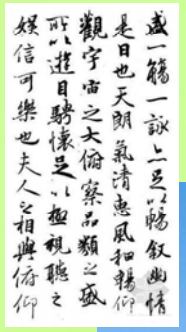
China's Climate Change Actions as a Developing Country



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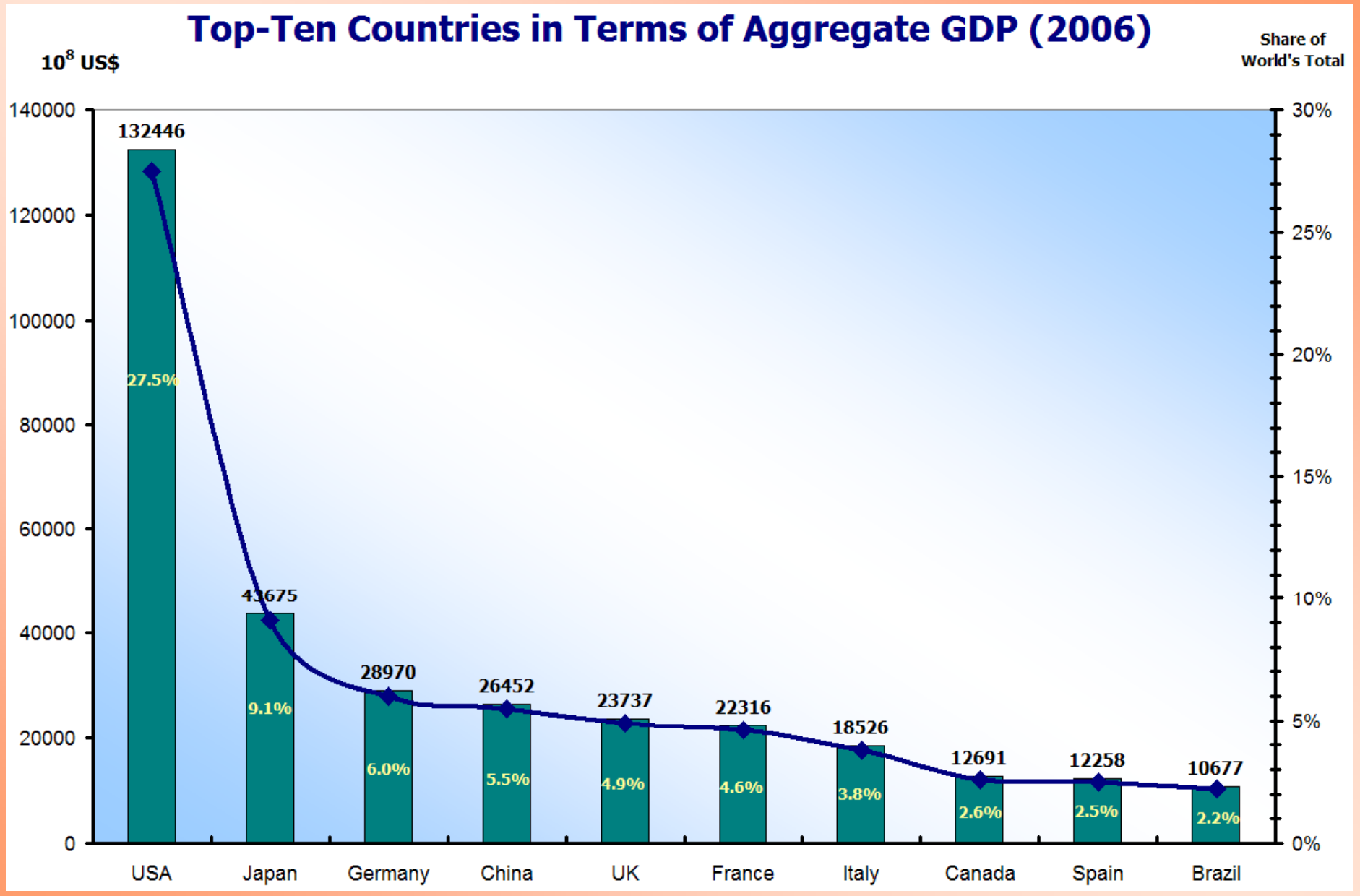
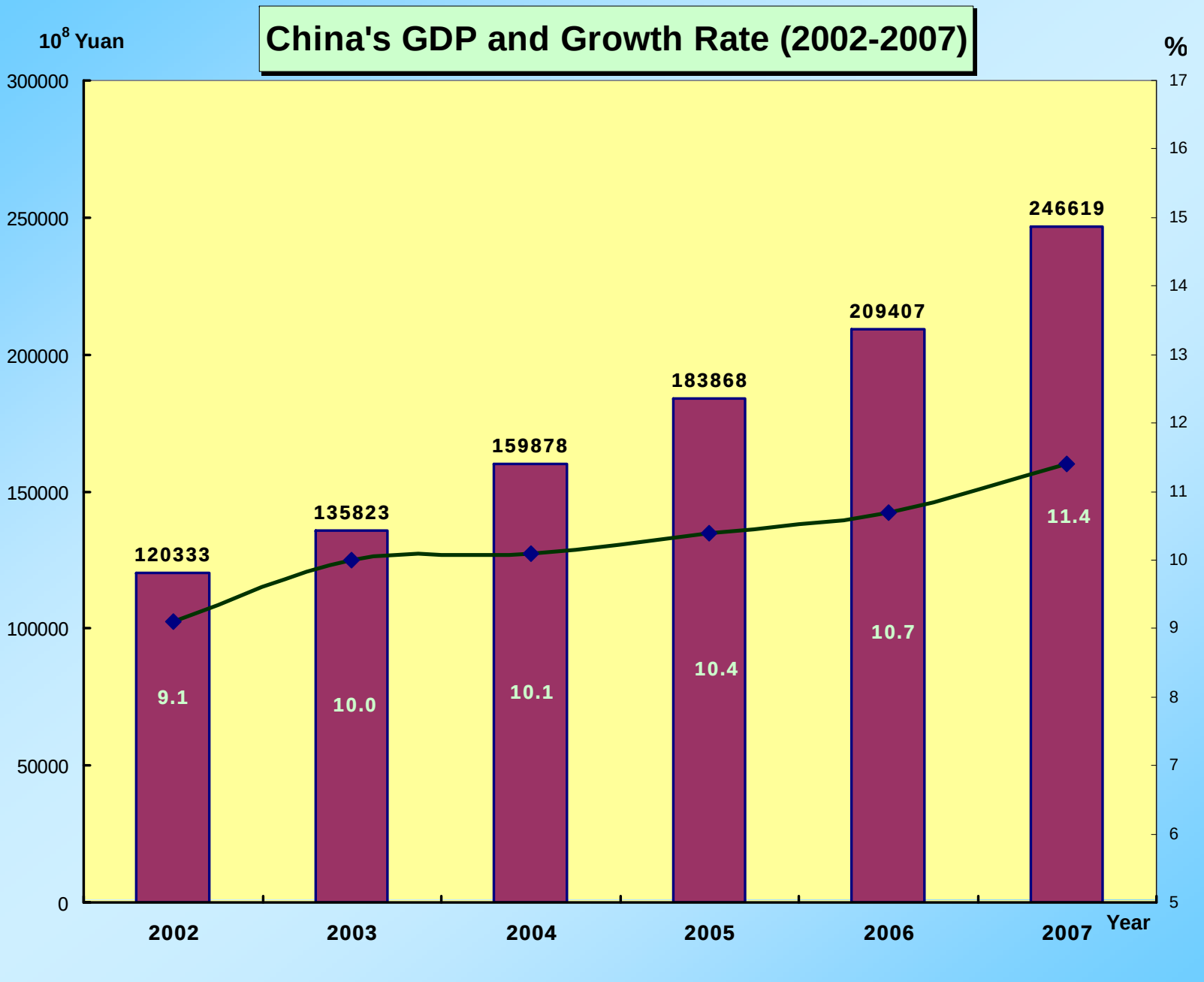
Country Listing by GDP-2007 (nominal) source: the IMF

