

# IDDRI



SciencesPo.

## A Review on the Environmental Performance in China

Xin WANG

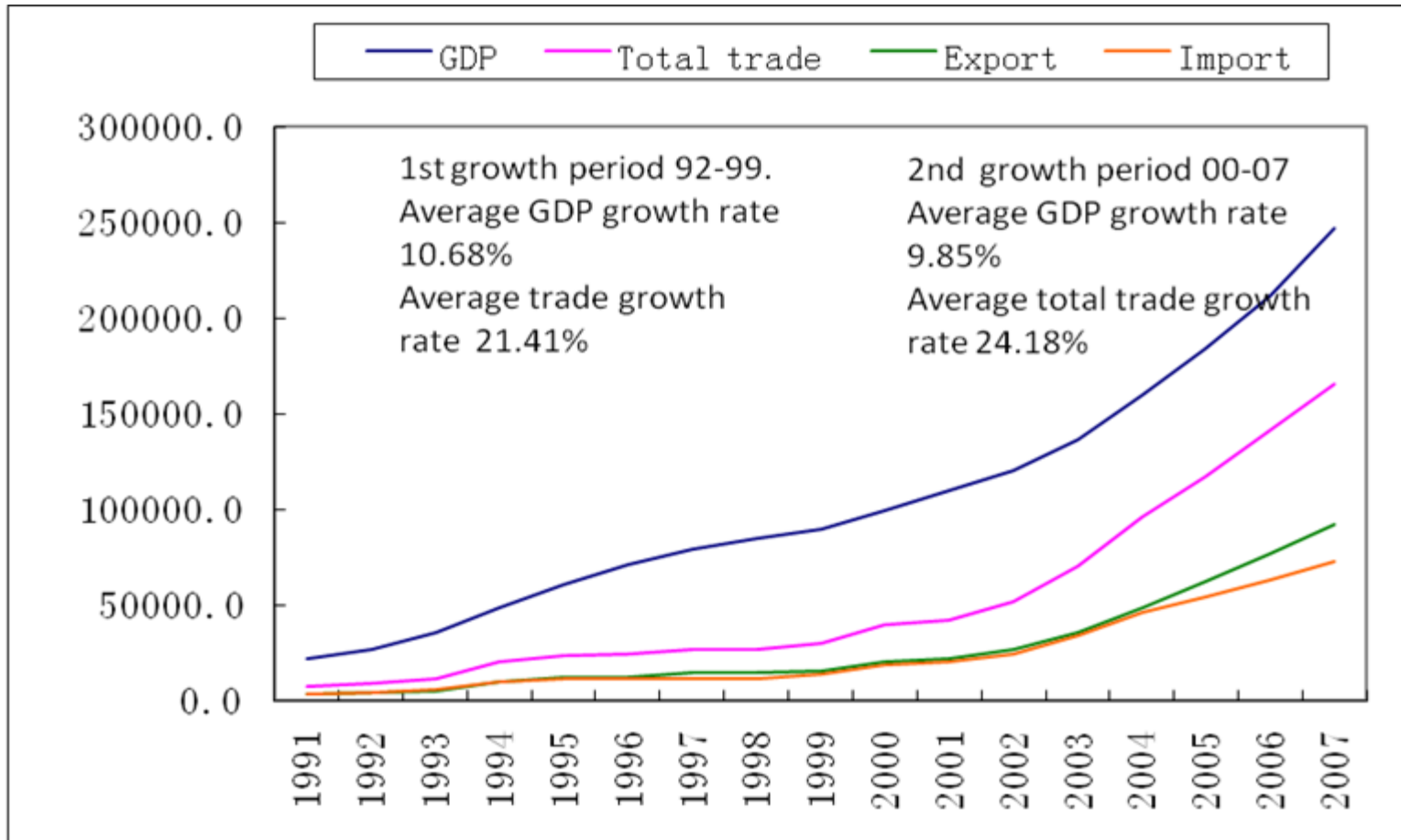
Institut du Développement Durable et  
des Relations Internationales

Dec. 4<sup>th</sup>, 2009, Brussels

# Environmental Problems as Major Development Lock-ins

- Central development target: restructuring production model to recycling and green economy both on domestic and export level.
- China's economic development lock-ins:
  - natural constraints: resource, energy, env. capacity, etc.
  - systematic constraints: technology, industrial/production structure, consumption behavior, etc.

# Rapid GDP growth accompanied by more env. challenges in the future



Source: National Bureau of Statistics of China, Custom House. Unit: 100 million dollars.

