Progress and Prospects :

in Accelerating China's Cities Transitioning toward Low-carbon and Green Growth

Innovative Green Development Program (iGDP)

Contents

- China's low-carbon cities- Global and Domestic visions and targets
- Existing polices and actions at national and local level
- Overall performance evaluation on China's low carbon cities
- Conclusions and Suggestions

In China, accelerating cities' low carbon development is a key way for the achievement of global and domestic visions and targets ?

United Nations Framework Convention on Climate Change

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

G20 2016 CHINA

G20 GERMANY 2017 HAMBURG

Characteristics of China's Low Carbon Cities

- Reshaping economic structure
- Optimizing the energy structure
- Adjusting the industrial structure and Driving energy efficiency
- City planning & Low-carbon and public transport
- Improving buildings more energy efficient
- Carbon Sink
- Resource-efficient & Low carbon lifestyle

Future Milestones for China's Transition, Energy, Climate

- Finishing the building of a moderately prosperous society in all respects
- Total primary energy consumption: below 5 000 Mtce
- Share of non-fossil fuels in the energy mix: 15%
- Reduction in CO_2 intensity per unit GDP: 18% from 2015 levels; 40-45% from 2005 levels
- Reduction in energy intensity per unit GDP: 15% from 2015 levels

Socialist modernization is basically realized (including: fundamental improvement in the environment; the goal of building a Beautiful China is basically attained)

2020 2030 2035 2050 Vision

- Carbon dioxide emissions around 2030 and making best efforts to peak early
- Total primary energy consumption: below 6 000 Mtce
- Share of non-fossil fuels in the energy mix: 20%
- Reduction in CO_2 intensity per unit GDP: 60-65% from 2005 levels

- Great modern socialist country that is prosperous, strong, democratic, culturally advanced, harmonious, and beautiful (New heights are reached in ecological advancement)
- Primary energy consumption level to be stable, with more than half coming from non-fossil energy sources.

What kinds of key policies and actions have been implemented during the 12th FYP Plan?

Cities' Initiatives and Priorities at the Central Level During the 12th FYP Plan

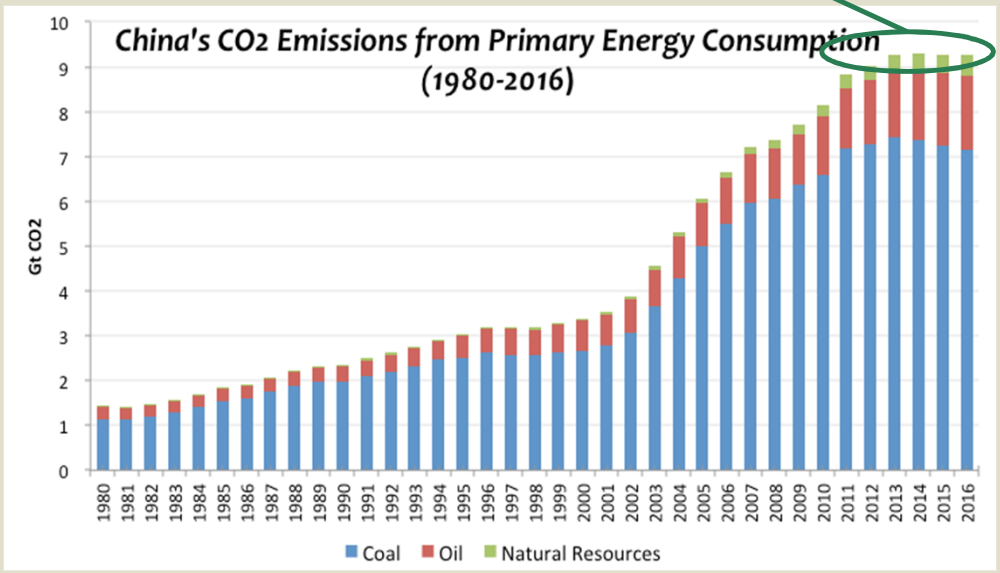
- Enforcement of compulsory carbon intensity reduction target at local level
- Low-carbon related city pilots (NDRC, and other central agencies
  - Low-carbon urban planning
  - Governmental support and incentive policy
  - Innovation R&D
  - GHG emission database and management system
- Control on air pollution
  - Local atmospheric pollution prevention action plan
  - A network of 500 PM2.5 monitoring stations across 70 cities

