# 能源效率和可再生能源的政策与效果

# Energy Efficiency and Renewable Energy

# ——Policies and Related Impacts

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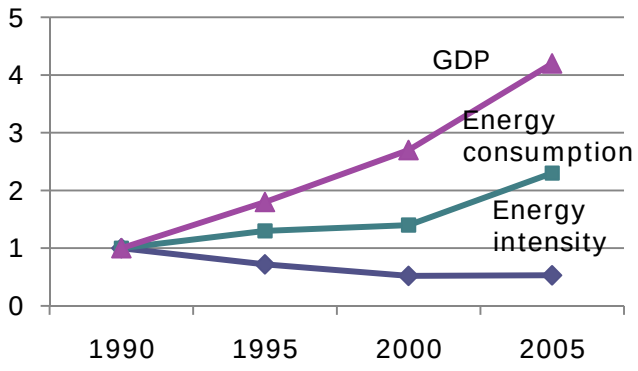
# 1. 中国在节约能源、提高能源效率方面做出了巨大努力，并取得显著成效，但能源消费和$CO_2$排放总量仍呈较快上升趋势

## Huge endeavor had been made in energy saving and improving energy efficiency, and marked progress had be made, but energy consumption and $CO_2$ emission still growth rapidly

- 国家制定高耗能产品和终端能耗标准（46项），新建建筑实行50~65%的节能标准。制定激励节能和可再生能源发展的法律财税政策。
  - 46 national energy consumption standards for energy intensive products and end-use facilities have been crafted and a standard of saving 50-60% energy implemented for new buildings. Fiscal and taxation laws and incentives have been introduced to promote energy conservation and renewable energy development.
- 2006到2008年，单位GDP能源强度分别比上年下降1.8%、4.0%和4.6%。努力实现2010年比2005年下降20%的目标。
  - Energy intensity of GDP was 1.8% lower than the previous year in 2006, 4.0% lower in 2007 and 4.6% lower in 2008, moving toward achieving the target of decreasing energy intensity by 20% from 2005 to 2010.
- 从1990~2005年，中国单位GDP的能源强度下降47%，年均下降4.1%，相应$CO_2$强度年均下降4.3%，为世界罕见。
  - Energy intensity of GDP has decreased by 47% from 1990 to 2005, with an annual decrease rate of 4.1%. And the annual decrease rate of CO2 intensity of GDP was 4.3%, which is unprecedented in the world.
- 1990~2005年，GDP增长4倍多，$CO_2$排放总量也增长一倍。人均$CO_2$排放量1990年约为世界平均水平的一半，2007年已接近世界平均水平。
  - From 1990 to 2005 the GDP increased by over four times while the CO2 emission by two times. CO2 emission per capita was just half of the world average in 1990 but close to the world average level in 2007.