# Major Policies Adopted in China

- Command-and-controls: Enclosure of small and demodded plants and factories; limitation on new installations of such capacities; limitation on new installations of energy-intensive and polluting industries, etc.
- Tax: on natural resources, on export of energy intensive products (and their export VAT refund rebating). Possible carbon tax in the short future.
- Fees and charges: on major emissions of pollutants (waste water, SO<sub>2</sub>, COD, etc.)
- Subsidies: on loans, production, etc. Reduction of 30% on consumption tax for firms who achieve pollution criteria in advance; tax exemption for firms with recycling production; electricity price differentiation and subsidies, etc.
- Emissions trading pilot programs: SO<sub>2</sub>, CO<sub>2</sub>.
- Voluntary programs: 1000 enterprises (NDRC)
- Green certificate: ISO, carbon certificate (SEPA), env. standards, etc.
- Public advertisement

# Major Actions on Environmental Protection

- Legislation: 9 laws on environmental protection, 15 laws on natural resource protection, more than 50 regulations in diverse areas announced by the State Council, more than 660 local regulations... more than 800 environmental standards.
- Industrial pollution: from end-of-pipe to upstream and life cycle controls, from source control to regional management, from firm-based management to sector-based structure amelioration by integrating clean production and recycling economy, etc. (enclosure of small and demodded installations, limitation of new installations of energy-intensive goods)
- Key regions pollution management: rivers(Liao, Huai, Hai), lakes(Tai, Dianchi, Chao), key projects(Three gorges, water resource relocation), regions(by SO<sub>2</sub>, by acid rain), city(Beijing), sea(Bohai).
- Urbain and rural environmental protection: water management, energy efficiency, new/renewable energies, biodiversity, etc.
- Flora and fauna: a/reforestation, land use, sea, biodiversity.
- Financial measures:
- Public involvement and env. evaluation.
- International cooperation: 50 international treaties; bi/multilateral and regional cooperation;

# Some figures of env. performance improvement

- Industrial wasted water, industrial COD, SO<sub>2</sub>, smokes and powders have been reduced by 58%, 72%, 42%, 55% and 39% by 2004 to 1995 level. GDP energy intensity reduced by 45% by 2004 to 1990 level (equivalent to 700 M tce), thermal electricity unit coal consumption, unit energy consumption of steel and cement have been reduced 11.2%, 29.6% and 21.9%.
- 84 k energy-intensive and resource-wasting firms shut down (1996-2000). Plus 30 k small and inefficient firms shut down during 2001-2004, 1900 projects postponed; 2600 firms shut down in 2005.
- 12k firms obtained ISO14000, 18k commodities obtained env. certificate.
- Percentage of pass on SO<sub>2</sub> density in cities increased from 32.8% in 1998 to 45.2% in 2005. Comparing to 1996 level, by 2005, number of cities achieving State air quality level II has increased 31%, and number of cities with air quality inferior to level III has decreased 39%.
- State investment in environmental protection raised to 952 bn yuan during 1996 - 2004, which accounts for 1% GDP for the same period.

Source: White Paper, China's Environmental Protection (1996-2005).

