

THE CHINA GREENTECH REPORT 2014

中国绿色科技报告2014



中国绿色科技
China Greentech Initiative
Strategic Insights, Industry and Government Collaboration, Market Acceleration

Greener, Smarter, More Productive (Part 1)

Report Sponsors:



China Greentech Initiative (CGTI) is copyrighted (c) 2014 by Greentech Networks Limited. This document is intended to be used by China Greentech Initiative's Partners and Strategic Advisors, and may not be distributed externally without explicit permission.

The China Greentech Report Briefing

Table of Contents



Introducing the China Greentech Report



2014 China Greentech Report: Point of View

- China's "War on Pollution"
- Greener, Smarter and More Productive

***The China Greentech Report* provides the trusted, fact-based commercial perspective on China's green transformation**

The China Greentech Report



🌱 ***The China Greentech Report 2009:*** Defines greentech market opportunities and solutions in China, launched at the World Economic Forum

🌱 ***The China Greentech Report 2011:*** Highlights China's emergence as a global greentech market leader

🌱 ***The China Greentech Report 2012:*** Shows how China is overcoming challenges to accelerate green growth

🌱 ***The China Greentech Report 2013:*** Argues that China is at a crossroads, targets are not enough and new approaches are needed

🌱 ***The China Greentech Report 2014:*** Recommends solutions for China's increasingly complex energy, air and mobility challenges. The Report proposes a greener, smarter and more productive development mode for China and highlights companies that are helping to drive this change



***The 2014 China Greentech Report* explores how companies can support China's growing commitment to pollution reduction**

2014 China Greentech Report: Point of View

China's pollution debate enters a new era



Extreme air pollution events and public concern compel government to act on all fronts

Pollution reduction is now a government priority



Central and local governments respond quickly with detailed implementation plans

Joining forces for a greener, smarter and more productive China



Leading companies support China's transition and expand business in the process

You can download the *The China Greentech Report 2014: Smarter, Greenter, More Productive* at: www.report.china-greentech.com

Table of Contents

 Introducing the China Greentech Report

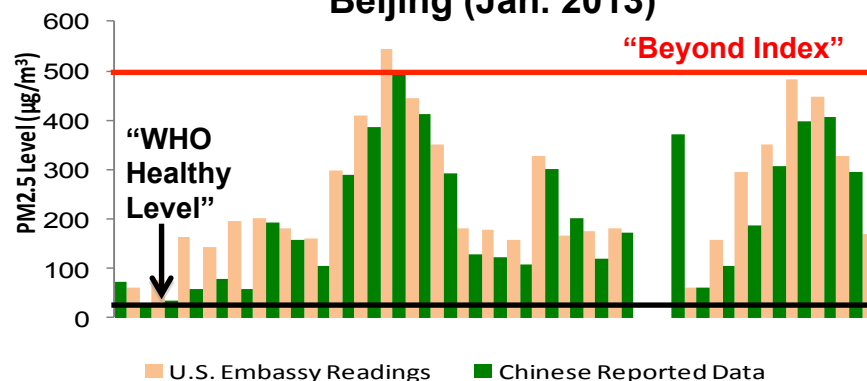
 **2014 China Greentech Report: Point of View**

- China's "War on Pollution"
- Greener, Smarter and More Productive

PM2.5 levels reached alarming levels in 2013 and 2014 on several occasions, elevating public concern

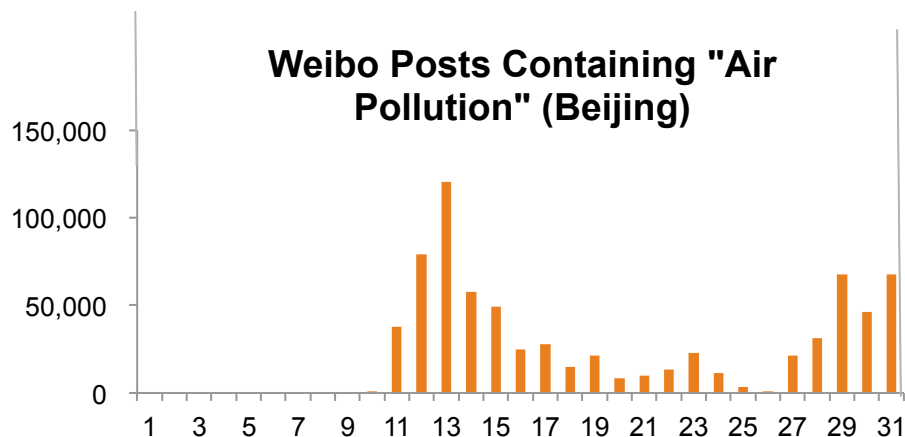
PM2.5 Levels "Beyond Index"

Average Daily PM2.5 Levels in Beijing (Jan. 2013)



Air Pollution Events

- Jan. 2013 “Airpocalypse” in Beijing: PM2.5 readings peaked at $886 \mu\text{g}/\text{m}^3$
- Oct. 2013, Harbin: PM2.5 concentrations reach record $1000 \mu\text{g}/\text{m}^3$
- Dec. 2013, Shanghai: PM2.5 pollution “beyond index” reading of $500 \mu\text{g}/\text{m}^3$
- Feb. 2014, Beijing, Hebei: “Hazardous” daily average PM2.5 levels for seven consecutive days



Interviews in 2013 suggest that public concern over air pollution influenced – and perhaps even accelerated – government action

CGTI Interviewee Estimates on Impact of January 2013 Air Pollution

“What are some of the major implications of Beijing’s severe air pollution in 2013?”

