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# Country Profile of Renewable Energy: China

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CREIA



renewable  
energy  
& energy  
efficiency  
partnership

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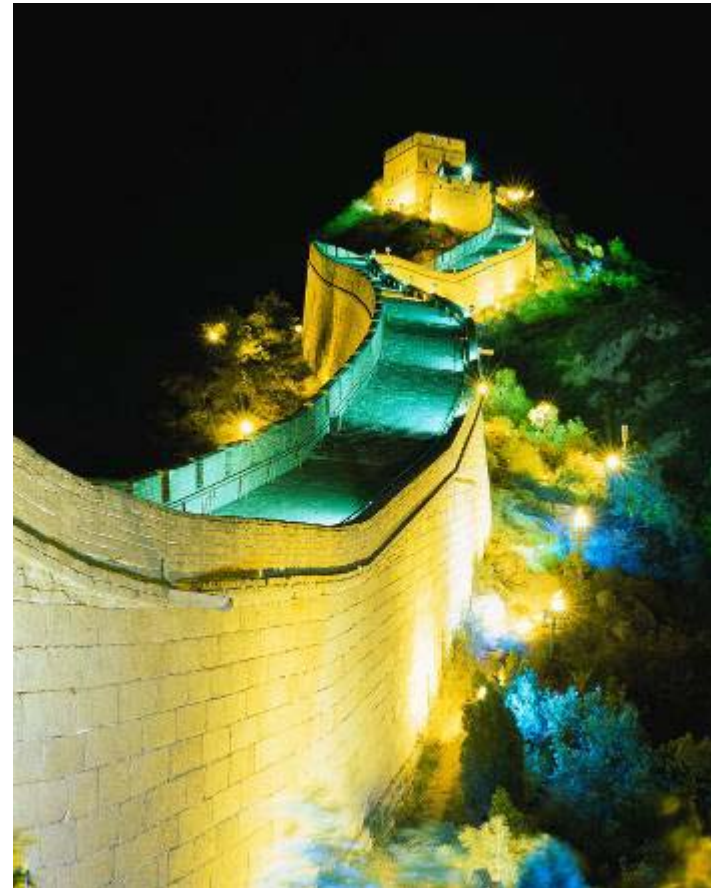
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# Agenda

- Country profile
- Strategic position of RE in China
- Status of RETs utilization in various sectors
- Incentive policy for RE development
- Impact of the RE Law
- R&D
- Plan and trends

# Country profile

- Population 1.31billion
- Area 960 million ha
- Total GDP 20,000 billion Yuan or = 2000 billion Euros
- TPS 2460 million tce
- GDP per capita 1500 Euro
- Energy use per capita, 1892 kgce, 2006



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# Strategic position of RE

- GDP growth over 10% from 2004-2006
- Energy consumption growth near 10% since 2000.
- 2.46 billion tce in 2006
- Facing pressure of energy security and global climate change