Rank	Country	GDP (millions of USD)
—	***World***	**54,311,608**
—	*European Union*	16,830,100
1	United States	13,843,825
2	Japan	4,383,762
3	Germany	3,322,147
4	China (PRC)	3,250,827
5	United Kingdom	2,772,570
6	France	2,560,255
7	Italy	2,104,666
8	Spain	1,438,959
9	Canada	1,432,140
10	Brazil	1,313,590
11	Russia	1,289,582
12	India	1,098,945
13	South Korea	957,053
14	Australia	908,826
15	Mexico	893,365
16	Netherlands	768,704
17	Turkey	663,419
18	Sweden	455,319
19	Belgium	453,636
20	Indonesia	432,944

Country Listing by GDP-2007 (nominal) source: The World Bank

Rank	Country	GDP (millions of USD)
—	***World***	**54,347,038**
1	United States	13,811,200
—	*rozone*	12,179,250[a]
2	Japan	4,376,705
3	Germany	3,297,233
4	China (PRC)	3,280,053
5	United Kingdom	2,727,806
6	France	2,562,288[b]
7	Italy	2,107,481
8	Spain	1,429,226
9	Canada	1,326,376
10	Brazil	1,314,170
11	Russia	1,291,011
12	India	1,170,968
13	South Korea	969,795
14	Mexico	893,364
15	Australia	821,716
16	Netherlands	754,203
17	Turkey	657,091
18	Belgium	448,560
19	Sweden	444,443
20	Indonesia	432,817


Top-Ten Countries in Terms of Aggregate GDP (2006)
10^8 US$
Share of World's Total
140000
120000
100000
80000
60000
40000
20000
0
30%
25%
20%
15%
10%
5%
0%
132446
43675
28970
26452
23737
22316
18526
12691
12258
10677
27.5%
9.1%
6.0%
5.5%
4.9%
4.6%
3.8%
2.6%
2.5%
2.2%
USA
Japan
Germany
China
UK
France
Italy
Canada
Spain
Brazil


China's GDP and Growth Rate (2002-2007)
10^8 Yuan
%
300000
250000
200000
150000
100000
50000
0
17
16
15
14
13
12
11
10
9
8
7
6
5
120333
135823
159878
183868
209407
246619
9.1
10.0
10.1
10.4
10.7
11.4
2002
2003
2004
2005
2006
2007
Year

China's electric power development

China's electric power has experienced a fast-paced period, along with the rapid social and economic growth ever since 1980s. Some important milestones are chronicled as follows

♦December,1987, China's installed capacity hit 100GW, an important milestone for the development of China's power industry