“The January 2013 Airpocalypse was transformative. You really can’t overstate how it changed China’s priorities.”

- Government Advisor

“For the first time, this is going to the top – to the State Council.”

- Government Advisor

“After the Airpocalypse, people expressed anger and air pollution is now higher up in the policy agenda. Efforts against pollution were accelerated, but the way you do business in China has not fundamentally changed.”

- Solution Provider

“The days have gone where a polluting enterprise can simply set up in an urban area and get away with it. It’s not going to happen anymore.”

- International Government Representative

The 2013 Action Plan for Air Pollution Prevention and Control is China's most recent and visible campaign for cleaner air

Central Government Response to 2013 Air Pollution Events

Central Government Response

- 🌱 Li Keqiang declares a "War on Air Pollution"
- 🌱 PM 2.5 reduction targets for three "key regions" by 2017:
 - Pearl River Delta: 15%
 - Yangtze River Delta: 20%
 - Beijing, Tianjin and Hebei: 25% (Beijing to reach annual PM 2.5 average of 60 $\mu\text{g}/\text{m}^3$ by 2017)

Local Government Actions

- 🌱 Twenty-three provinces issue air pollution reduction plans
- 🌱 Liaoning government fines eight cities for air pollution
- 🌱 Hebei aims to cut 60 million tons of steel capacity by 2017
- 🌱 Beijing city government officials are held personally accountable for meeting targets



Destruction of Steel Plant in Tangshan

Image Source: Xinhua

The central government appears committed to pollution reduction and public support for a cleaner development model is on the rise

Public Support for Cleaner Development Grows

“All eyes are on China as the country redefines its approach to development. If this opportunity is missed, resource constraints, choked cities and health costs will become major bottlenecks of development.”

– *The China Greentech Report 2014*

Nevertheless, tangible results will require much more than a change in government rhetoric and ambitious targets

A Change in Mindset is Needed

*"Small and medium-sized enterprises are not willing to make energy efficiency investments based on the promise of future savings. This will very much require a change of **mindset**."*

- Investor

"I am 100% sure that bad building operation is a matter of awareness. The management should take initiative. If the top does not care, the bottom will not act."

- Real Estate Developer

"Economic growth and reduced dependence on fossil fuels are mutually exclusive in the minds of local economic planners."