## Major Environmental achievements in 2009

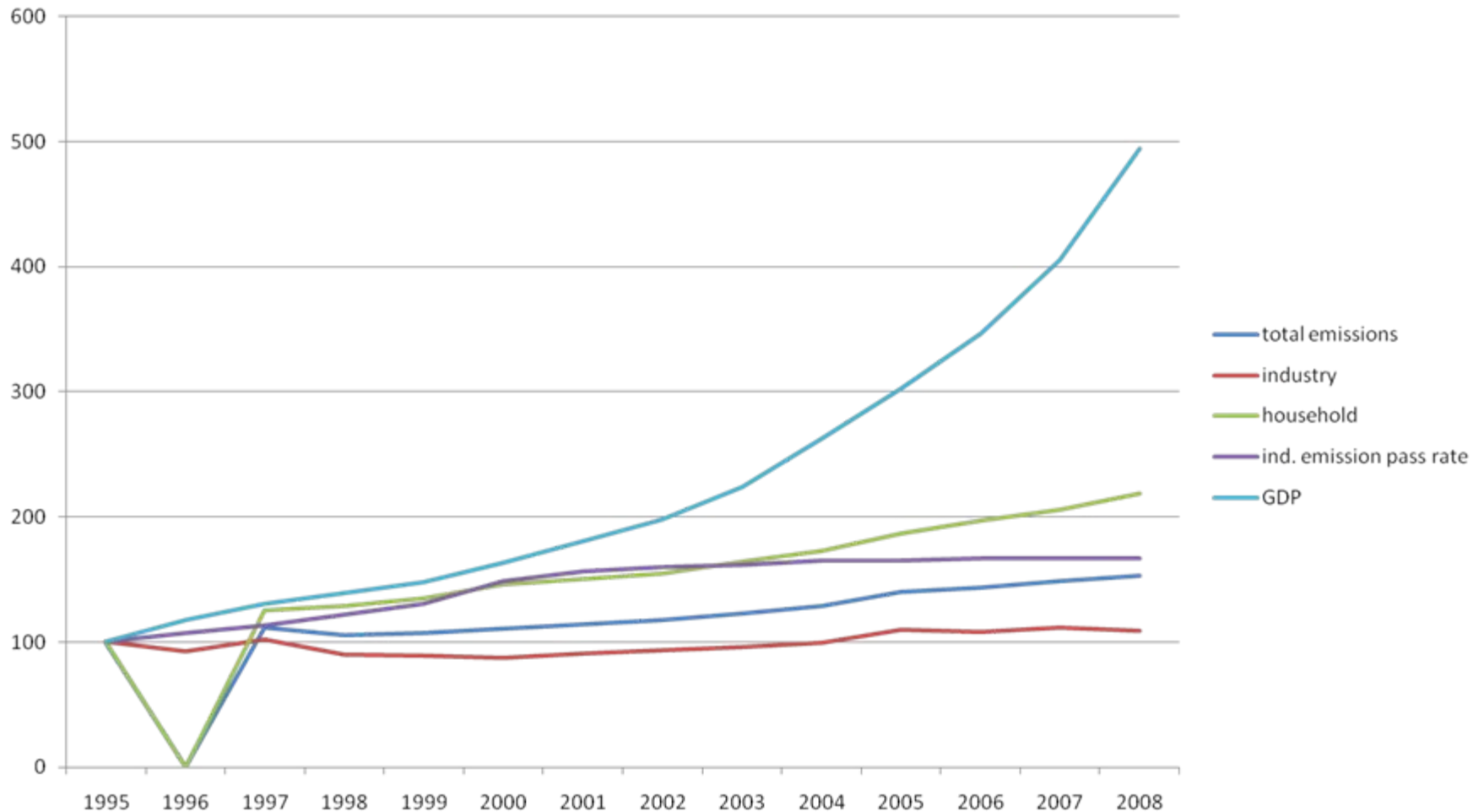
- SO<sub>2</sub> and COD emissions reduction by 2.1% and 2.7%;
- Great achievements on shutting down of demoded production capacity: 21 Mn Kw small thermal plants shut down; more than 1000 small coal mines.
- Forest coverage rate reached to 20.36% by 2008 with 2 years in advance.
- EP infrastructures: 11. 25 Mn m<sup>3</sup> increased on annual waste water daily treatment capacity, desulphurization capacity on thermal plants with 700 Mn Kw
- Rapid development on urban green economy: new and renewable energy accounted for 9% on total energy consumption; hydro power, nuclear power, solar water heating capacity and solar energy photovoltaic generation capacity at first range of the world, wind power capacity fourth of the world.

Source: Wen Jiabao, speech at the fifth EU-China Summit, Nanjing, Nov. 30<sup>th</sup>, 2009.

# Major pollutants and investment in pollution treatment

- Wasted water, COD, SO<sub>2</sub>, industrial smoke and powder, solid wastes
- Investment on pollution treatment
- Data from Ministry of Environmental Protection and National Bureau of Statistics.
  
- Conclusion: Contrary to energy consumption, major pollutants are disconnected with GDP growth while investment in pollution treatment increases in coherence with GDP.