	Central Government Agencies	Beijing	Jilinng	Guiyang	Wuhan	Yan'an	Jinchang	Guangzhou	Shenzhen	Zhenjiang
Low Carbon Pilots	NDRC	■	■	■	■	■	■	■	■	■
Sustainable Urbanization Pilots Program	NDRC	■	■		■		■	■	■	
Smart-City Pilots Program	MOHURD	■	■	■	■	■	■	■	■	■
Integrated Energy Conservation and Emission Reduction Cities Pilots Program	NDRC MOF	■	■	■					■	
Alternative Energy City Pilots Program	NEA	■		■			■		■	
Low Carbon Industrial Zone Pilot Program	MIIT	■	■	■	■					
Renewables in Buildings Pilots Program	MOHURD	■		■	■				■	
Alternative Fuel Vehicles Pilots Program	MIIT	■	■	■	■			■	■	
Low Carbon Integrated Transportation Planning Pilots Program	MOT	■		■	■			■	■	■
Public Transit City Pilots Program	MOT	■			■			■	■	

■ Yes ☐ No

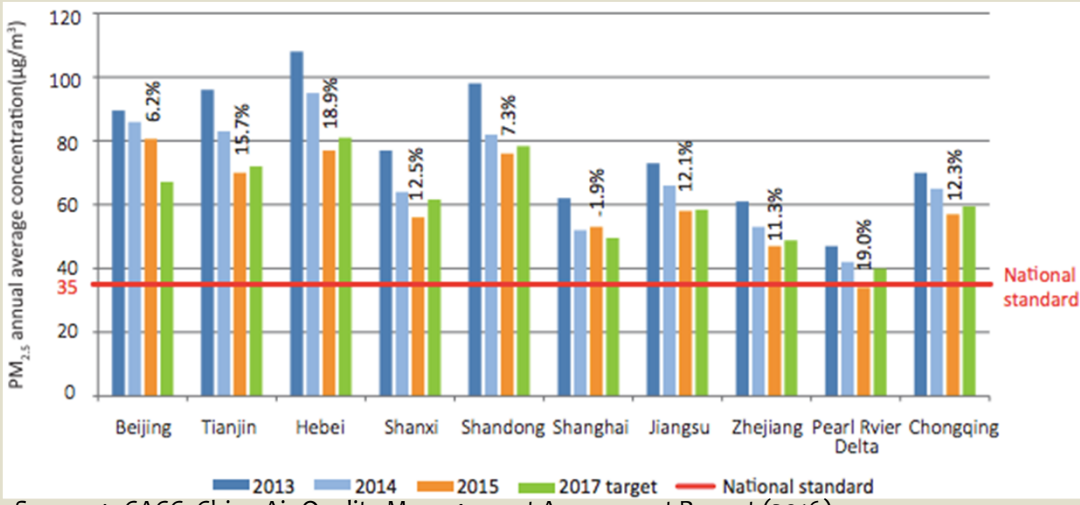
Source： iGDP

Four years ‘plateau’



Source： China energy statistical yearbook （2017); iGDP

PM2.5 Annual Average Concentrations across ten major provinces/municipalities/autonomous regions(2013-2014)



Source： CACC. China Air Quality Management Assessment Report (2016)
en.cleanairchina.org/file/loadFile/164.html