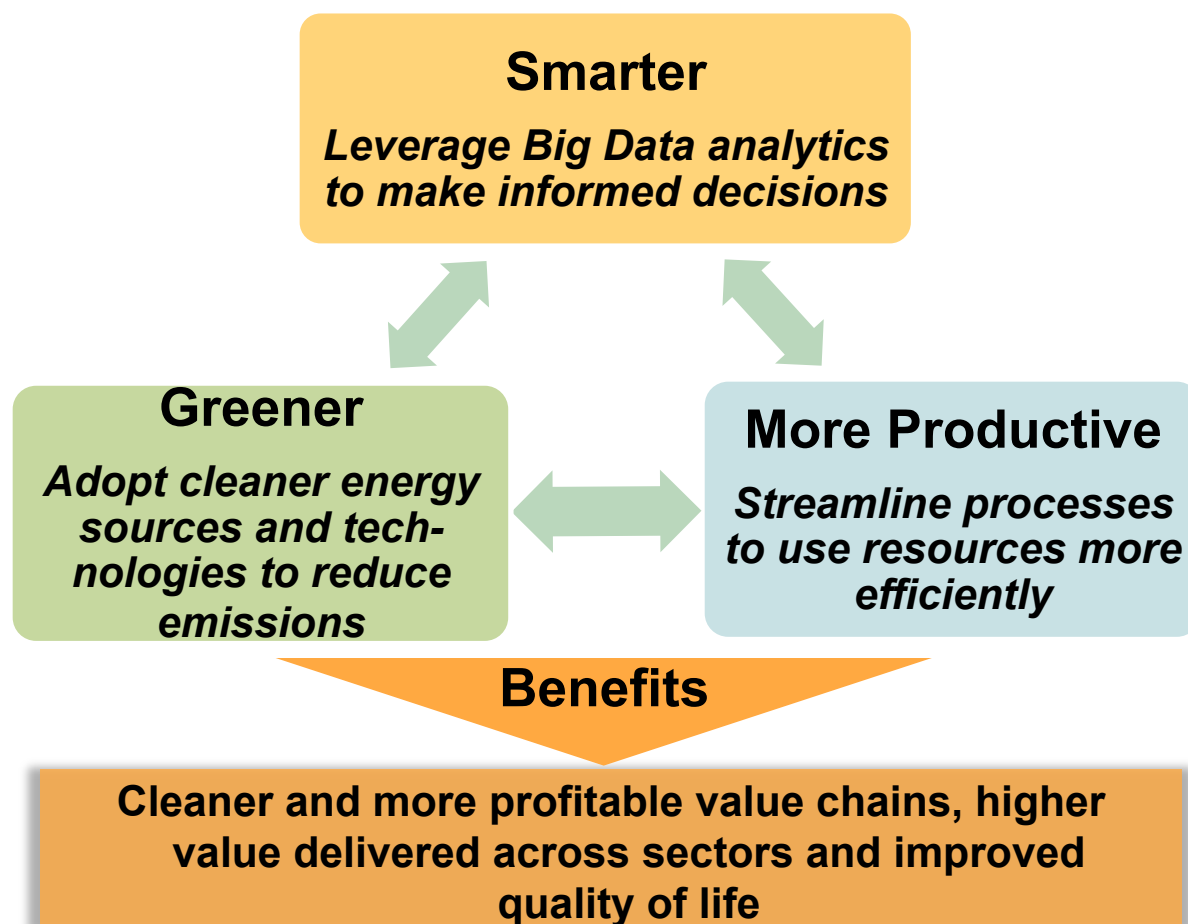
- City Planner

*"We need to drive a change in **mindset**. We do not yet see strong awareness for resource saving on management levels."*

- Real Estate Developer

China has the opportunity to adopt a greener, smarter and more productive form of growth

Greener, Smarter and More Productive Development



- 🌱 Greener, smarter and more productive concepts are **applicable at all levels and across all sectors**
- 🌱 Concepts **should be combined** to fully enjoy benefits

Pollution reduction technologies for China's small –to medium-sized power plants address air quality concerns in cities

Cost-Effective Solutions Reduce Pollution from Fossil Fuels

Greener *Adopt cleaner energy sources and technologies to reduce emissions*

Driving NOx Reduction

- 🌱 Retrofit existing fossil fuel plants with cost-effective solutions
- 🌱 Enforce stricter standards to drive adoption of pollution control technologies
- 🌱 Promote the benefits of adoption and operation

Jingfeng (京丰) Power Plant



LP Amina's Approach and Successes

- 🌱 Partners with Chinese universities and solution providers to refine technologies and provide cost-effective solutions for medium-sized fossil fuel plants
- 🌱 Achieved an average 70% reduction in NOx emissions across 25 plant retrofit projects (total capacity of 8GW)
- 🌱 Future LP Amina solutions will provide additional value streams to operators, incentivizing future upgrades

Intelligent software improves operational efficiency of the world's largest integrated renewable energy power plant – Zhangbei

Big Data Improves Energy Efficiency

Smarter

Leverage Big Data analytics to make informed decisions

Big Data refers to large and unstructured volumes of data that can be analyzed and interpreted to help companies improve internal operations, better understand market trends and remain informed about competitor behavior

Zhangbei Power Plant

Planned capacity of
700 MW



Data Analytics at Zhangbei

- Integrates solar, wind and battery storage
- IBM's weather forecasting system allows operators to better predict how weather patterns impact power generation from wind and solar units
- Forecasting system has a short-term accuracy of 94%, increasing renewable energy availability by 10%

Zhangbei is the world's largest integrated renewable energy power plant

Information sharing and a “value chain” approach accelerate the refinement and adoption of biomass solutions

Biomass Solutions Accelerate Cleaner Development

More Productive

Streamline processes to use resources more efficiently

DP-CleanTech's Approach

- Collaborates with local universities to publish analyses on the performance of over 60 biomass fuel types
- Engages stakeholders along the entire value chain to ensure informed decisions around fuel and equipment use
- Offers long-term operational and maintenance training

A ‘value chain’ approach improves operational efficiency of plants, increases profit margins for operators, and accelerates development of the biomass industry as a whole

Innovative companies will adopt the solutions and business models needed to drive China's greener and smarter growth

Collaboration Across Industries and Sectors Needed

Private Sector Collaboration

- 🌱 Collaborate with partners to scale up solutions
- 🌱 Improve operational efficiency and work closely with other companies to make full use of resources
- 🌱 Promote data transparency and information sharing across industries

Public-Private Collaboration

- 🌱 Align business strategies with national goals
- 🌱 Seek access to infrastructure and institutional support for greentech project implementation

The factors needed to drive China's transformation are in place – public awareness is at its height, city officials are under pressure to build cleaner urban centers, and more readily available tools are allowing wide-scale participation in resource conservation.

Thank You!

**You can download *The China Greentech Report
2014: Smarter, Greener, More Productive at:***

www.report.china-greentech.com