

Establishing China's Green Financial System

MA Jun

Chief Economist, PBOC's Research Bureau

Chairman of Green Finance Committee, China Society of
Finance and Banking

March 2016

Why green finance

01

What can green finance do

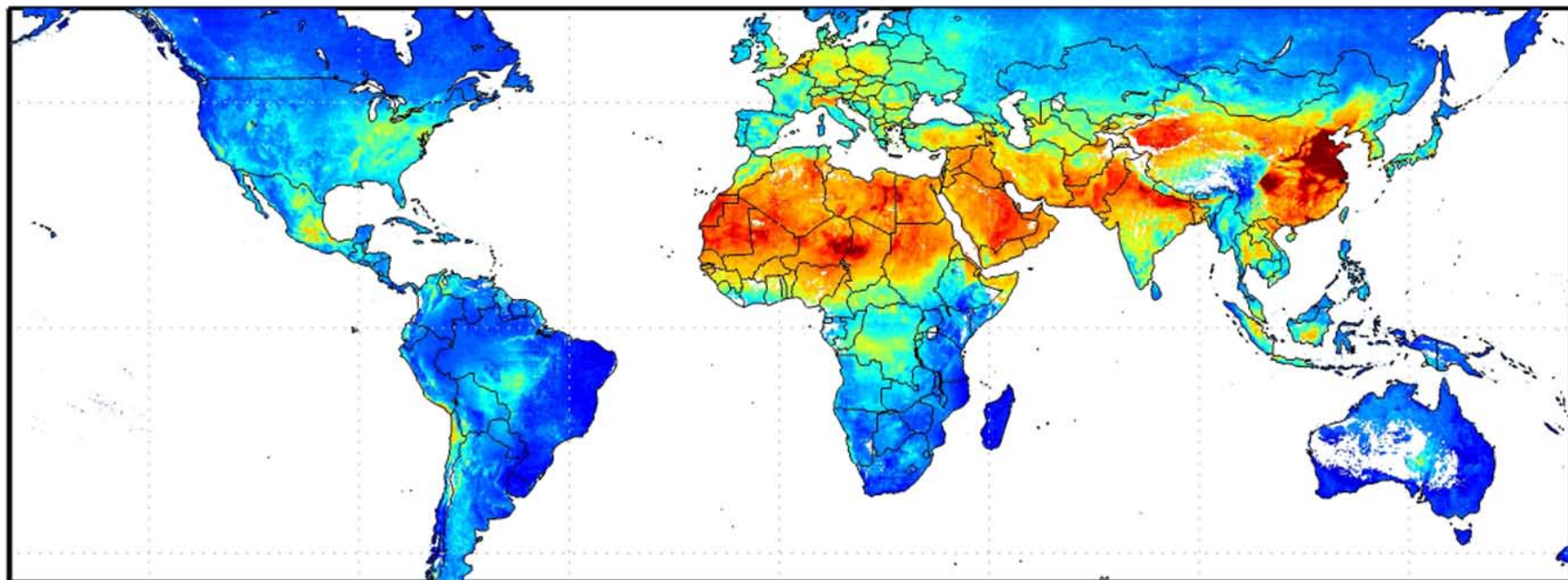
02

Major action points

03

Global comparison of PM2.5 (air pollution) index

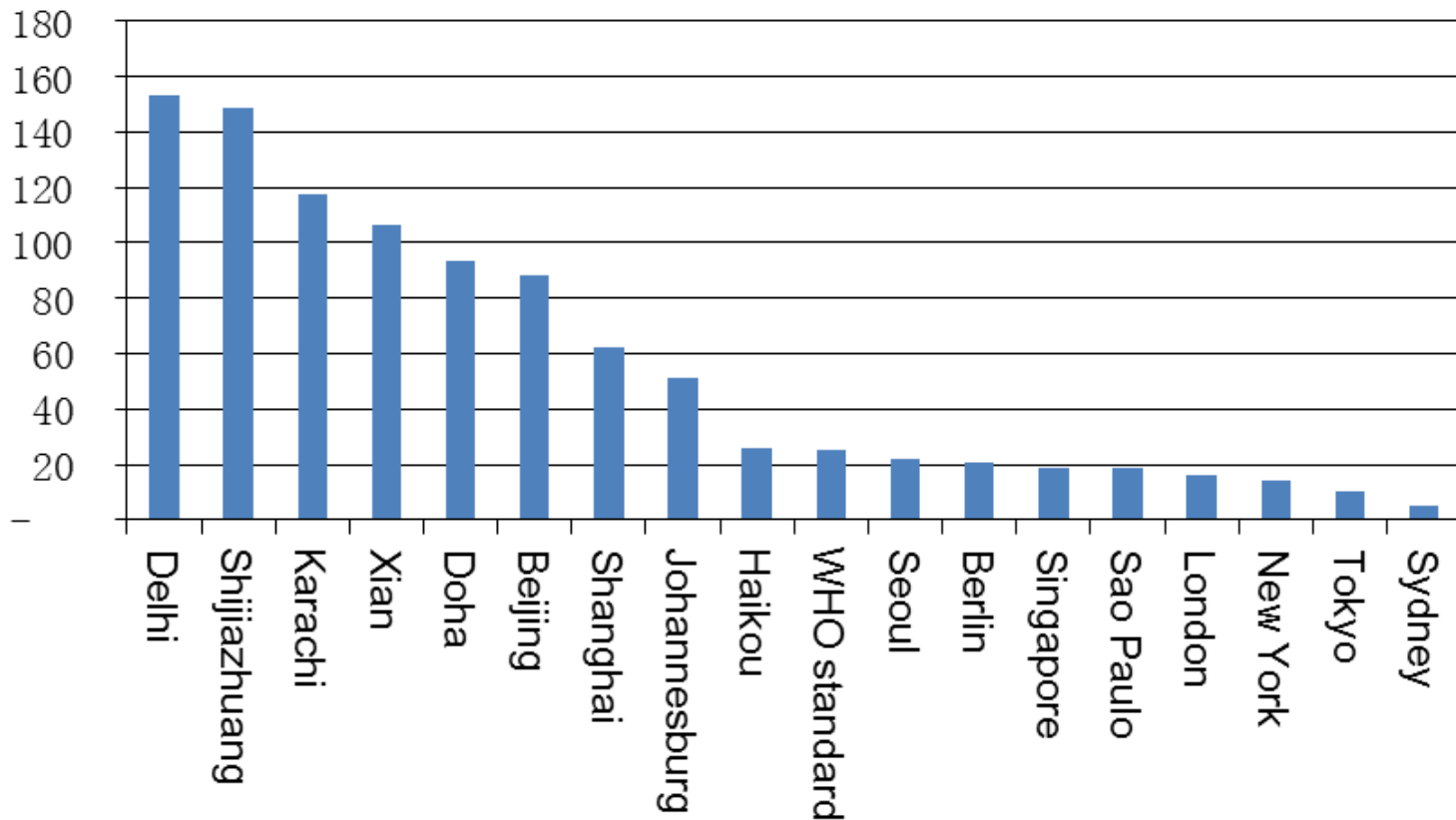
图 1: PM2.5 全球地图: 五年平均水平 (微克/立方米)



PM2.5 五年平均浓度 (微克/立方米)