Case study: Wuhan City

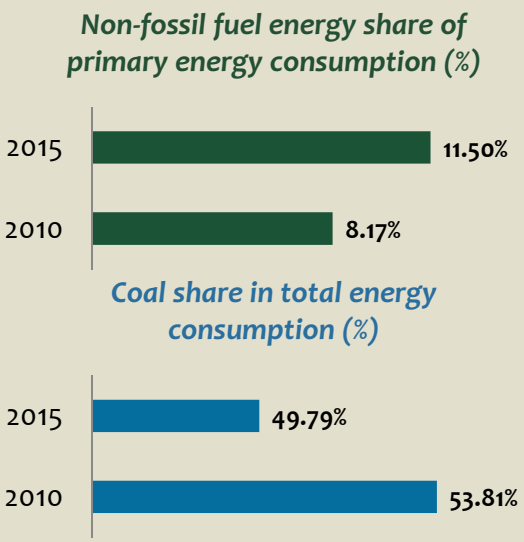
Case Study-Wuhan

Wuhan City, Hubei province, located in central China and along the middle reaches of the Yangtze River

Selected energy and economic indicators for Wuhan

Indicator	2010	2015
Population (million persons)	9.78	10.61
Urbanization rate (%)	70.5%	79.77%
GDP (100 million RMB)	5565.9	10905
GDP per capita (RMB)	58000	104132
Primary: Secondary: Tertiary share of the economy (total GDP)	3.1:45.5:51.4	3.3:45.7:51.0
Total energy consumption (tce)	3615	4858
CO_2 emissions per unit GDP (t/10000RMB) (2010 constant price)	2.09	1.55
Carbon dioxide emissions per capita (t)	11.9	14.2

Energy System



Key Tasks:

--Prioritize the development of non-fossil fuel energy sources

--Raise the proportion of natural gas utilization

--Place strict controls on coal consumption

--Encourage cogeneration

Regulatory Instruments:

- Average coal consumption of coal-fired generating units is less than 310 grams of standard coal / kWh
- Issue industry access
- Construct no high-pollution fuel zones
- Eliminate small boilers
- Prohibit the sale of inferior coal on the market

Market Incentives

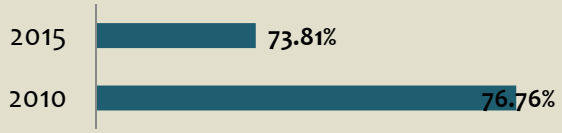
- Tax breaks
- Carbon trading scheme
- Research and development

Voluntary measures

- Demonstration projects

Industry

Heavy industry output share of total output for industries above a designated size (%)



Comprehensive energy consumption of total industrial output value/ 10,000 RMB (tons…

Hi-tech manufacturing value-added share of total industrial value-added

Key Tasks :

--Encourage the use of more low-carbon energy and the use of clean energy in coal-fired facilities

--Improve technologies used

--Improve the recycling rate of residual heat pressure

--Comprehensive utilization level of resources

--Transformation and upgrading of traditional industries

--Optimization of product structure

Regulatory instruments:

- Implement strict energy saving and emission reduction standards for energy-intensive enterprises
- Energy and carbon assessment system for fixed assets investment projects
- 10,000 enterprises assessment and evaluation of energy-saving targets

Market-based instruments:

- Implement differential pricing for cement and steel industries that fail to meet energy consumption limits requirements
- Special fund for industrial investment and technological transformation
- Carbon trading (covering companies whose annual comprehensive energy consumption is 60,000 tons of standard coal and above)
- Government procurement

Voluntary

- Enterprise energy efficiency benchmarking standards (international advanced level as benchmark)

Capacity building

- Fixed assets evaluation of energy conservation, contract energy management and carbon asset management trainings
- New energy-saving technologies, new product financing, and best practices trainings

Buildings

Proportion of newly-added green buildings in all new buildings that year (%)

Proportion of newly-added green buildings in all new buildings that year (%)

Key Tasks:

--Prioritize the development of non-fossil fuel energy sources

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Regulatory Instruments:

- Strict implementation of building energy efficiency standards: 65% of Hubei Province Low-energy residential building design standards DB / T559-2013 and Public building energy efficiency design standards GB50189-2015

Market-based Instruments

- Special energy-saving funds
- Government procurement
- Contract energy management

Information sharing

- Green Building Information Platform
- Energy efficiency evaluation and labeling
- Green building identification system
- Green building demonstration areas and top -level green building demonstrations
- Energy-saving monitoring platform for buildings
- Technical support, education and trainings

Some takeaways from the case study

- Preliminary comprehensive and systematic low-carbon development strategy and policy framework
- Challenges:
  - how to effectively implement these
  - How to monitor and evaluate of the implementation of these
  - How to establish legal support

A KEY QUESTION :

Are China's cities making progress on their green and low-carbon goals?

