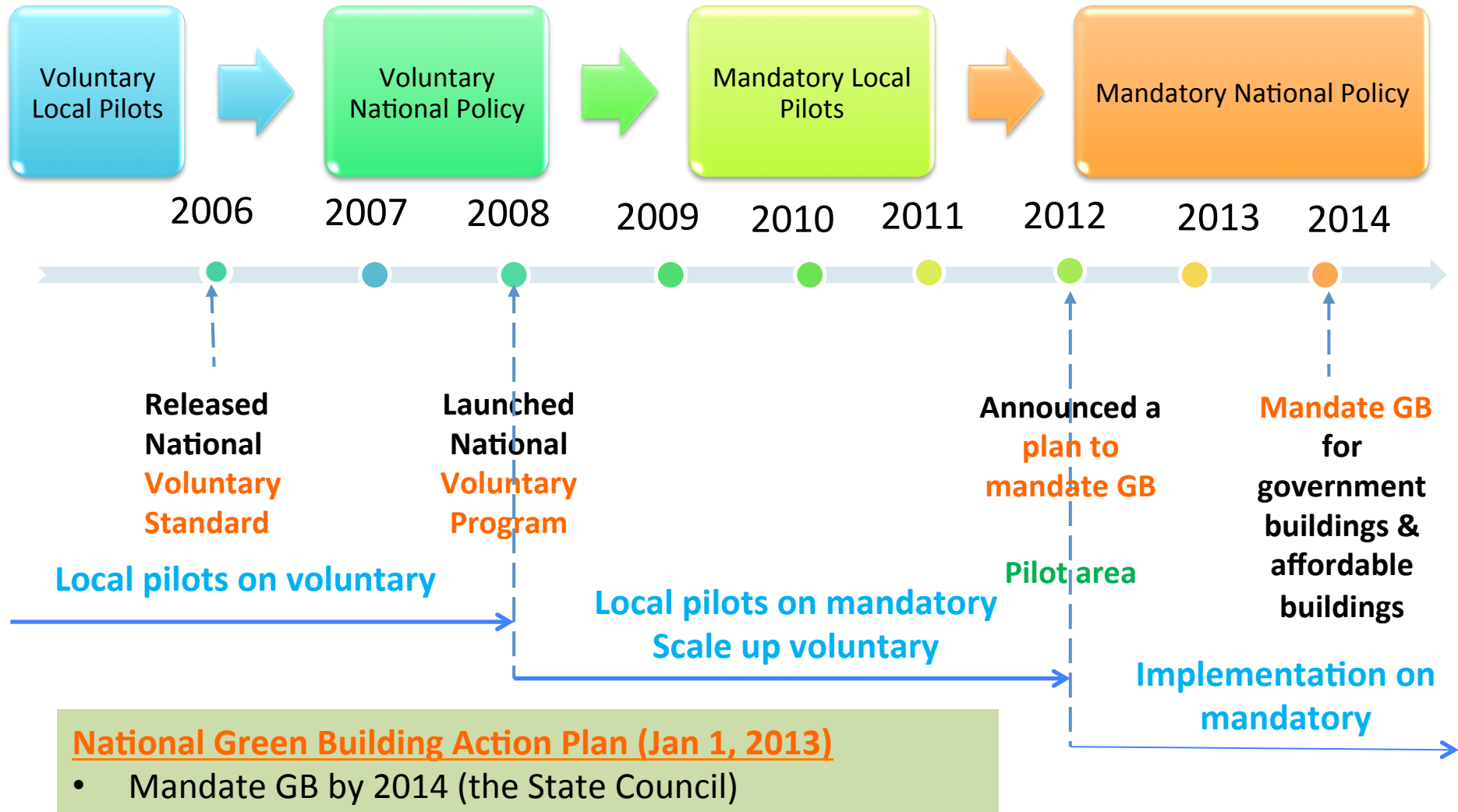
(GDP data: 2010. GB data: 2012)