资料来源: 美国国家航空航天局 (NASA); 注: 数据年份为 2001-2006

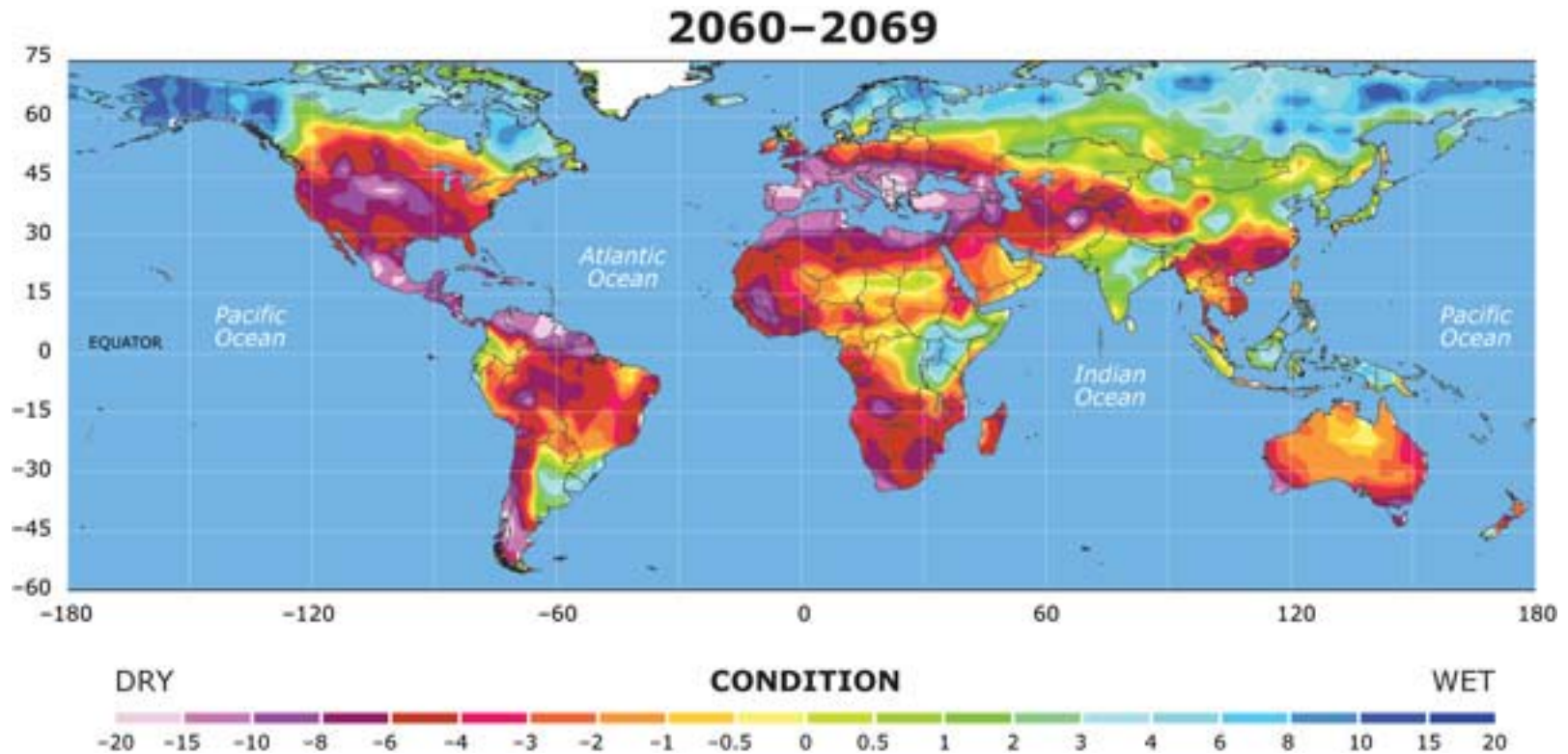
PM2.5 index by city, 2013



Source: www.pm2d5.com, WHO

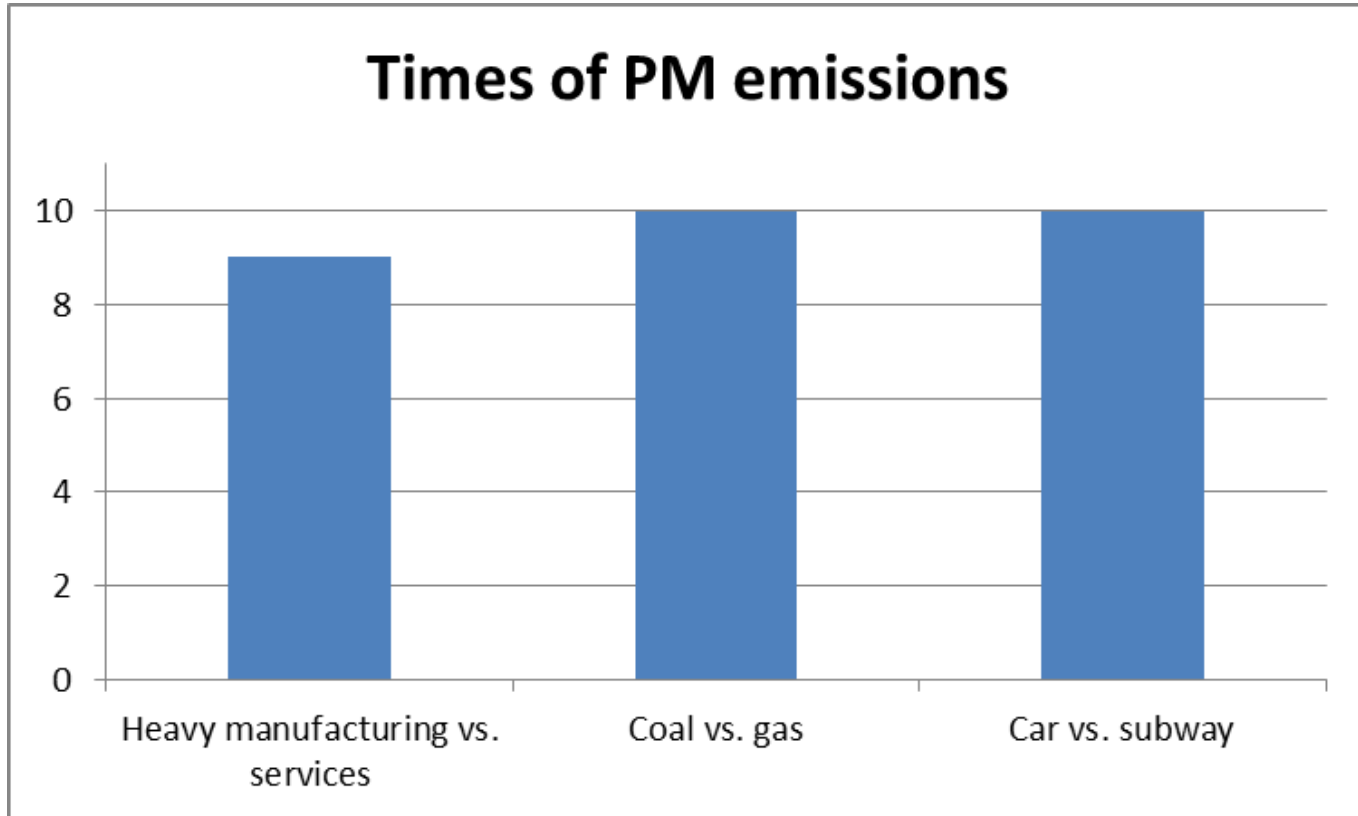
-
- Professors from Beijing and Tsinghua Univ. show that air pollution due to coal burning in Northern China causes a reduction in average life expectancy by 5.5 years.
 - A study by ADB and Tsinghua Univ. indicates that the economic cost of air pollution amounts to 3.8% of GDP per year.
 - 75% of water sources and 19% of arable land are contaminated.