♦ March,1995, China's installed capacity reached 200GW

♦ April, 2000, China's installed capacity reached 300GW

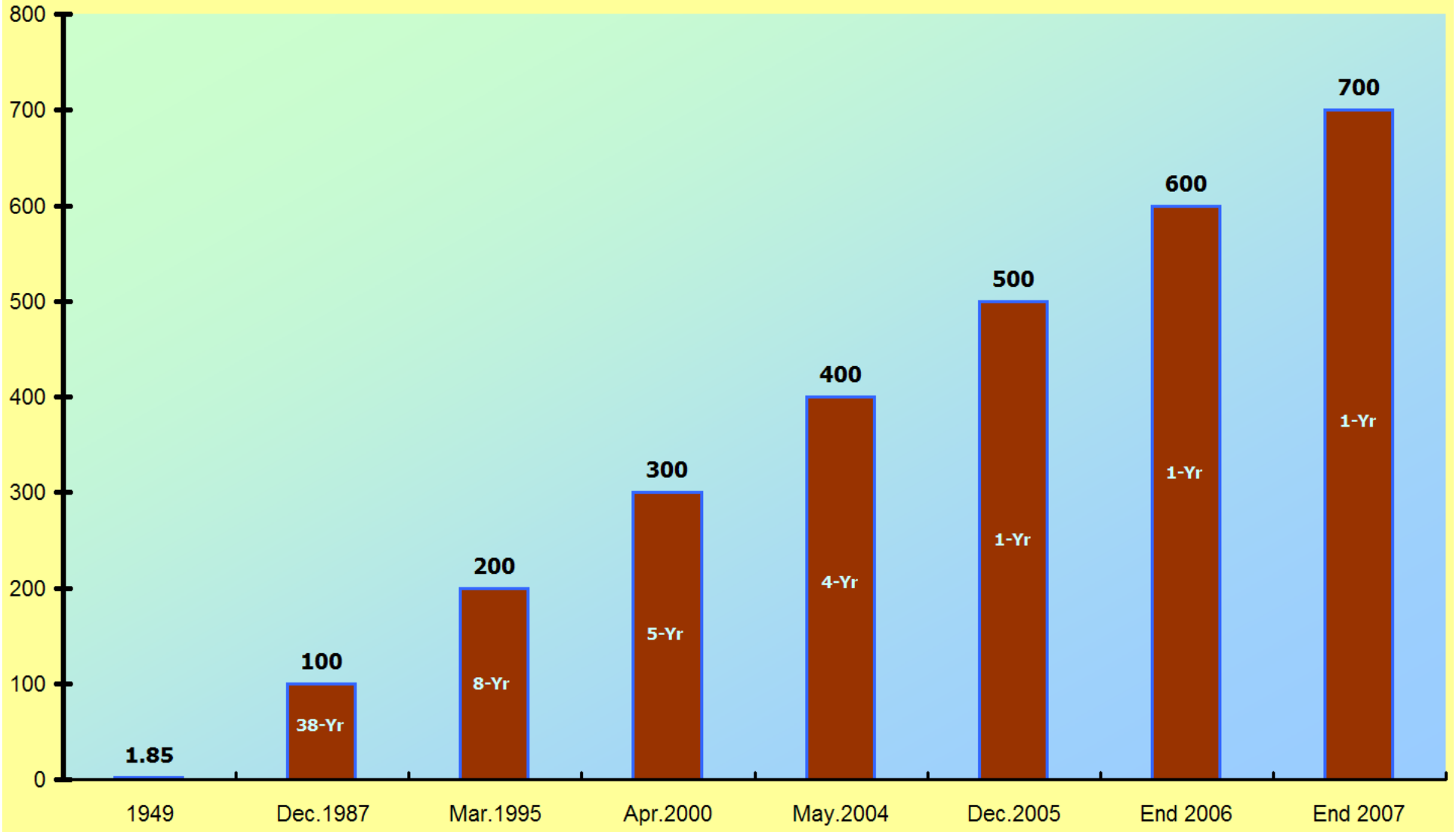
♦ May, 2004, China's installed capacity reached 400GW