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# Strategic position of RE

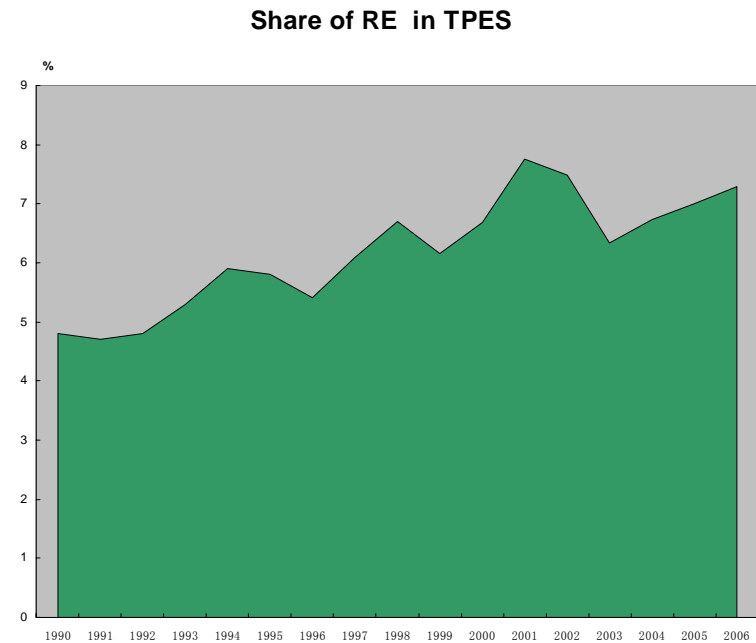
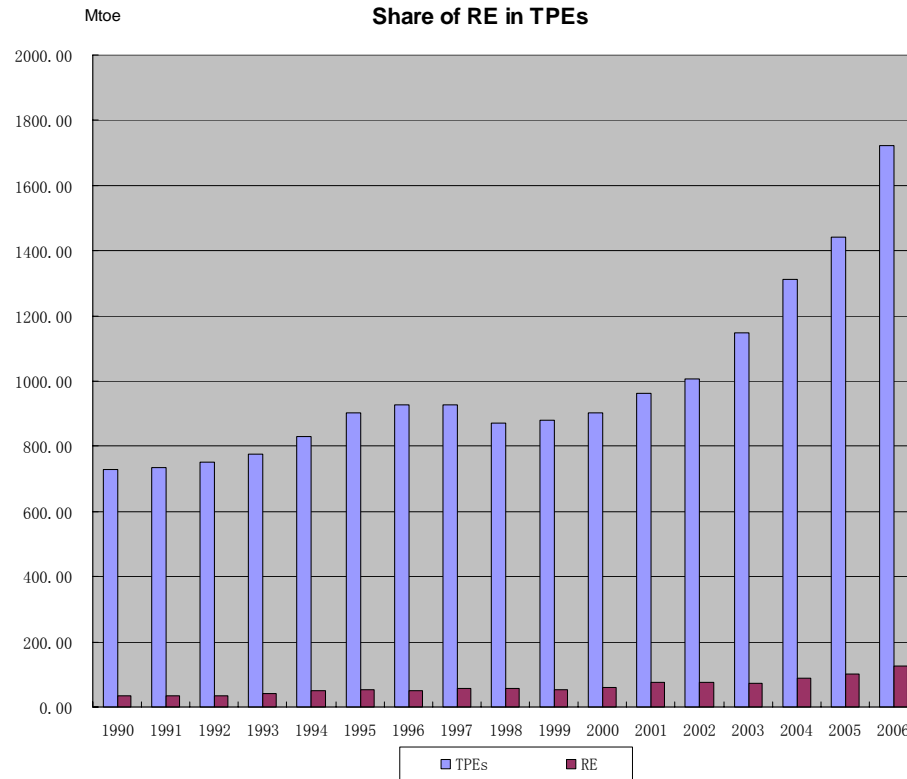
- Triangle support to combat energy security
  - Efficient utilization of convention energy resource
  - International cooperation to improve the energy utilization technology
  - Encourage the development of new and renewable energy
- Two pathways towards sustainable development of energy
  - Renewable energy
  - Energy efficiency

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# Strategic Position of RE

- Share of RE in 2006
  - 0.93% within total energy consumption
  - Covers electricity, heating, gas, and bio-fuel
- RE portfolio in 2006 (hydro excl.)
  - Electricity 19.8%
  - Heating 73.9%
  - Bio-fuel 6.2%

# Historical Share of RE in TPES



# RETS Market Against Sectors (2006)

## ELECTRICITY SECTOR

### Electricity generation: total renewables

<b>Unit: TWh per year</b>	<b>429.63</b>
Hydro (TWh)	416.70
of which: Pumped Storage	na
Wind (GWh)	3868.00
Solar PV(GWh)	105.00
Solar Thermal (GWh)	0.00
Geothermal (GWh)	79.20
Biomass excl. CHP (GWh)	3891.25
Biomass CHP (GWh)	4968.0
Tide, Wave, Ocean (GWh)	18.0



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# RETS Market Against Sectors

## (2006)

### Heating Sector

Solar thermal (GWt)

66.50

Geothermal (GWt)

N/a

Biomass heat

N/a



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# RETS Market Against Sectors (2006)