INTRODUCING THE NEW

China Low-Carbon and Green Index for Cities (LOGIC Index)

A NEW AND UNIQUE CITY INDEX DESIGNED FOR CHINA'S LOW-CARBON URBAN AND ECONOMIC TRANSITION

FOCUS ON KEY ECONOMIC & SOCIAL FACTORS

- Group and evaluate cities according to development
- Three economic groups
- Three city-size groups
- Four regional groups
- Status of low carbon pilots

REFLECTS RECENT POLICY EFFORTS

- Four policy indicators
- Assess efforts and new actions

TRACKS LOW-CARBON PERFORMANCE

- 19 quantitative indicators, across key urban sectors
- Tracking real low-carbon performance
- Reflect China's urban economies and industry

DEFINED USING GLOBAL BENCHMARKS

- Assess performance against China + Global best practice
- Guide the path forward

A collaborative project, in partnership with:

- Innovative Green Development Program (iGDP)
- China's Energy Group, Lawrence Berkeley National Lab(LBNL)
- Energy Foundation China(EFC)

City Selection and City Grouping

115 Cities, accounting for:

74% of National GDP

58% of National Energy Consumption

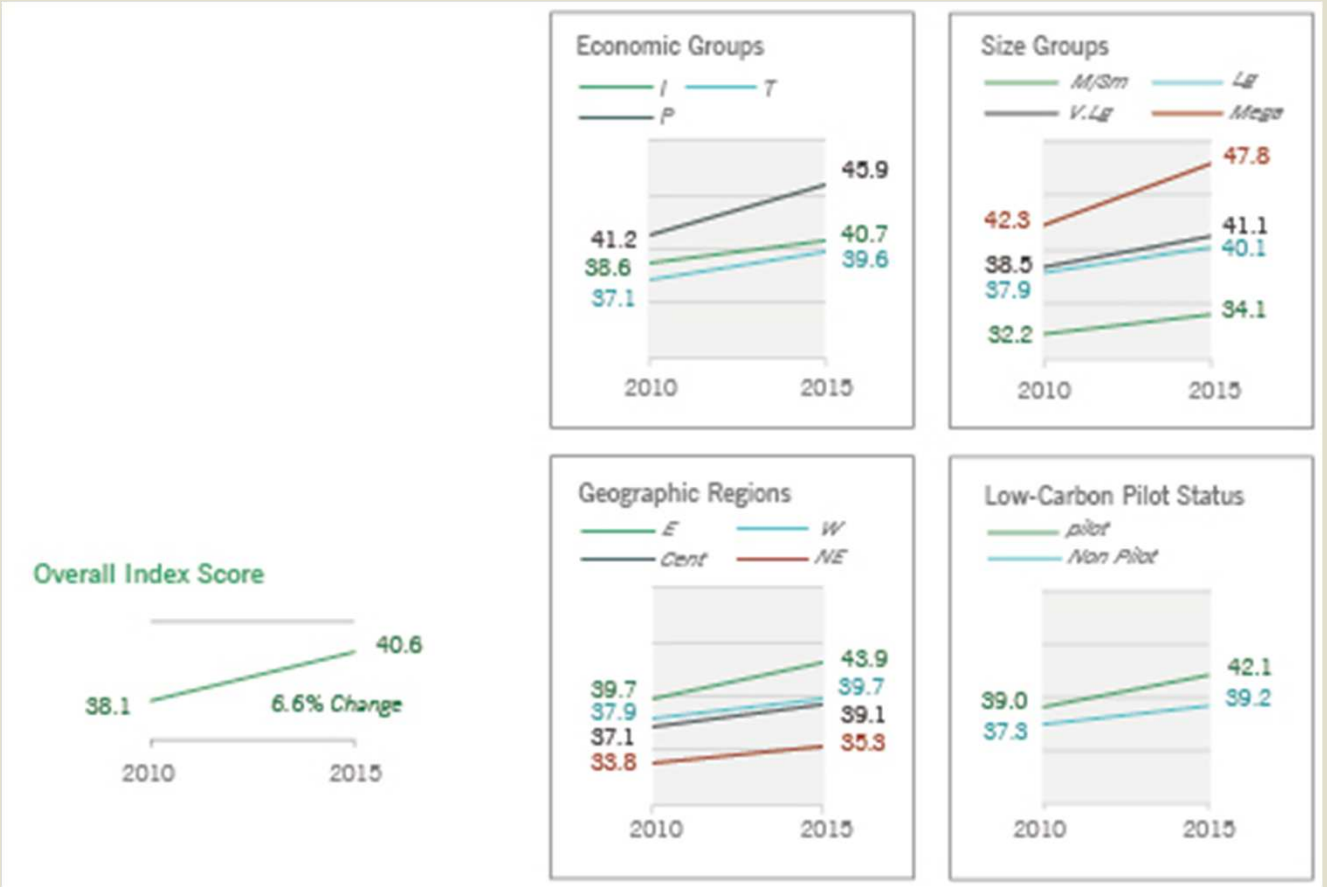
52% of National Population

Economic Groups	Size Groups	Region Groups	LC Pilot Status
47 **Industrial (I)** Industry dominated, lower GDP	7 **Mega** Cities with population >10M	50 **Eastern** Industry dominated, lower GDP	54 **LC Pilot Cities** Among China's pilot cities and provinces
58 **Transitional (T)** From heavy industry to services	20 **Very Large** Cities with population between 5-10M	26 **Central** Industry dominated, lower GDP	61 **Non-Pilots** Other cities not involved in pilots
10 **Post-Industrial (P)** Relatively wealthy, highly urbanized	84 **Large** Cities with population between 1-5M	12 **Northeastern** Industry dominated, lower GDP	
	4 **Med/Small** Cities with population <1M	27 **Western** Industry dominated, lower GDP	

*China's cities **are** getting greener :*

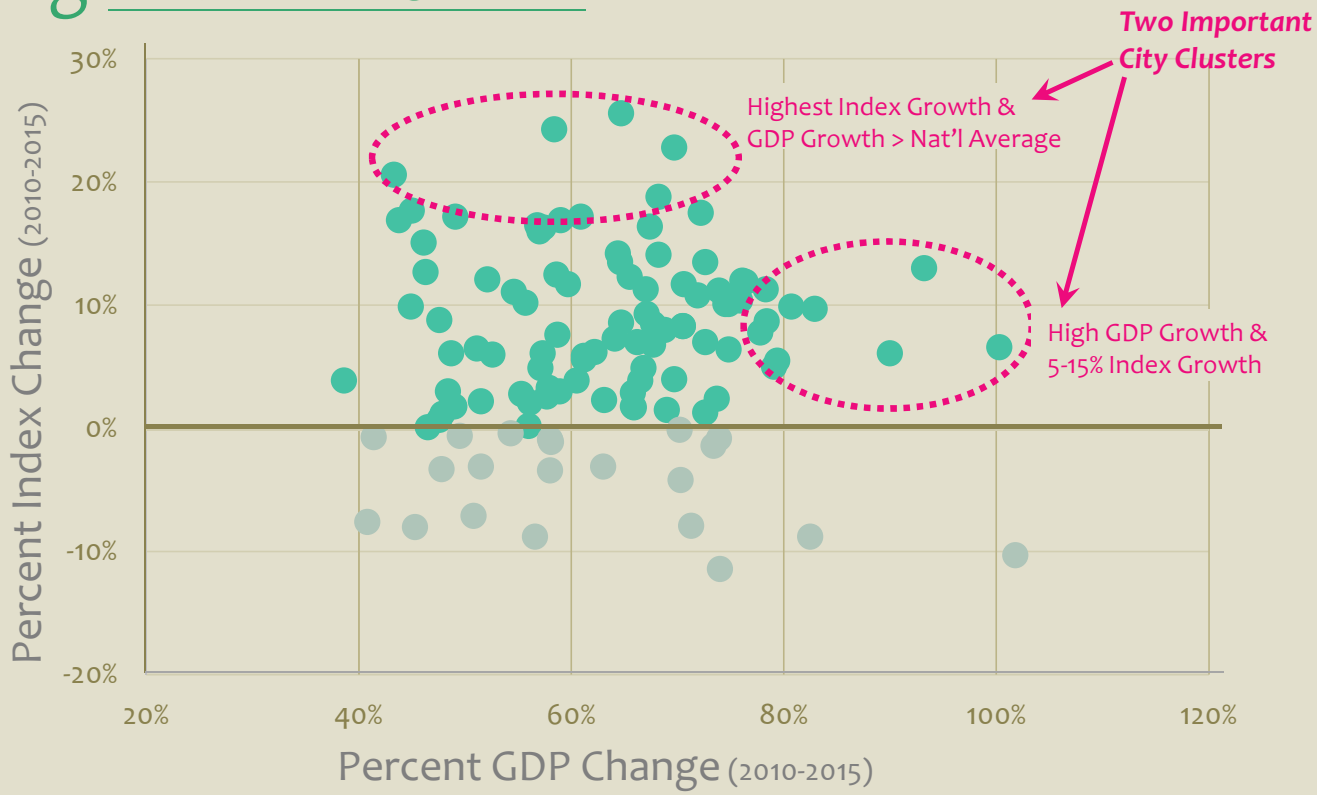
Overall green and low carbon index scores improved