Source: Center of Science and Technology of Construction, MoHURD. Funded by EF

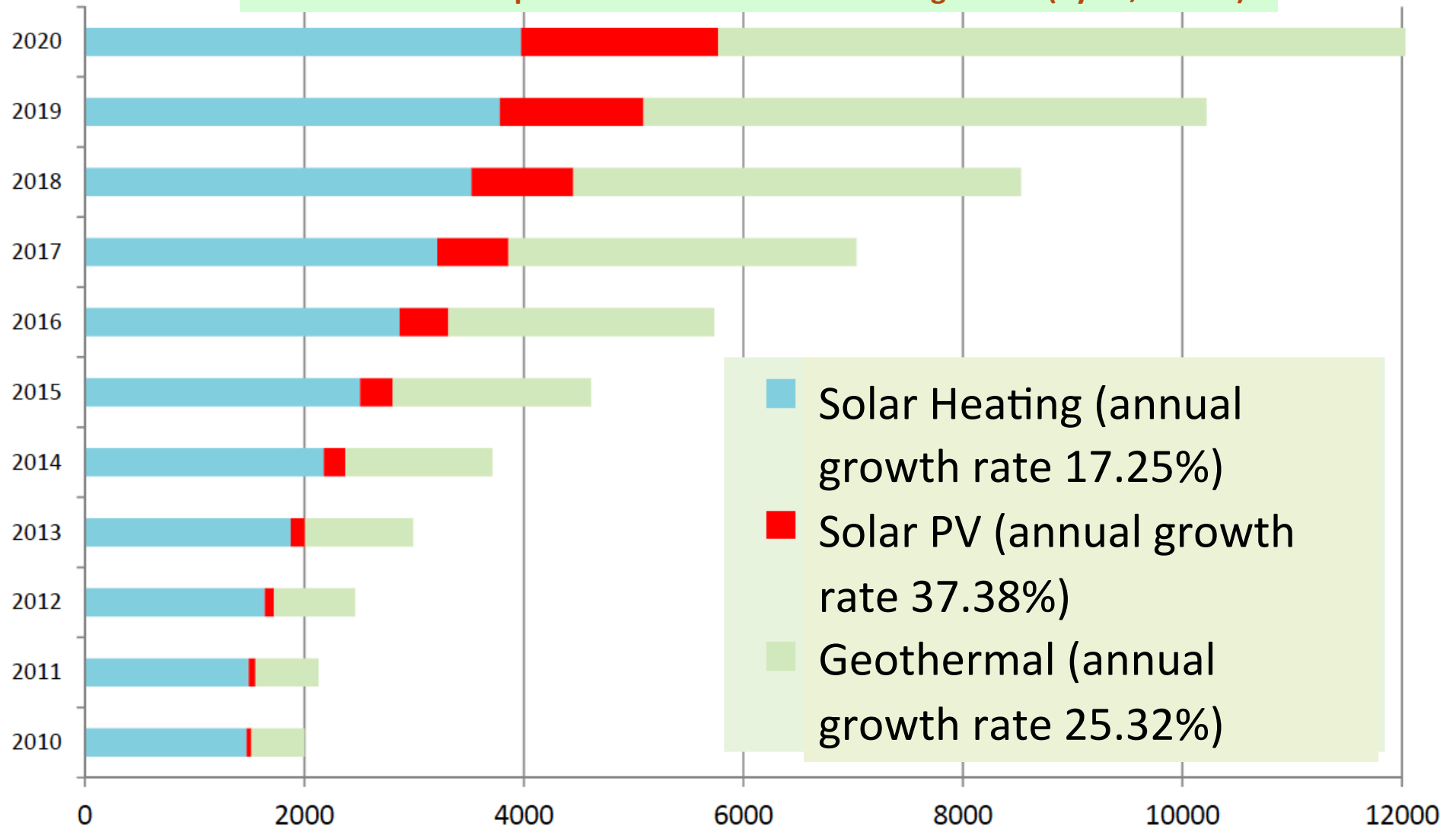


# Scale Up Green Buildings



# Roadmap for Scaling up RE in buildings

Renewables to Replace Fossil Fuels in the Building Sector (by 10,000 tce)



Source: Center of Science and Technology of Construction, MoHURD. Funded by EF

## Conclusion

- China's building energy use will keep increasing in the next two decades
- We developed strategies to cut carbon emissions in China's building sector
  - Green buildings and renewable energy application in buildings are two of the five strategies
- We supported policy research to scale up green buildings and renewable energy application in buildings

# Thank You!



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Credit: The Jiangbeizui District in Chongqing and the Chongqing Grand Theater.  
(A total of four million square meters of building space is conditioned by renewable energy via river-source heat pump technology)