## TRANSPORT SECTOR

Ethanol (million tons)      1.56

Biodiesel (million tons)      0.19

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# Key RE Policies

1. Renewable Energy Law of the People's Republic of China ( Adopted by the 14th meeting of the Standing Committee of the 10th NPC on Feb. 28, 2005 )
2. Catalogue for the Guidance of Renewable Energy Industry Development, NDRC Energy No. ( 2005 ) 2517
3. Interim Measures for Renewable Energy Power Price and Cost-sharing, NDRC Price No. ( 2006 ) 7
4. Management Rules of Renewable Energy Power Generation, NDRC Energy No. (2006)13
5. Interim Measures for Management of Special Fund of Renewable Energy, MoF Construction No. ( 2006 ) 237
6. Implementation Notes of Enhancement of Renewable Energy Industry Development, NDRC Energy No. ( 2006 ) 2535
7. Interim Measures for Allocation of Additional Benefits from Renewable Energy Tariff, NDRC Price No. ( 2007 ) 44
8. NDRC, MoF about Strengthening Bio-fuel Ethanol Project Construction and Management, Enhancing Healthy Development of the Industry, NDRC Industry No. [2006] 2842
9. Measures for Management of Product Oil Market, Ministry of Commerce Mandate No. 23 (2006)

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# Key RE Policies

10. Transformed Fuel Ethanol GB 18350-2001
11. Vehicle use Ethanol Gasoline GB 18351-2004
12. Interim Measures of of Special Fund for Renewable Energy Use on Buildings , MoF construction No. ( 2006 ) 460
13. Review Measures for Demonstration Project of Integrating Renewable Energy with Buildings, MoF construction No. [2006]459
14. NDRC about Requirements of Management of Wind Farm projects , NDRC Energy No.〔2005〕 1204
15. Interim Measures of Management of Land use of Wind Farm Construction Project and Environmental Protection , NDRC Energy No.〔2005〕 1511
16. Technical Regulations of Application of Solar Water Heater Use in Domestic Buildings , GB50364—2005
17. National Grid Company about Regulations of Connecting Wind Farm into the Power, Grid (tentative), National Grid Development No. [2006]779
18. National Grid Company about Further Regulation of Design of System Connecting Wind Farm into Grid (tentative), National Grid Development No. [2006]779

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# Impacts of renewable energy law