- Dark red parts indicate projected drought conditions in the 2060s



Source: Aiguo Dai, 2011, "Drought under Global Warming: A Review"

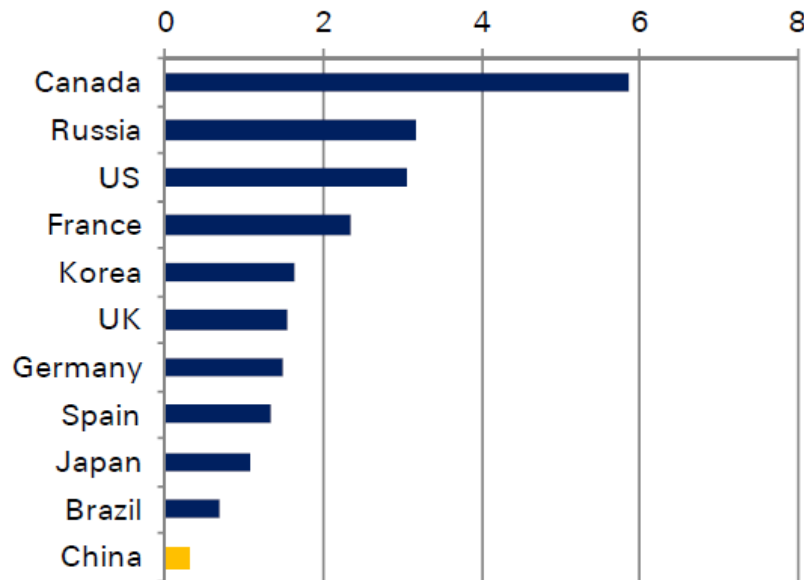
Economic cause of pollution: polluting industry, energy and transport structures



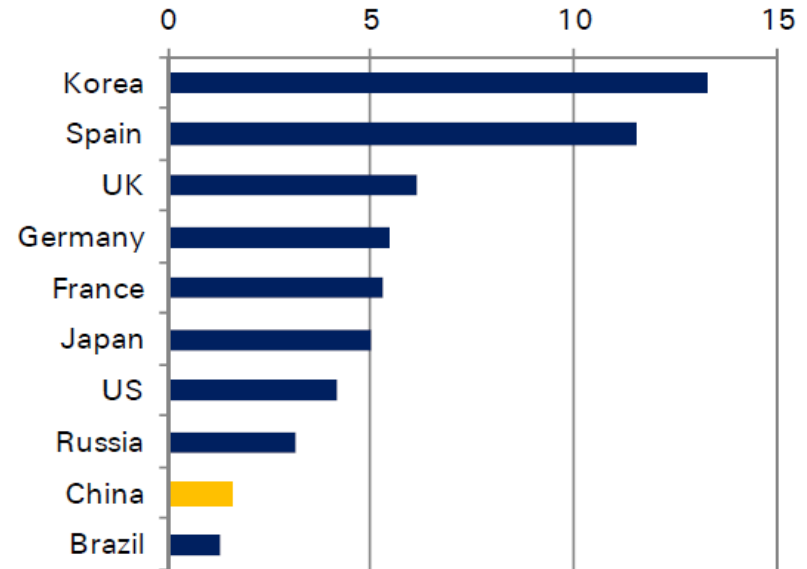
Source: Ma and Li, 2014, Economics of Tackling Air Pollution in China, China Econ Press

Evidence of inadequate supply (investment) in green sectors

Clean energy production, tonnes oil equivalent per capita, 2012



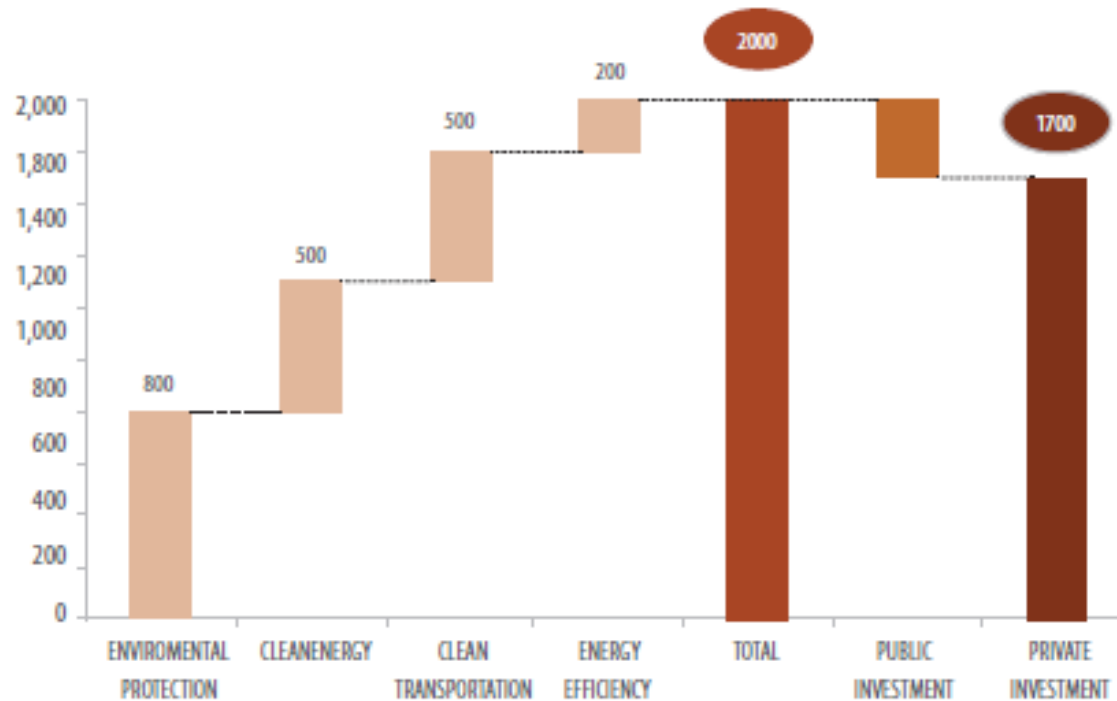
Subway density, km per m people, 2012/13