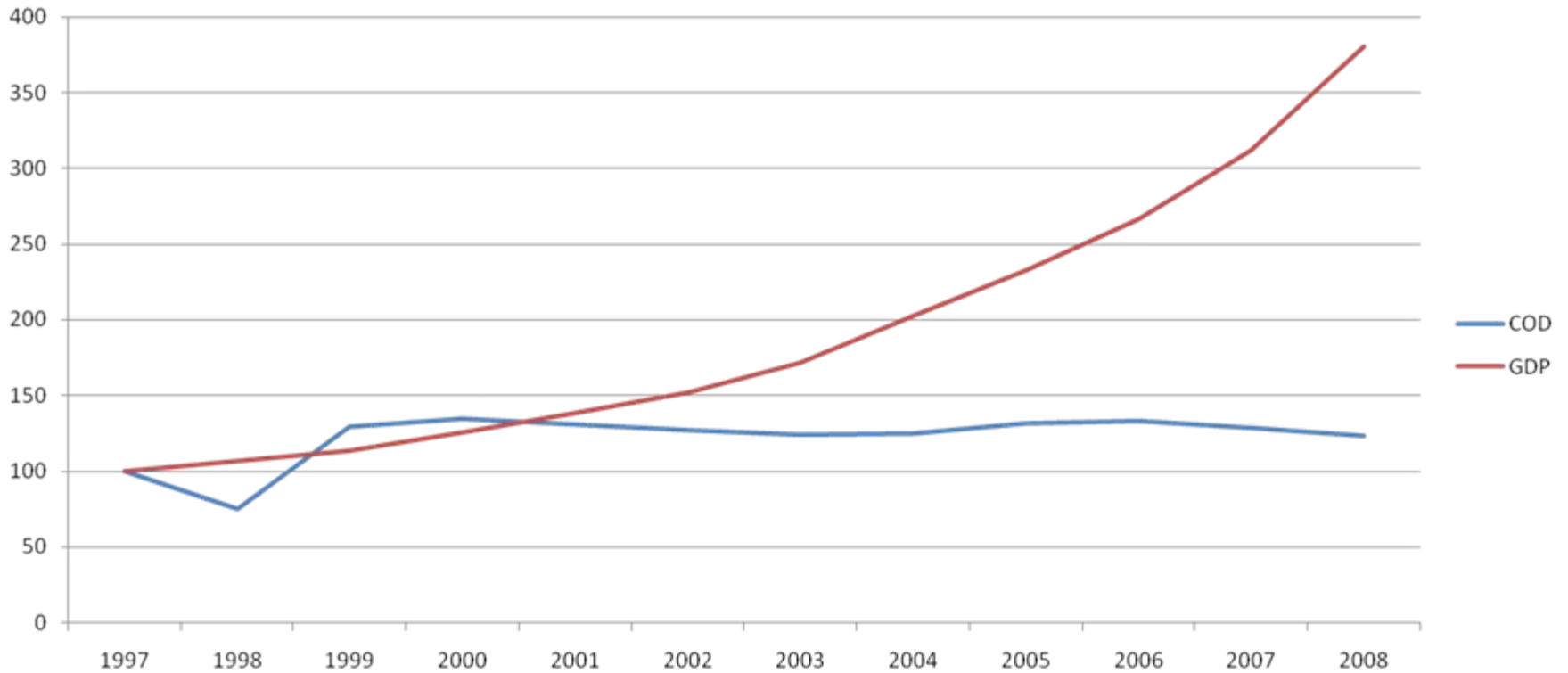
# Wasted water emissions 1995-2008



Emissions are not connected to GDP. Total emissions reached to 52 bn tons with 92% percentage of pass of emitted water in 2008.

1995 level=100. Note: total and household emissions not available for 1996.