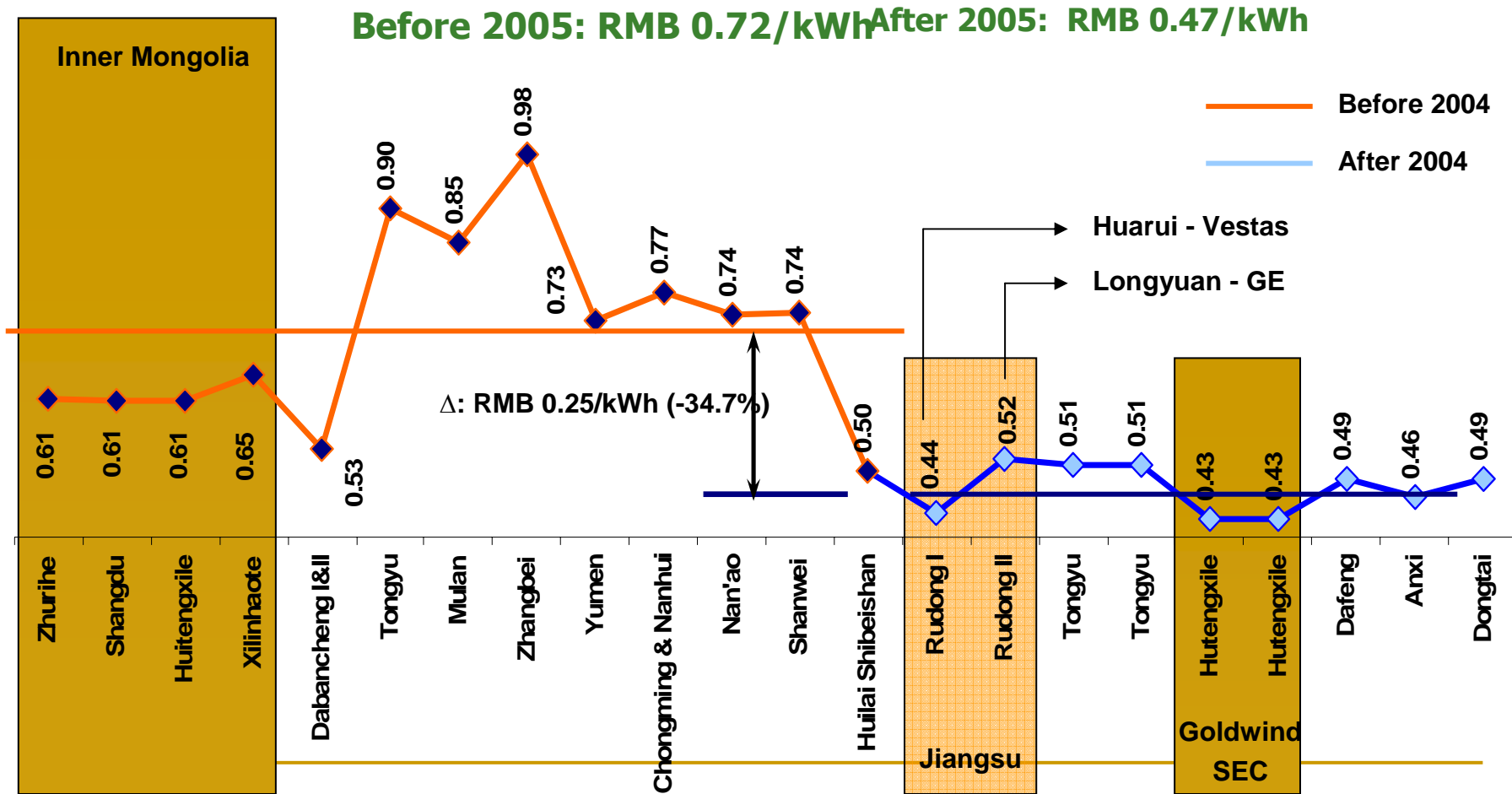
- Current status of the law
- Impacts of the law
  - Market expansion
  - Investment involvement
  - Manufacture's booming
  - International influence

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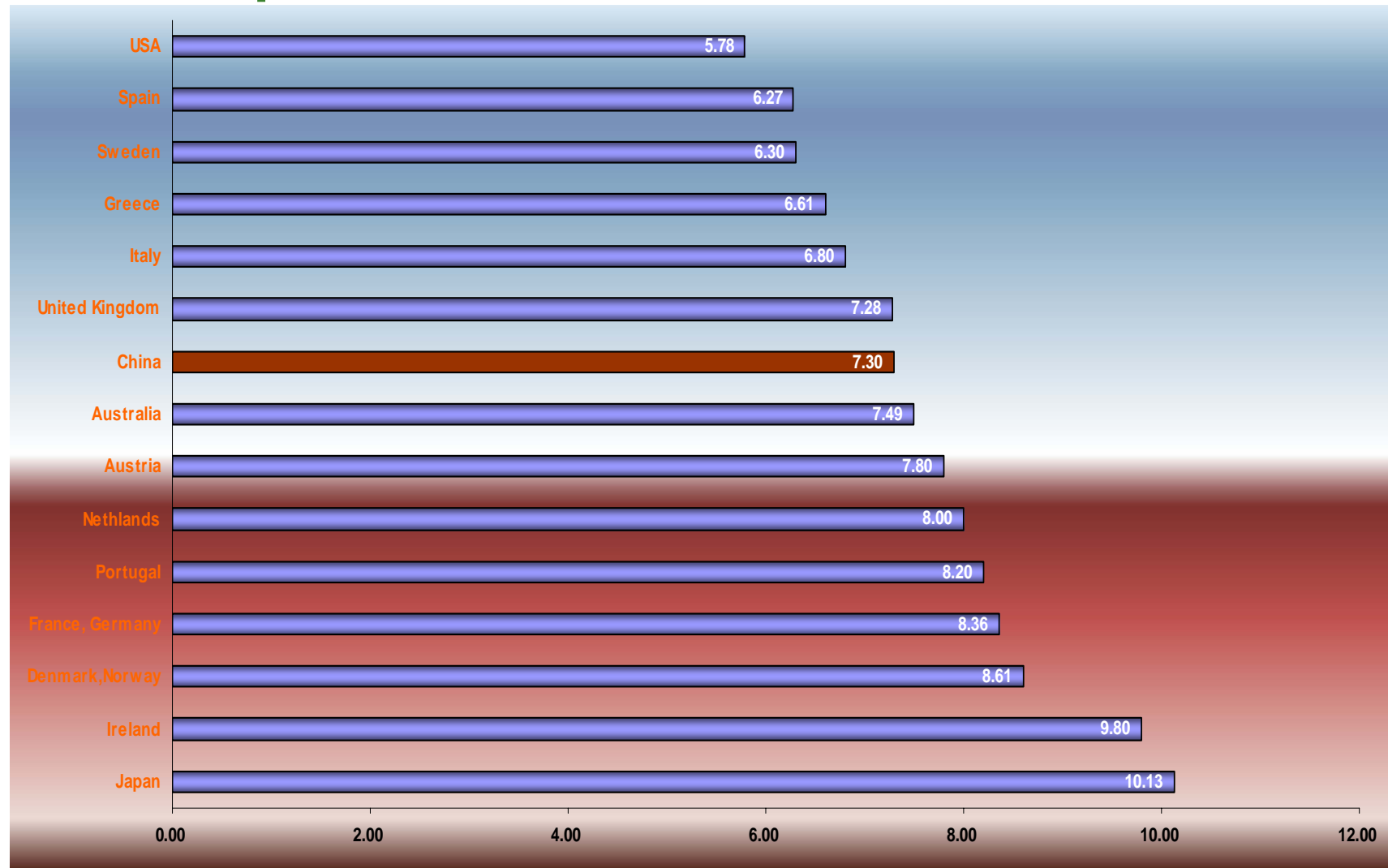
# Current status of law