Source: BP Statistical Review of World Energy 2013, Deutsche Bank; Note: Clean energy include gas, wind, hydro, solar, nuclear and other renewable; Urbanrai.com, company reports

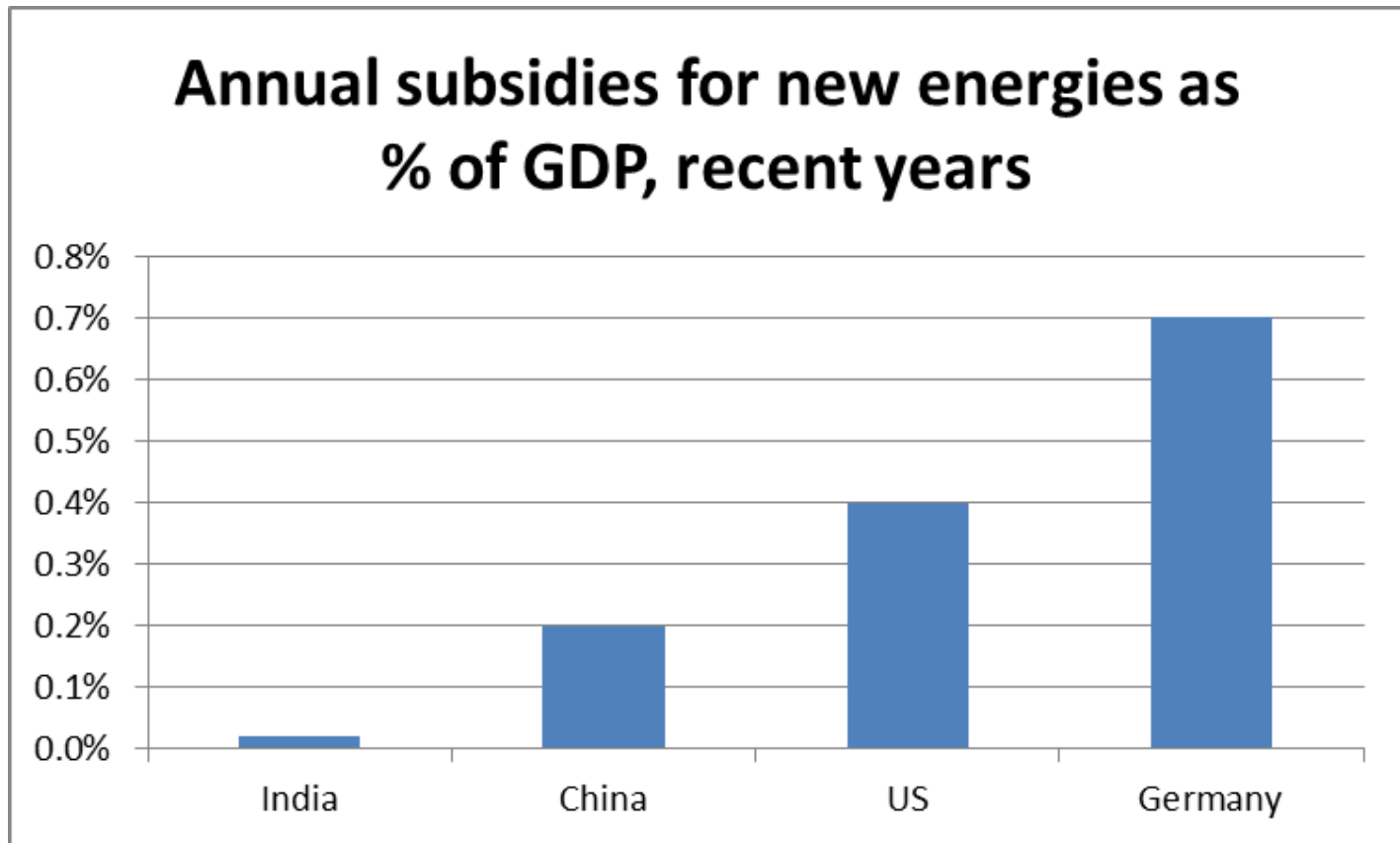
China's fiscal budget can only finance less than 15% of green investment, now estimated at RMB3-4tn per year