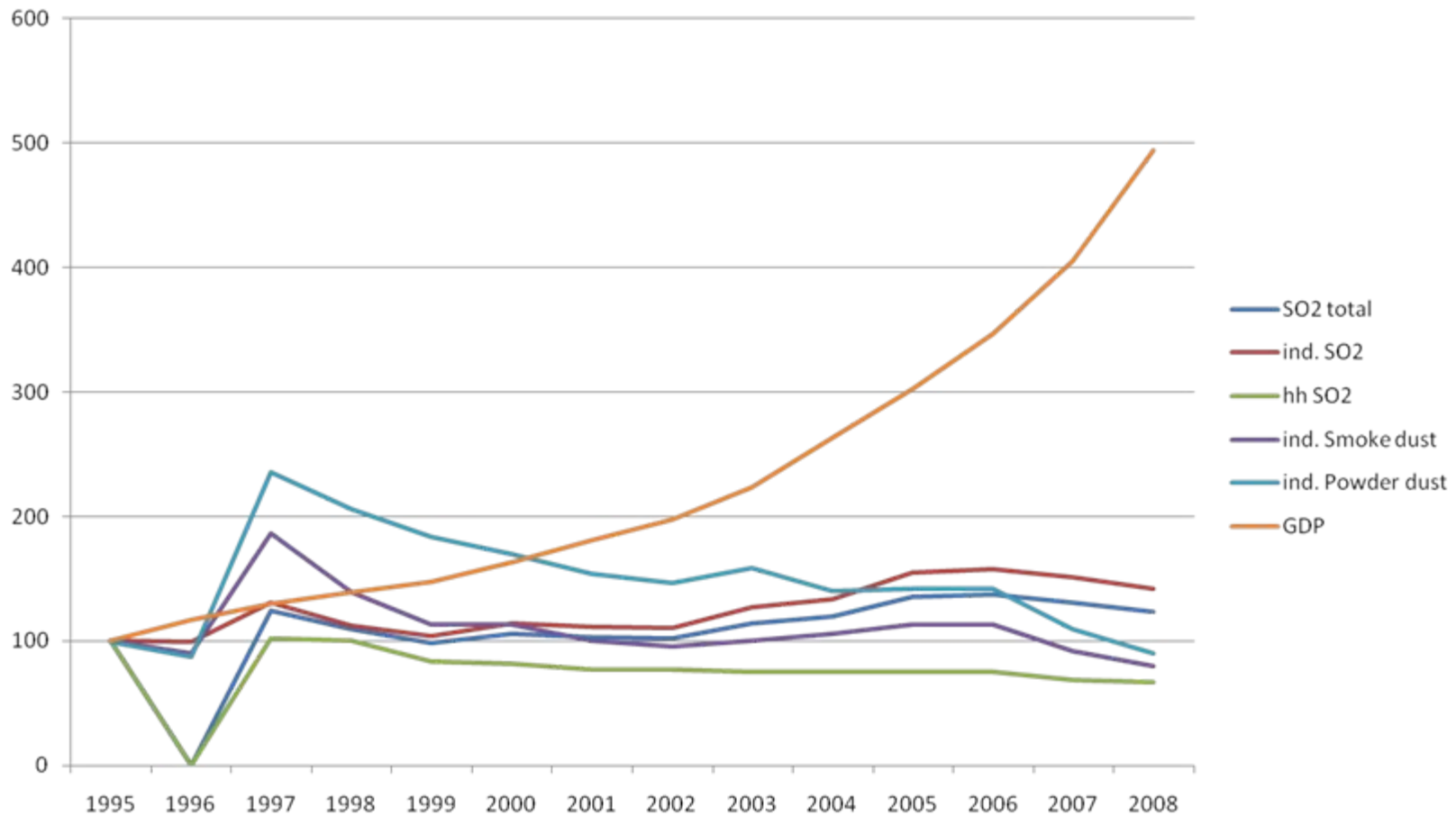
# COD Emissions 1995-2008



No connection with GDP growth. COD emissions reached to 13.21 mn tons in 2008.

Note: 1997 level=100.

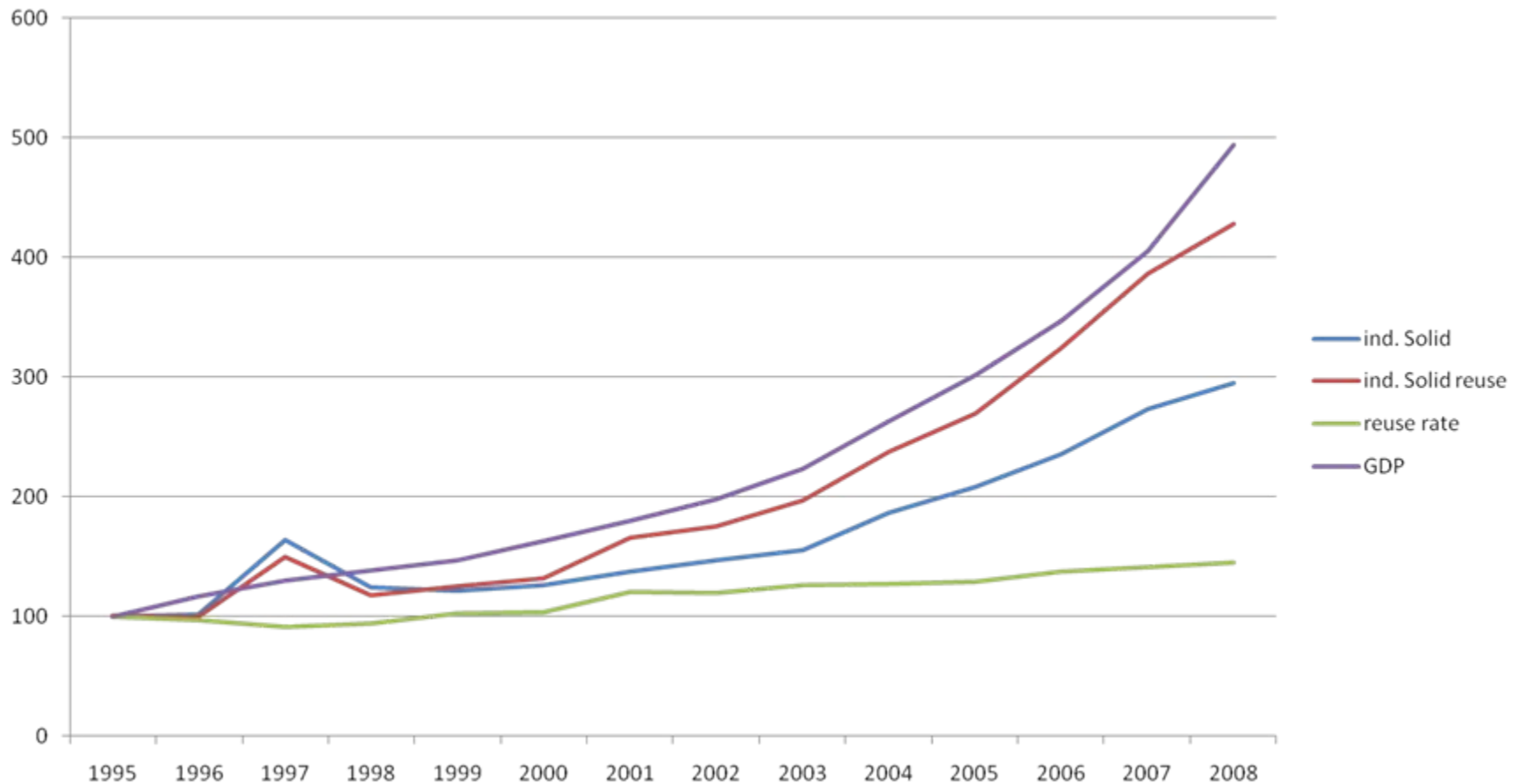
# SO2, smoke and powder Emissions 1995-2008