- 12 regulations should be developed
- 10 of them have been issued
- Most important one
  - the price and cost sharing
  - National fund for RETs
- The rest one is taxation and favorite bank loan

# Wind price in China



# Wind price international





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# Good news for wind price

- Local is higher than the central government
  - 5 to 10 cents high
- Local approval more than control approval
  - One 25% is approval from central government
- Price bureau is conducting investigation for price system improvement
- The Vice Chair for price indicated that NDRC will gradually make right price system

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# Renewable market expansion

- Wind
  - 1337 MW to be added in one year
  - 2.6 GW accumulated
  - Ranked 6<sup>th</sup> in the world
- Solar PV
  - 1000 MW for capacity
  - 360 MW for real production
  - 7 companies listed in stock market
- Solar thermal
  - 100 million square meters have been installed, with annual production 10 million square meters

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# Investment involvement

- All the state owned large investor start into RETs
- Private sector involved slowly
  - Mainly in the solar and small hydro sectors
- International investment
  - mainly through the venture capital
  - FDI is limited

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# Manufacture booming

- 30+5 wind turbine manufactures are ready for production
  - Include GE, Vestas, Suzlon, Gamsa and other
  - Most of people believe that by 2010, the annual production of WTG will be over 5 GW
- More than 300 solar PV and more than 3000 solar collector manufactures

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# International influence

- China is not only for coal
- Renewable energy became playing some role
- International cooperation increased
  - USA discussed for supporting to set up RE lab
  - EU
    - set up a clean energy center
    - Open R&D for China
  - Australia
    - We have a lot in fast
    - What is the new?

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# Next step for the law improvement

- A national wide comments have been taken
- A annual review will be hold during 20<sup>th</sup> of April
  - Every ministry will report to NPC for current status and next step
- Most concern by the investor is wind price
  - Continue to argue with the price bureau.
  - No any signal to change yet.