China's Mega cities , Post-industrial cities, and Low-carbon pilot cities performed particularly well over this period



*Chinese Cities are seeing **Green Growth** :*

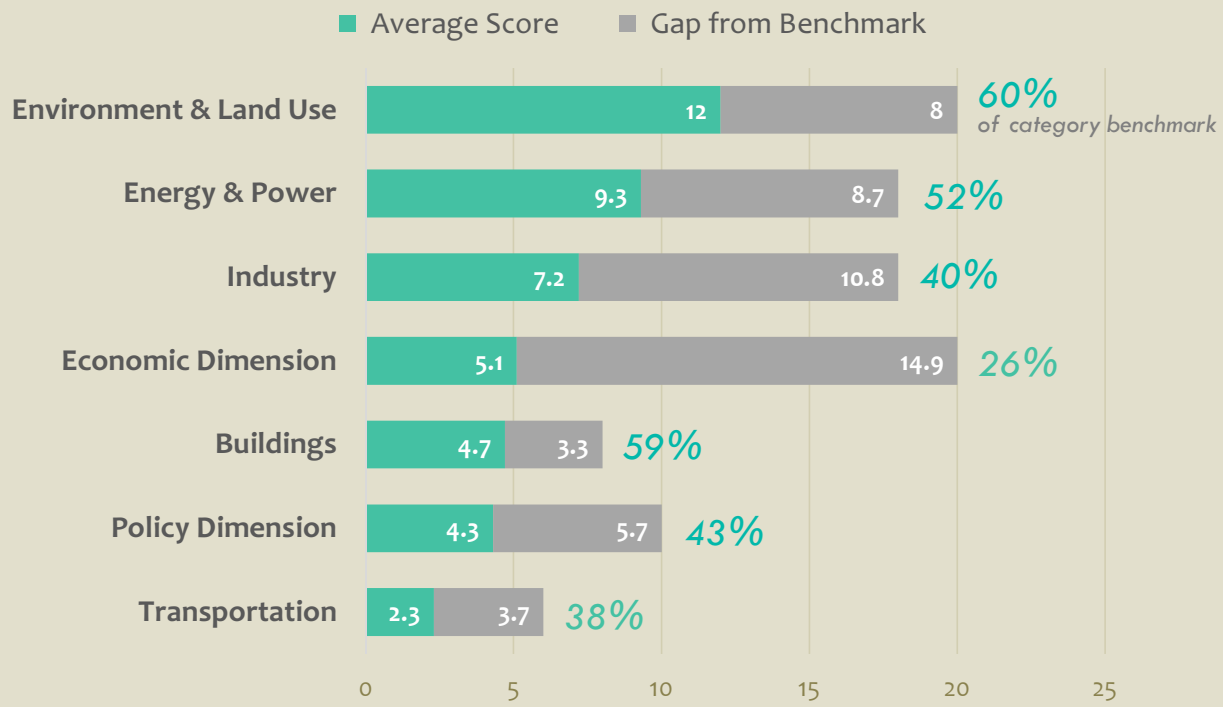
*90+ out of 115 cities saw both GDP growth **and** logic score growth from 2010-2015*