♦ December, 2005, China's installed capacity reached 500GW

♦By the end of 2006, China's total installed capacity has reached 622GW

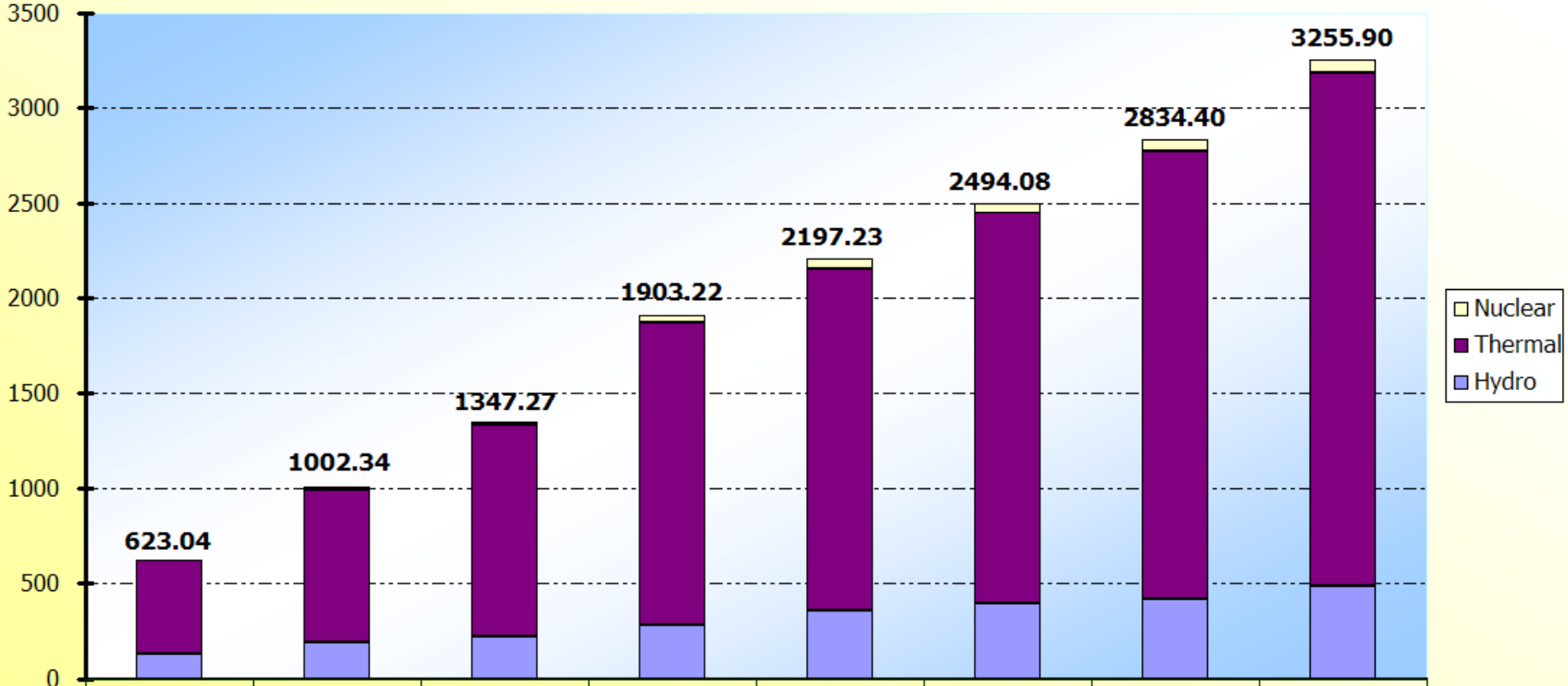
♦ By the end of 2007, China's total installed capacity has reached 700GW