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# Taxations and bank system

- The new taxation law was just issued
  - Energy efficiency, waste utilization has been put into the favorite taxation system
  - Renewable is not yet, however, the taxation department indicated, renewable will sure be in the listed of low taxation system
- Bank loan
  - Most of the banks put renewable energy as investment priorities
  - National development bank takes majority of the investment

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# Industrial support

- NDRC and MOF issued a paper
  - Supply subsidized for localization of wind, solar
  - Support set up national test center for wind
  - Set up a national test wind farm for new turbine demonstration
  - Lunched a solar power demonstration in west desert areas and roof top in Beijing, Shanghai and other developed cities



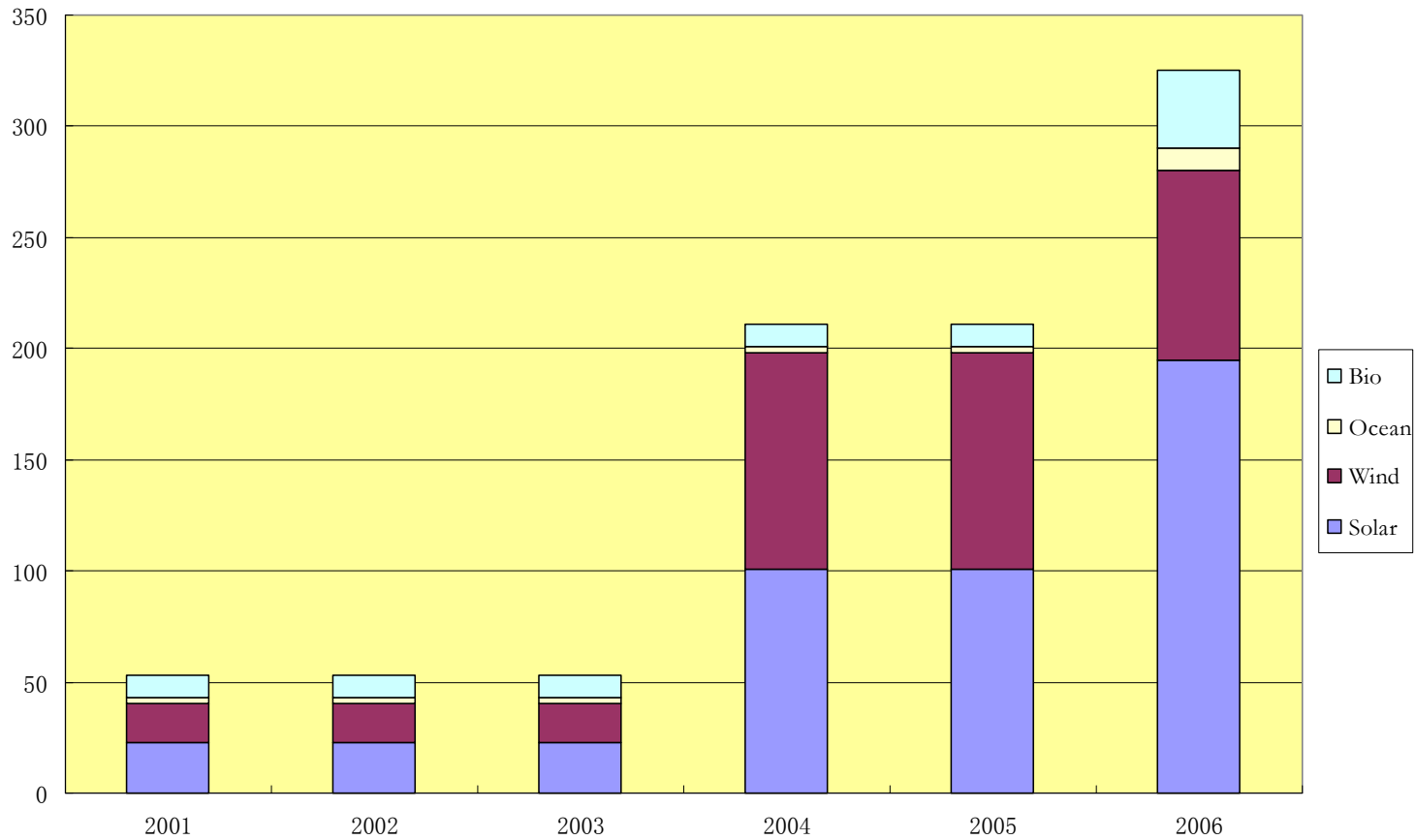
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# Resources assessment & strategy

- NDRC launched program for national RETs resource assessment
  - Wind map
  - Biomass for power
  - Biomass for liquid fuel
- NDRC and National energy lead group
  - Start a study for energy strategy for 2030 and beyond