FIGURE 1: GREEN INVESTMENT NEED



[Source: Green Finance Task Force]

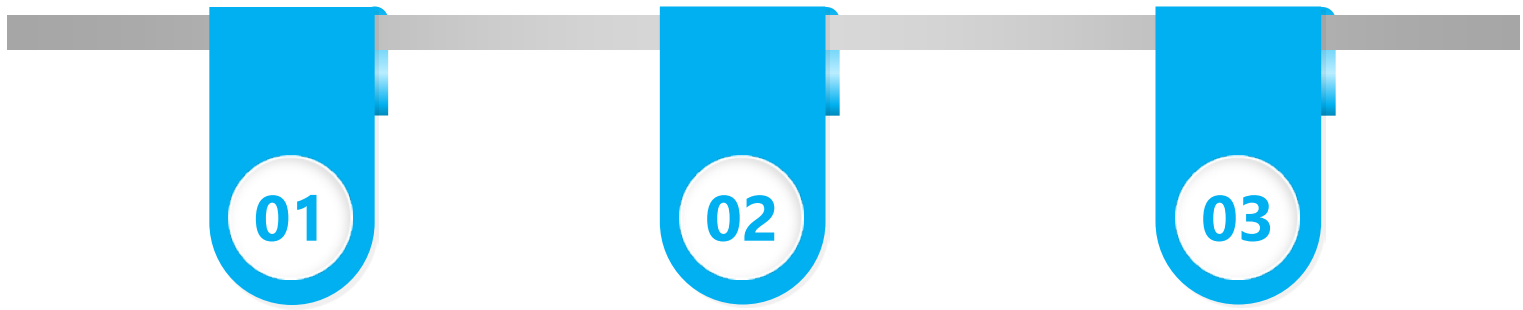
EM fiscal capacity is generally weak



Source: Ma and Li (2014), authors' estimates.

Need for a green financial system to mobilize private green investment

- The lack of green investment is due to that fact that positive environmental externality cannot be fully internalized by the market, and thus returns of green projects are not sufficient to attract private investment.
- Given that many countries' fiscal capacity to correct the externality is constrained, **a green financial system is needed to channel and incentivize private investment in green projects.**



Enhancing
green
investment
return

Reducing
return on
polluting
investment

Increasing
investor/consumer preference
for green
assets/products

S

Expected effects of policy measures

Policy recommendation	Reduce cost of green investments	Increase cost of polluting projects	Bolster social responsibility
Green banks (1)	✓		
Green bonds (5)	✓		
Discounted green loans (4)	✓		
Green investment funds (2)	✓		
Green IPO (6)	✓		
Green ratings (8)	✓	✓	✓
Green database (10)	✓	✓	✓
Green insurance (12)		✓	
Emission trading (7)	✓		
Green stock indices (9)	✓	✓	
Compulsory disclosure (14)	✓	✓	
Green investor network (11)	✓	✓	✓
Lender liability (13)		✓	✓

Source: Green Finance Taskforce (2015)