2015

Chinese cities have significant potential to improve

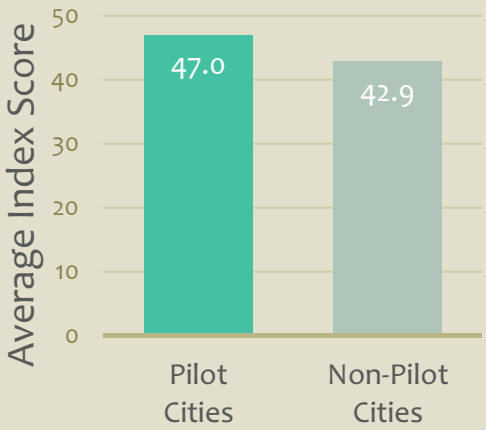
Green & Low-carbon performance on average reached 45% of LOGIC potential



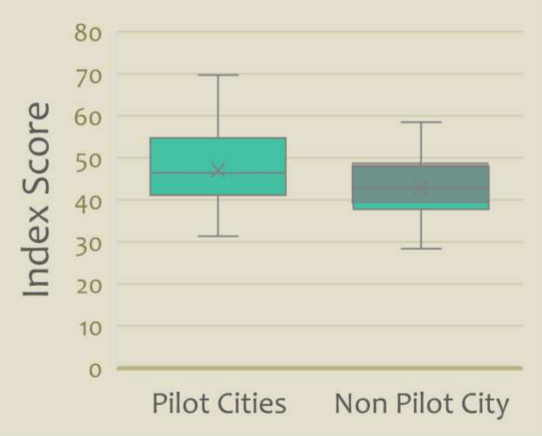
China's Low-Carbon Pilot Cities Are Leading the Way :

Pilot cities have higher LOGIC scores, and their scores are improving faster

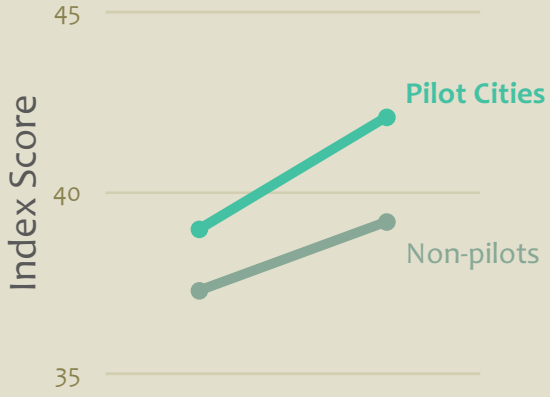
Pilot cities have higher average scores…



Pilot cities have scores in a higher range….