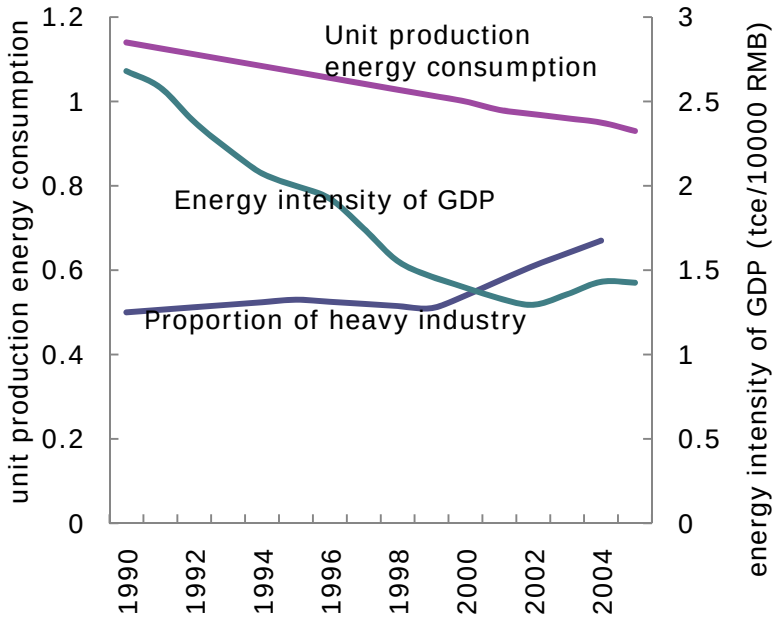

**The comparison among growth index of GDP, energy consumption and energy intensity**

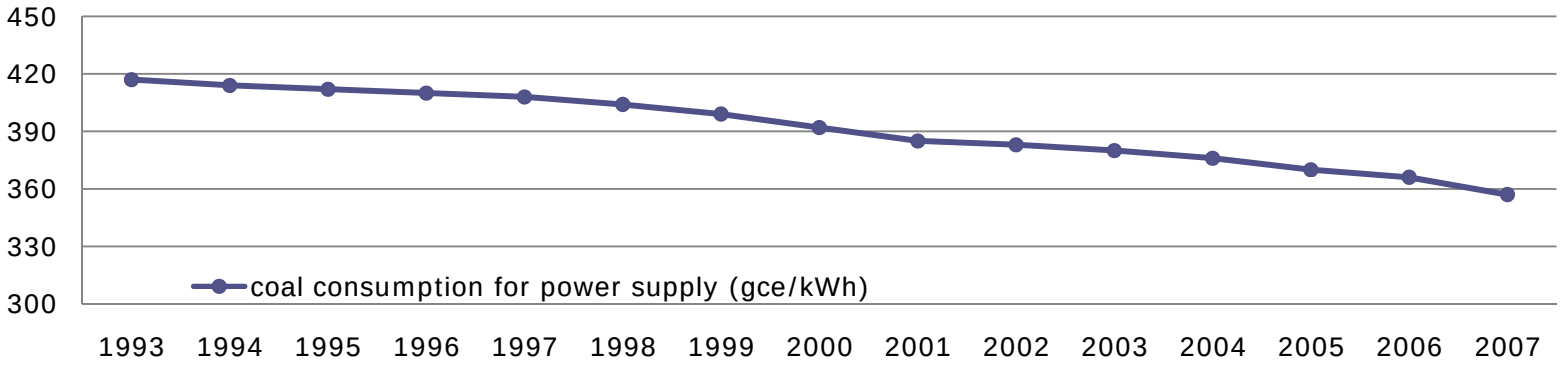
## 2. 中国能源领域技术进步显著，能效快速提高。但近年来重化工业和高耗能产业的快速发展，抵消或减缓了GDP能耗强度的下降趋势

**China has make marked progress in energy technology advance and energy conservation. But the rapid development of outputs of energy intensive sectors has offset the trend of energy intensity decrease.**

主要高耗能产品能源单耗持续下降，供电煤耗近10年下降50 gce/kWh，效率提高14.2%。2007年新投产容量中600MW以上大机组占70%，包括4×1000MW超超临界机组。当年关闭小火电机组14.3GW。

The energy consumption per unit production of main energy intensive products has decreased. The energy consumption per KWh of electricity supply had decreased by 50 gce during the last ten years with energy efficiency increasing by 14.2%. 70% of the new installations of power plants are 600MW or larger in size, including 4×1000MW super ultra critical installation. A total 14.3 GW of small scale coal-fired plants have been shut down.

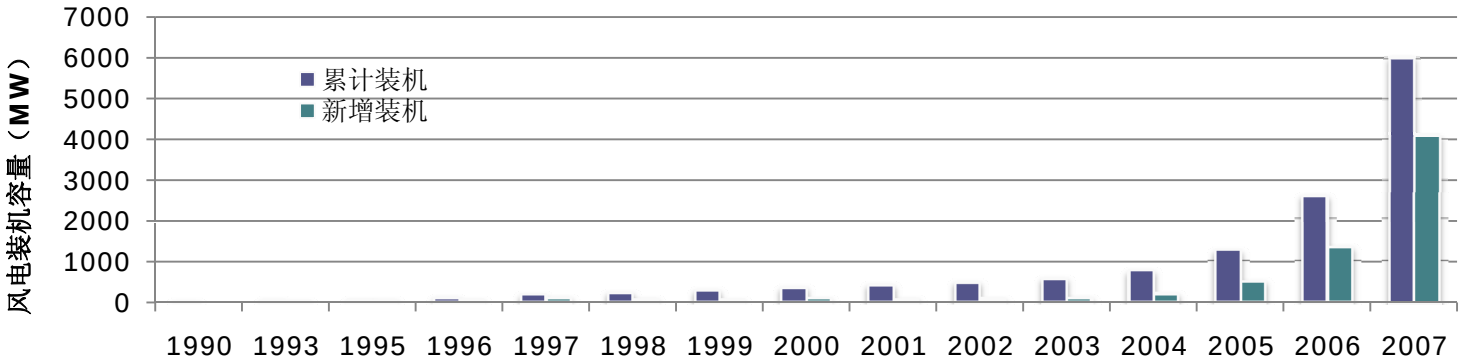


## 3. 我国可再生能源、核能发展迅速，比重持续增加，但相当长时期内仍不能满足新增能源需求，煤炭等化石能源仍会继续增长

**Although renewable energy and nuclear energy have witnessed a rapid growth and their shares in primary energy supply increased as well, they can not meet the new increased energy demand. So the supply of coal and other fossil fuels will keep growing.**