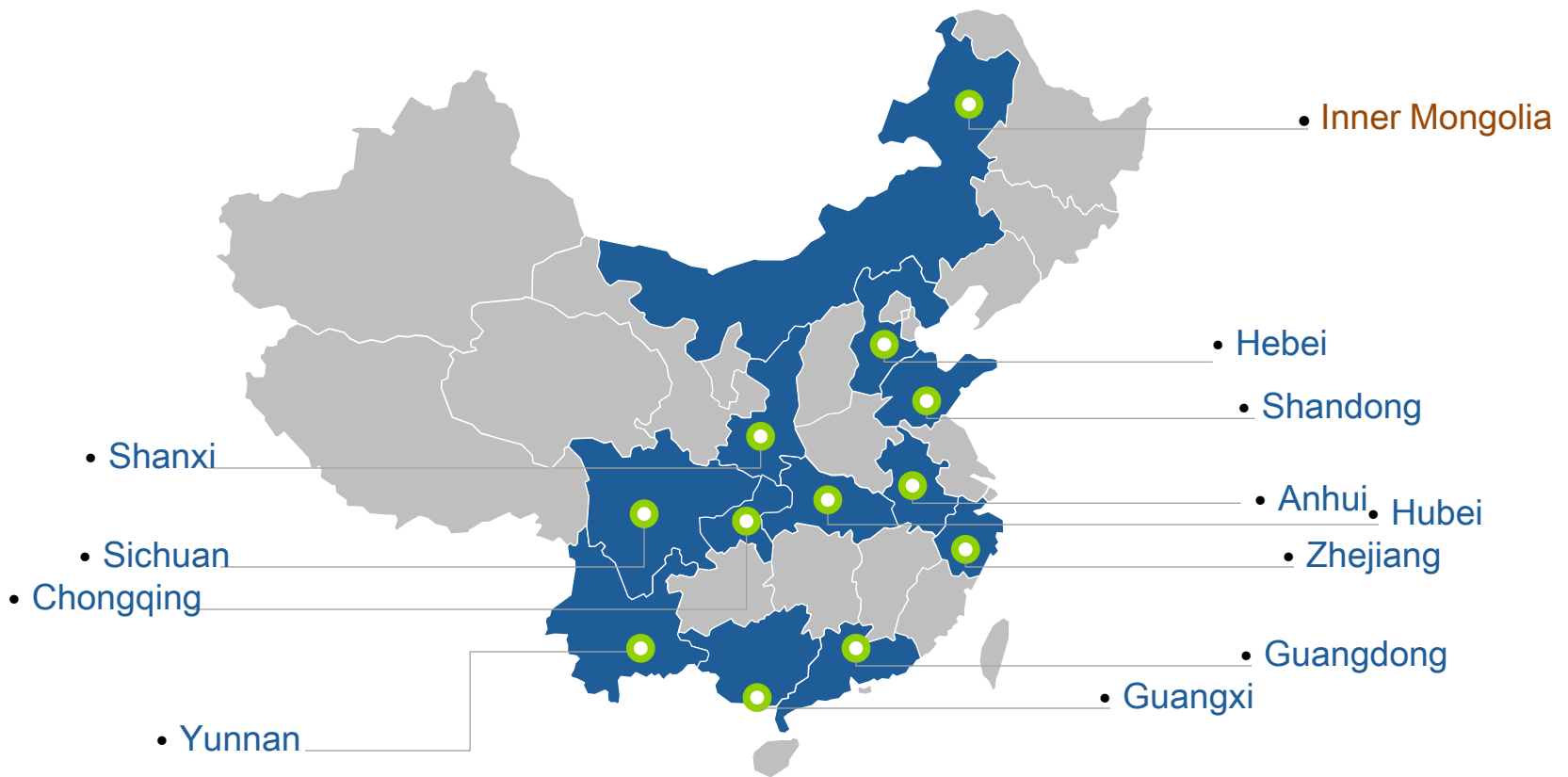
“Guidelines for Establishing China's Green Financial System” , by 7 ministries led by PBOC

- PBOC relending, interest subsidies/guarantees for green Lending;
- National and regional green development funds;
- Developing the green bond market;
- Developing green equity indices & products;
- Introducing mandatory pollution liability insurance;
- Introducing mandatory disclosure requirement for listed companies;
- Developing the carbon finance market;
- Promoting international collaboration on green finance

1. Green Development Funds

- **Establishing National Level Green Development Fund**
- **Encourage regional green development funds (at least four provincial funds were set up already)**
- **Encourage private and foreign investors to set up green development funds**
 - **Important signals for private investors**
 - **Can potentially leverage 3-10 times of private capital**

More than 12 Chinese provinces have established green development funds



2. Re-lending and interest subsidies on green loans

- Relending has been used to incentivize lending to agriculture and SMEs, and will be used to support green lending and green investing.
- Interest subsidies can allow public funds to leverage 20-30 times of private investment. Provinces are now taking actions.

Classification of green loans (China)

Classification and the balance of green credit for major Chinese bank institutions in 2013

Unit: 100 million yuan

No.	Indicator of green credit		Year-end loan balance
(I)	Projects and services of energy conservation and environmental protection		36853.5
1	Green agriculture		229.3
2	Green forestry		193.8
3	Industrial energy and water conservation and environmental protection		3180.8
4	Nature preservation, ecological restoration and disaster prevention and control		998.5
5	Circular utilization of resources		848.5
6	Waste treatment and pollution control		1834.5
7	Renewable energy and clean energy	7.1 Solar power	616.4
		7.2 Wind power	2374.1
		7.3 Biomass	161.1
		7.4 Hydropower	6366.7
		7.5 Other renewable energy and clean energy	806.2
		7.6 Smart grid	82.8
		Subtotal	10407.4
8	Rural and urban water supply	8.1 Rural drinking water safety	197.5
		8.2 Small farmland water conservancy facilities	297.9
		8.3 Urban water conservation	436.5
		Subtotal	931.9

Source: Green Finance Task Force (2015)

Classification of green loans (cont.)

9	Building energy conservation and green buildings	9.1 Green renovation of existing buildings	49.2
		9.2 Construction O&M of green buildings	410.9
		Subtotal	460.1
10	Green transport	10.1 Railway transport	10444.7
		10.2 Waterway regulation and ship procurement	555.8
		10.3 Urban public transport	5862.5
		10.4 Environmental protection of transport	443.9
		Subtotal	17307.0
11	Energy conservation and environmental services	11.1 Energy conservation and services	152.1
		11.2 Environmental protection services	127.5
		11.3 Water conservation services	18.8
		11.4 Circular economy (circular utilization of resources) services	63.4
		Subtotal	361.9
12	Overseas projects with international practices or international standards	99.8	
(II)	Green credit for strategic emerging industries	15129.6	
1	Energy conservation and environmental protection	9613.1	
2	New energy	5294.5	
3	New energy vehicles	222.0	
(III)	Sum of green credit by major bank institutions [(I)+(II)]	51983.1	