Emissions are not connected to GDP. Total emissions of SO2, smoke and powder reached to respectively 23.2, 6.7 and 5.8 mn tons in 2008.

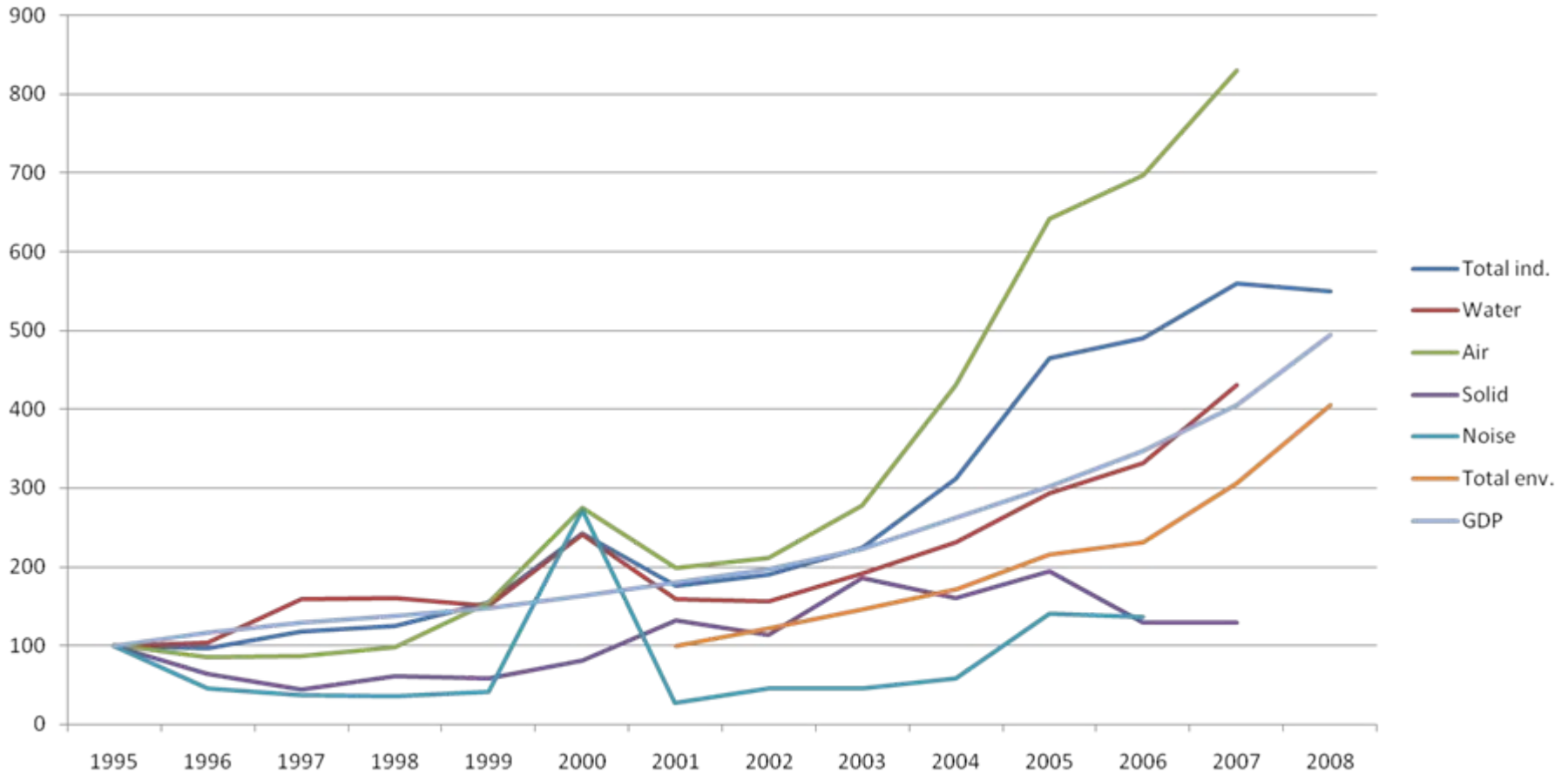
1995 level=100. Note: total and household emissions of SO2 not available for 1996.