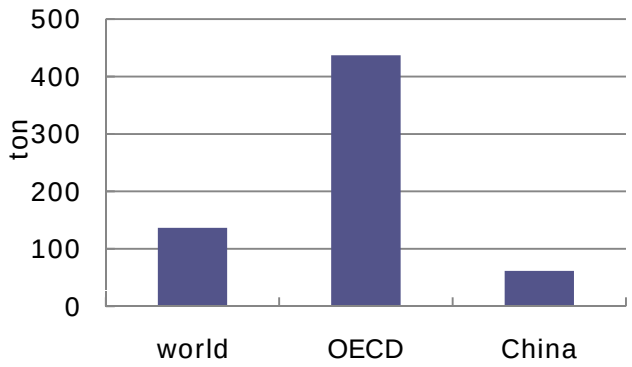
- 到2008年底，我国核电装机9GW，风电装机12GW，均呈快速增长趋势。
  - The installed capacity of nuclear, and wind power reached 9GW, and 12GW respectively by the end of 2008, demonstrating a the rapid growth trend.
- 2020年可再生能源在一次能源构成中比重将由目前的7%提高到15%。相当于6亿吨标准煤，核电将超过70GW，风电也将超过100GW。
  - The share of RE in the primary energy consumption would increase to 15% in 2020 from 7% in 2005, or 600 million tce in amount. And the nuclear power would be more than 70GW,and wind more than 100GW.
- 到2020年，我国经济会快速增长，可再生能源发展速度和规模仍不能满足新增能源需求，煤炭等化石能源的消费量仍会有所上升。
  - With the rapid growth of China's economy, the size and growth rate of RE would not be large enough to meet the new increased energy demand, as a result, the consumption of fossil fuels would keep growing.



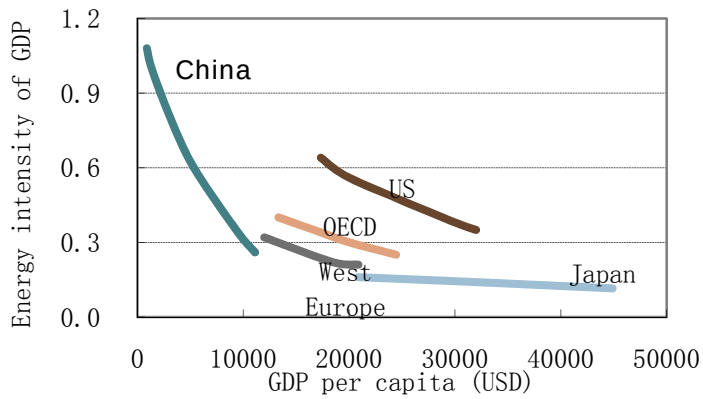
## 4. 中国工业化、城市化进程中，现代化基础设施还需要一定时期的积累过程，但需要探索低能耗、低排放的低碳发展之路

**China needs to experience a process of accumulating modern infrastructure during her industrialization and urbanization, but also should explore a low carbon development pathway characterized by low energy consumption and low carbon emission.**

- 人均累积$CO_2$排放反映了一个国家现代化进程中利用有限大气空间对自身发展、现代化基础设施建设、社会财富的累积贡献。
  - The per capita accumulated $CO_2$ emission of a country represents the accumulated contribution of the county to her development, modern infrastructure construction and social welfare building during her modernization with limited emission atmosphere space.
- 中国坚持节约资源、保护环境的基本国策，与发达国家的发展历程相比，可以实现更为节约资源和能源的道路，人均累积$CO_2$排放量到2050年也不会超过发达国家水平的1/3。
  - China can use less resources and energy during her development than developed countries due to China putting conserving resource and protecting environment as a basic national policy, resulting in China's per capita accumulated $CO_2$ emission would not more than one third that of developed countries.