Source: 2013 Green Credit Fact Sheet of Major Bank Institutions, the CBRC, 2014

Source: Green Finance Task Force (2015)

3. Green bond market



Recent progress

- Defined green bonds and issued disclosure requirement (done, Dec 2015)
- Second party verification and green credit ratings (on-going)
- China green bond issuance reached RMB230bn, or 40% of global total, in 2016

China's Green Bond Catalogue

- 一) **节能**：工业节能、绿色建筑、能源管理等。
- 二) **污染防治**：污染防治（水、大气、固体废物）、环境修复、清洁煤炭利用等。
- 三) **资源节约与循环利用**：节水，尾矿、伴生矿可再开发利用，固废和再生资源利用等。
- 四) **清洁交通**：铁路、城市轨道交通、公共交通、清洁燃油、新能源汽车等。
- 五) **清洁能源**：太阳能、风能、水能、天然气、地热能、海洋能、分布式能源、智能电网等。
- 六) **生态保护和适应气候变化**：生态保护、植树造林、生态农牧渔业、灾害应急防护等。

China's green bond indices

China's securities index companies have developed 3 green bond indices.

INDEX	LAUNCH TIME
ChinaBond China Green Bond Index	2016.4
ChinaBond China Green Bond Select Index	2016.4
ChinaBond Climate-aligned Bond index	2016.9

4. Green equity indices & products

- Green equity indices can direct more investments into green sectors, and help reduce green firms' funding costs.
- 20 green equity indices have been developed, but many more needed
- A recent index was the Shanghai 180 Carbon Efficient Index, based on calculation of carbon footprint

China's green equity indices

- China's securities index companies have developed 18 green equity indices.

INDEX	SHORTHAND	LAUNCH TIME
SSE Corporate Governance Index	Governance index	2008.1
SSE 180 corporate governance index	SSE 180 GV	2008.9
SSE Social Responsibility index	Responsibility index	2009.8
China Low Carbon Index		2010.6
ECPI ESG 40 Index	ECPI ESG 40	2010.9
CSI China Mainland Low Carbon Economy Index	Mainland L-C Index	2011.1
CSI ECPI ESG 100 Index	ECPI ESG 100	2012.9
SSE Environmental Protection Industry index	SSE Environmental Protection	2012.9
CSI Environmental Protection Industry Index	CSI Environmental Protection	2012.9
CSI environmental governance index		2014.6
CSI New Energy Vehicles Index	New Energy Vehicles	2014.11
CSI New Energy Index	CSI New Energy	2015.2
CSI Environmental Protection Industry	CSI Environmental Protection	2015.4
CSI Nuclear Energy & Power Index	CSI Nuclear Energy & Power	2015.5
CSI AEF Ecology 100 Index	Ecology 100	2015.10
SSE 180 carbon efficient Index	SSE 180 carbon efficient	2015.10
CSI 50 index of Environmental protection of Metasequoia		2016.5
CSI Sponge Cities Index	CSI Sponge Cities	2016.7

5. Compulsory green insurance

Challenges

Over 700 environmental incidents per year in China

Benefits

- **Reveal future environmental costs**
- **Ensure funds for remediation**
- **Reduce probability of incidents**

Government will promulgate “rules on mandatory environmental liability insurance” in sectors of high environmental risks

6. Compulsory disclosure of environmental information by listcos

- Disclosure of environmental information by listed companies will allow investors to “vote with their feet” on companies’ environmental performance.
- Globally about 20 securities exchanges have required disclosure of environmental information.
- China will introduce a compulsory system in the coming years.

7. Carbon finance market

- China's National People's Congress authorized the signing of Paris Agreement on Sept 3.
- China will launch a nation-wide carbon market, which will probably cover 40% of national carbon emission and over 8000 large firms.
- Carbon finance, which includes carbon futures, forwards, options, leasing, as well as bonds and loans supported by carbon credit, will be developed

International cooperation: G20 Green Finance Study Group, etc.

- China proposal to establish the G20 Green Finance Study Group was approved by G20 in Dec 2015
- GFSG focuses on five areas this year: green banking, green bonds, green investment by institutional investors, environmental risk analysis, and measuring progress in green finance
- “Developing green finance” is included in G20 Summit Communique, representing a newly formed global consensus
- Impact already felt as some countries are approaching GFSG for advice on domestic actions to advance green finance

G20 GFSG: 5 challenges to green finance

1. Difficulties in internalizing externalities
2. Maturity mismatch
3. Lack of green definitions
4. Asymmetric information
5. Lack of analytical capacity

G20 GFSG: 7 options to promote green finance

1. Provide policy signals to support green investment
2. Promote the adoption of green finance principles
3. Expand capacity building networks (e.g, SBN/PRI)
4. Develop local currency green bond markets
5. Promote cross-border green bond investments
6. Develop risk analysis capacity
7. Improve measurement of green finance