# Industry Solid wastes, reuses



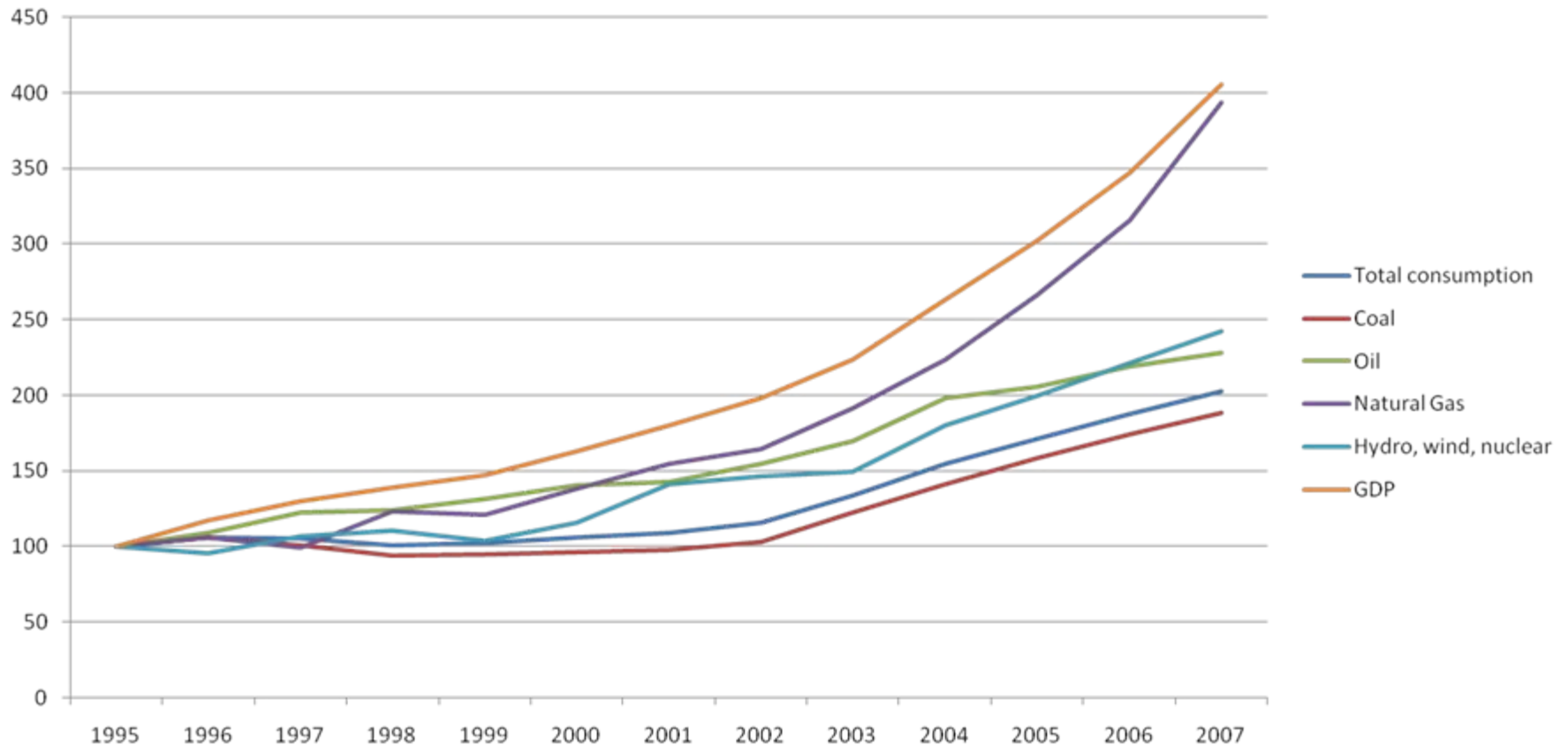
Emissions are partially connected to GDP. Total emissions of industry wastes reached to 1.9 bn tons with 64.3% as reuse rate in 2008.  
1995 level=100.