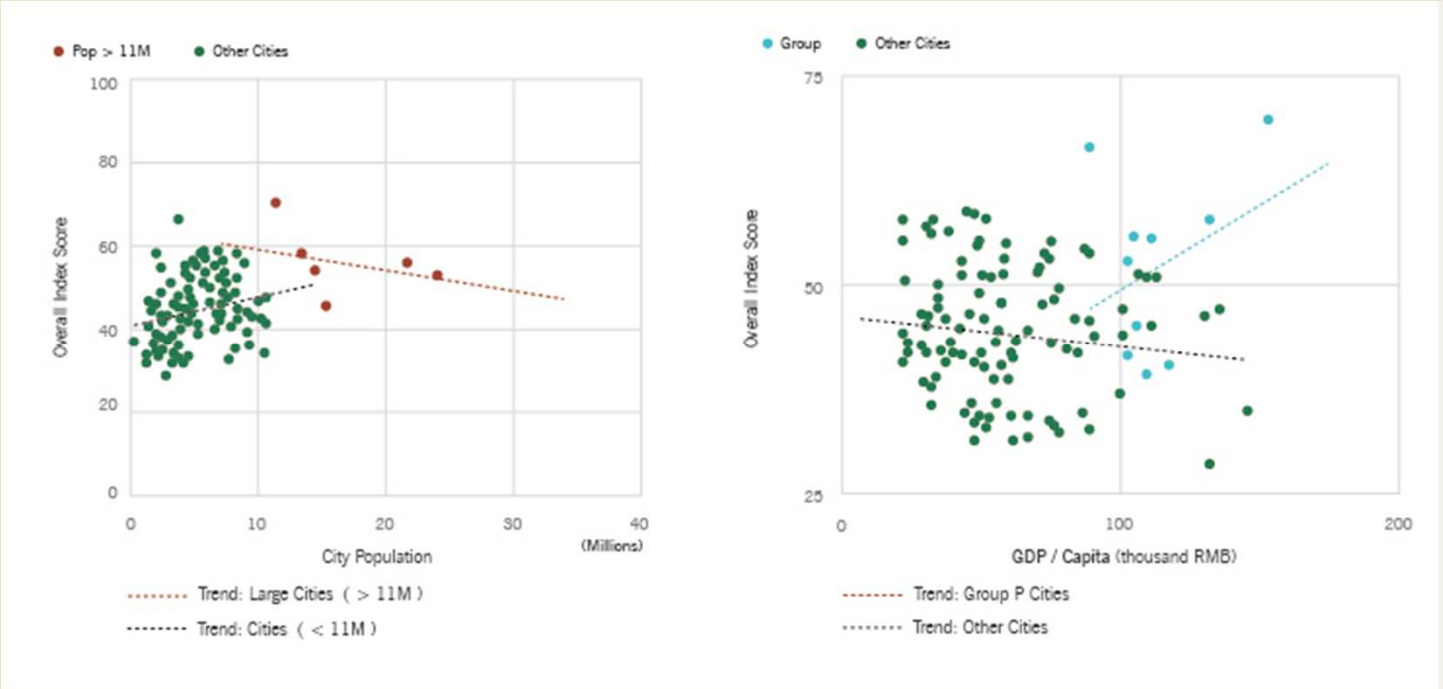
And, pilot cities' scores are improving faster.



2015

Large(but not too large) Cities, and Post-industrial Cities Are Greener

Green & Low-carbon policies must pay special attention to city size and economy



Key Findings and Suggestions

Key Findings

- Chinese Cities have considerable room to improve
  Especially in the economic, transportation, & industry dimensions

- Economic, Energy, + Industry categories drive index scores
  Urban energy and economic structure are key part of low-carbon transition

- Cities of all types can be Top-Performers in the LOGIC Index
  Cities with different levels of economic & urban development achieved high scores; all cities can learn from top-performers in any Group, any Region, & any Policy area

Recommendations for Policy Decision Making

- Cities should continue to use comprehensive data-driven analysis to evaluate, track and compare low-carbon and green finance
- Cities should continue strong political leadership, and accelerate pilot efforts to ensure consistent follow-through on low-carbon commitments
- Mega-cities need special attention to avoid backsliding on green & low carbon goals
- *As the next critical step, city leaders need to prepare an more integrated and systematic low-carbon and green legal and policy system*

End

Thank You

iGDP Policy Mapping Tool

- A database and interactive platform to track, synthesize and compare low-carbon development: http://www.cepm.igdp.cn/

--- Framework of Indicators: 10 Categories

1. Economy-wide Development Goals
2. Institutional Capacity
3. Economic Structure
4. Energy
5. Industry
6. Transportation
7. Buildings
8. Urban Planning
9. Carbon Sink
10. Waste Management