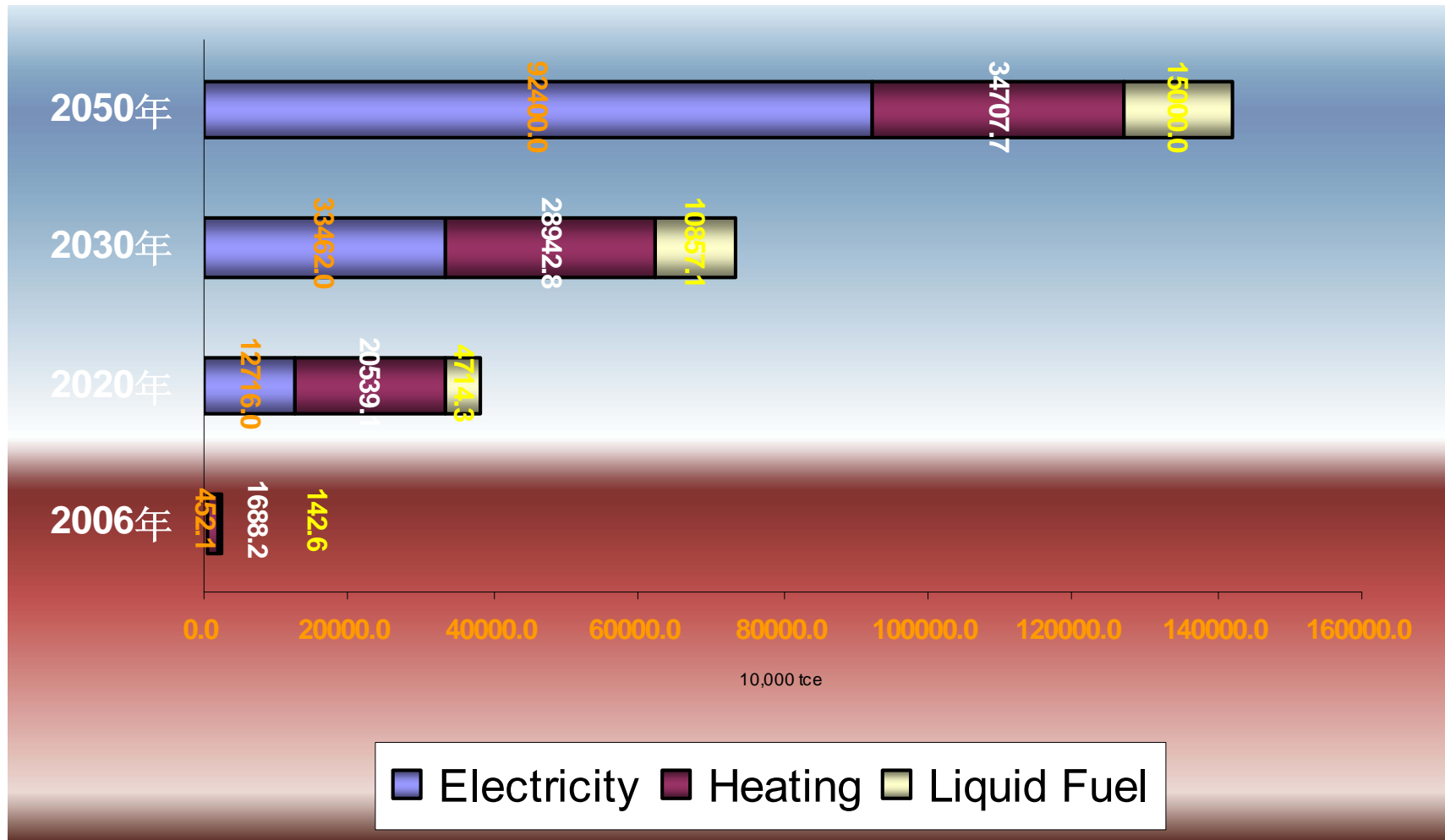
# R&D National Budget and Share

Million Yuan



2001	2002	2003	2004	2005	2006
53	53	53	211	211	325

# Plan & Trends



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# Thanks

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