# Investment on pollution treatment 1995-2008



Investments used for industrial and total pollutions are related to GDP growth. Total investment reached to 449 bn yuan in 2008, that is 1.49% of the total GDP; investment in industrial pollutions accounted for 11% in total investments 2008. Note: 1995 level=100 except for total pollution investments with 2001 level=100.

# Energy consumption and GDP 1995-2007



Natural gas and new/renewable energies correlated with GDP growth; total (particularly coal) consumption made rapid increase since 2002.

Source: State Bureau of Statistics, China Energy Statistical Yearbook 2008.  
1995 level=100.

# Review: achievement and questions

- Great achievement on major pollutants. Improvement in env. performance. Possible to meet the very important 10% reduction goal for SO<sub>2</sub> emissions a year ahead of schedule.
- But carbon and energy intensity needs to be rebated: energy intensity 20% higher than OECD countries' average (2006). To reach the goal of 20% energy reduction per unit GDP from 2005 levels will require further reduction levels of 5.89 % in 2009 and in 2010.
- Many important pollutants such as ground level ozone, mercury and other heavy metals, etc. are not subject to targets, or even control strategies in the 11<sup>th</sup> Five Year Plan (2006-2010)
- 40%-45% carbon intensity target: too generous and ambitious (Pan Jiahua + other key researcher advisors of CASS, ERI (NDRC), etc.). But help to achieve simultaneously other env. goals.
- Trade challenges: prevent protectionism, but stricter criteria contribute to product quality and env. performance improvement in mid term (ref. REACH, State advisor Dr. YE Ruqiu).
- And still lots of serious problems: production structure still occupied by heavy industries; 1/3 water sources seriously polluted; wastes management, desert, flora and fauna, biodiversity are also in great challenges.

# Opportunities of EP and key areas for 12<sup>th</sup> Five Year Plan 2011-2015

- The opportunities associated with Low Carbon Economy should provide both competitive advantages and improved quality to future growth and green prosperity

## Proposals for consideration of constructing the 12<sup>th</sup> Five Year Plan (2011-2015) in China (source: CCICED):

- Energy conservation and energy efficiency needs in a variety of sectors to bring energy intensity in line with, or better than, existing international norms.
- Reduction in energy intensity for urban buildings, infrastructure construction and operations, and urban transportation.
- Continued efforts to expand as rapidly as possible the use of renewable energy sources in China, focusing particularly on wind, solar, marsh gas (methane), and small-scale hydro.
- Specific actions related to international arrangements on energy, environment and climate change, including carbon pricing and possible trading, CDM, bilateral and multilateral agreements on technology transfer and partnerships, IPR, and investment arrangements.
- Adaptation needs concerning climate change.

# Opportunities of EP and key areas for 12<sup>th</sup> Five Year Plan

- Mandatory targets for reduction in GHG emissions and carbon intensity of development.
- Continued improvement in environmental quality through more stringent reductions in pollutants covered under the 11th Five Year Plan mandatory targets, plus a broader range of pollution control (e.g. mercury from coal burning, NO<sub>x</sub>).
- A system for reduction in total pollution load for some sectors and regions.
- Improved protection for ecological services, and eco-compensation.
- Environment and health targets designed to reduce or eliminate mortality and cases related to specific causes, and improvement in environmental safety associated with key sectors such as coal mining and various types of industrial sectors.
- Full achievement of the MDGs within China, including those related to environmental sustainability.
- Strengthening frameworks to improve green growth opportunities, including scientific R&D, innovation technology investment, institutional strengthening and capacity building related to advanced efforts that will provide China with new economic growth opportunities and export potential related to meeting international demand especially those related to environment and energy.
- Improvement to the statistical information base for both energy and for environmental performance.

# Conclusions

- Stricter norms and criteria need to be implemented in order to maintain a sustainable growth.
- CCICED 2009 annual meeting proposals on key areas: Sustainable Use of Coal, Urban Energy and Environment, Rural Energy and Environment, Economic Instruments for Energy and Environment, and Low Carbon Economy.
- Domestic solutions and cooperation, on tech., financing, capacity buildings, etc.
- Market-based instruments should play more: environment tax, carbon tax, energy tax, etc.

**Thank you!**  
[www.iddri.org](http://www.iddri.org)