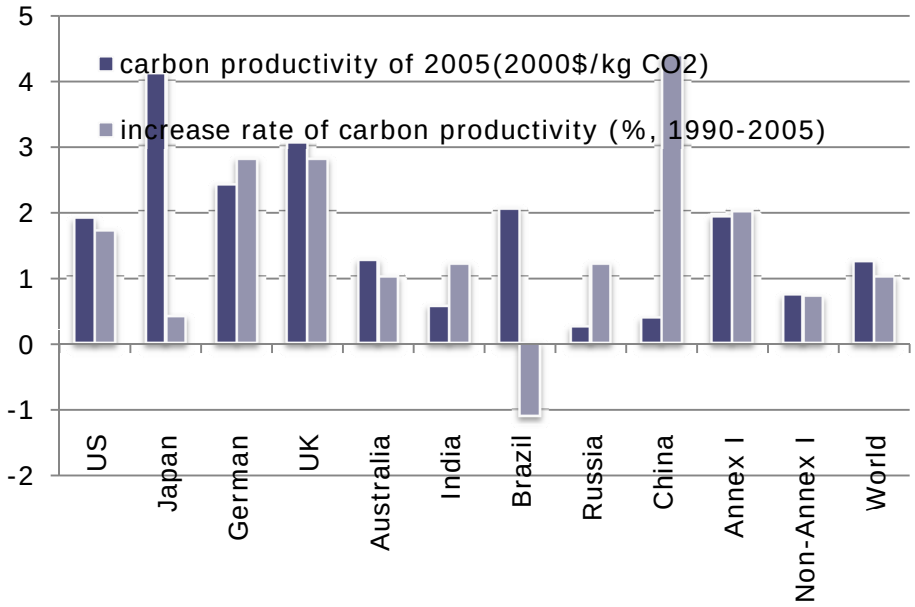

**Comparing of accumulated $CO_2$ emission per capita (1950-2002)**



# 5. 发展低碳经济，减缓碳排放，是中国可持续发展的内在需求，也是应对气候变化的核心对策

## Developing the low carbon economy and mitigating carbon emission reflect China domestic needs for sustainable development， and are also the core part of China's strategic responses to climate change

- 当前与解决国家能源安全、资源和环境约束、节能减排以及建设资源节约型、环境友好型社会的目标一致。
- Currently they are well consistent with the objectives of improving energy security, conserving resources and energy, protecting environment， and building resource conserving and environmentally friendly society.
- 我国当前碳生产力相对较低，但提高速度很快，由于受到经济发展阶段的制约，达到发达国家水平还需要一个相当长时期的努力过程。
- The carbon productivity in China is relatively low now, but has increased rapidly. It will need a rather long time for China to increase her carbon productivity to the level of developed countries due to the constraints of economic development stage.
- 低碳经济的现代化道路世界尚无先例，中国需要探索，并做出成效。
- Since pursuing a modernization road characterized by low carbon economy is unprecedented, China needs to take substantial efforts to safeguard success.

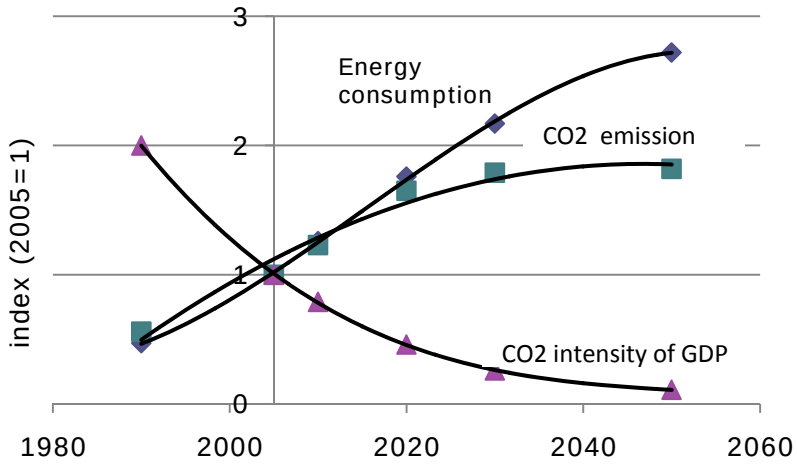



**Comparing of carbon productivity between main countries**

# 6. 中国在发展低碳经济方面正在和进一步作出巨大努力，已经并将进一步取得显著成效

## China has taken substantial efforts to develop low carbon economy and achieved marked progress. The momentum will be maintained in future

- 中央政府已制定十大节能工程（到2010年形成2.4亿tce节能能力）；并与1000家大型企业签署节能协议（到2010年实现节能1亿tce）；2007年政府投入节能基金280亿元。
- The Central Government has launched ten energy conservation programs with a total energy saving of 240 million tce by 2010, and signed energy saving agreements with 1000 enterprises with a total energy saving of 100 million tce by 2010. The Government provided 28 billion RMB fund for energy conservation in 2007.
- 淘汰落后产能，到2010年，淘汰小水泥生产能力2.5亿吨，小炼铁、炼钢能力1.5亿吨，小火电机组50GW。
- Shutting down of small cement production facilities with a total production capacity of 250 million ton, small steel and iron production facilities with total production capacity of 150 million tons, and 50 GW of small thermal power plants.
- 到2020年，单位GDP的$CO_2$强度将比2005年下降40%以上。
- The $CO_2$ intensity of GDP would go down over 40% in 2020 compared with 2005.




**$CO_2$ emission Increasing Vs. $CO_2$ intensity of GDP decreasing in China**

*Thanks !*