China's Electric Power Capacity

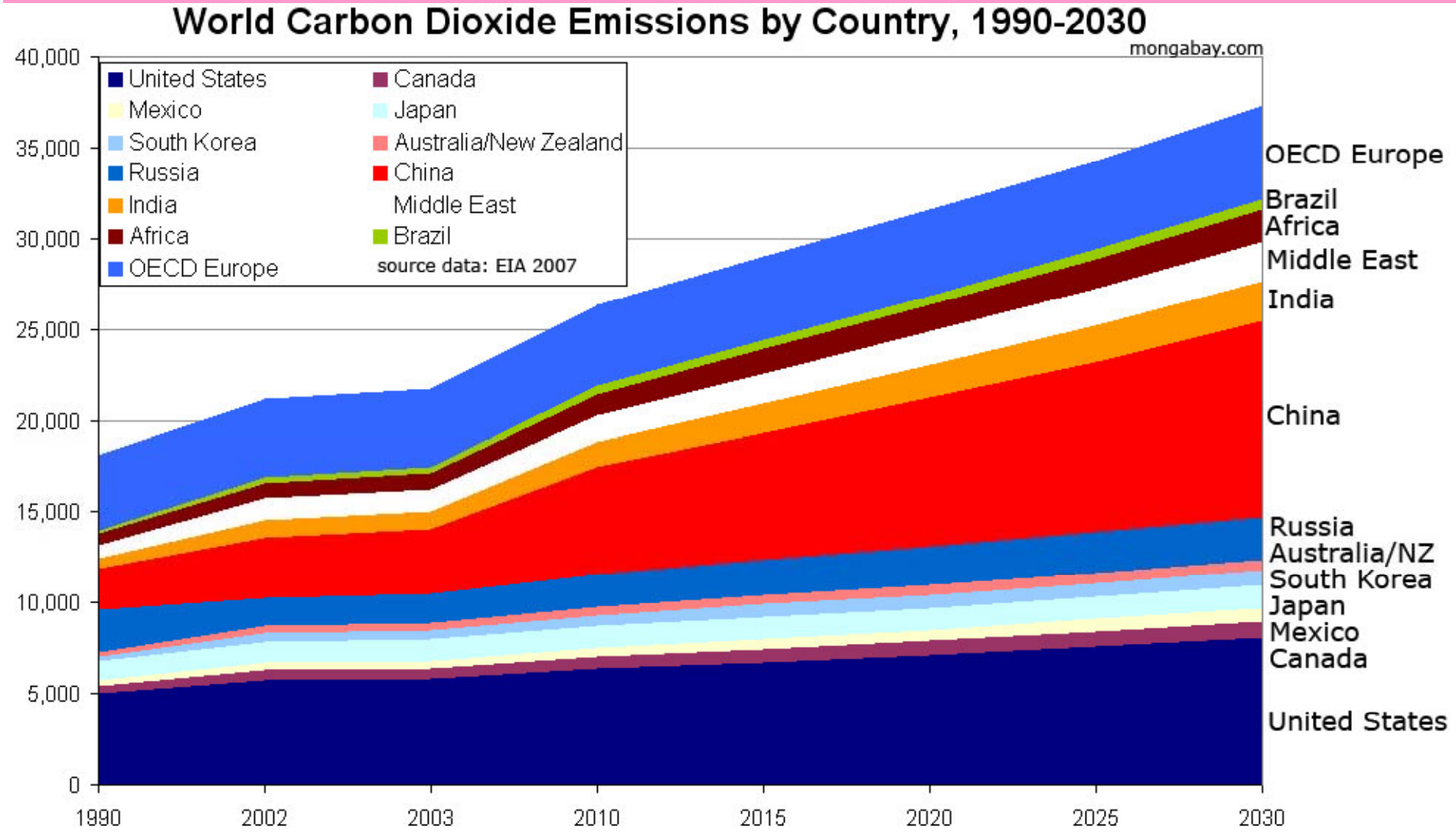


China's Electricity Production

Unit: TWh



	1990	1995	2000	2003	2004	2005	2006	2007
Nuclear		12.83	16.74	43.34	50.47	53.09	54.30	62.60
Thermal	494.48	804.32	1114.19	1580.36	1795.59	2047.34	2357.30	2698.00
Hydro	126.72	190.58	222.41	283.68	353.54	397.02	416.70	486.70


World Carbon Dioxide Emissions by Country, 1990-2030
mongabay.com
United States
Canada
Mexico
Japan
South Korea
Australia/New Zealand
Russia
China
India
Middle East
Africa
Brazil
OECD Europe
source data: EIA 2007
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1990
2002
2003
2010
2015
2020
2025
2030
OECD Europe
Brazil
Africa
Middle East
India
China
Russia
Australia/NZ
South Korea
Japan
Mexico
Canada
United States

By the end of 2006, China's total power capacity has reached 622GW, this year saw a record-high annual increase: 122GW !

China's Power Capacity Installation-2006

Unit: GW

	Capacity	Share	Year-on-year increase
China's Total Power Capacity	622		20.3%
—Thermal	484	77.82%	23.7%
—Hydro	129	20.67%	9.5%
—Nuclear	6.85	1.10%	-
—Wind	2.60	0.30%	76.7%
—Others	0.28		

- Annual increase of hydro power >10GW, less than the planned level.
- Annual increase of Thermal power > 90GW, well over the planned level.
- Coal intensity for electricity generation was 366g/kWh, reduced by 4g/kWh compared with the previous level.

By the end of 2007, China's total power capacity has reached 713GW, this year saw a fast annual increase: 100GW !

China's Power Capacity Installation-2007

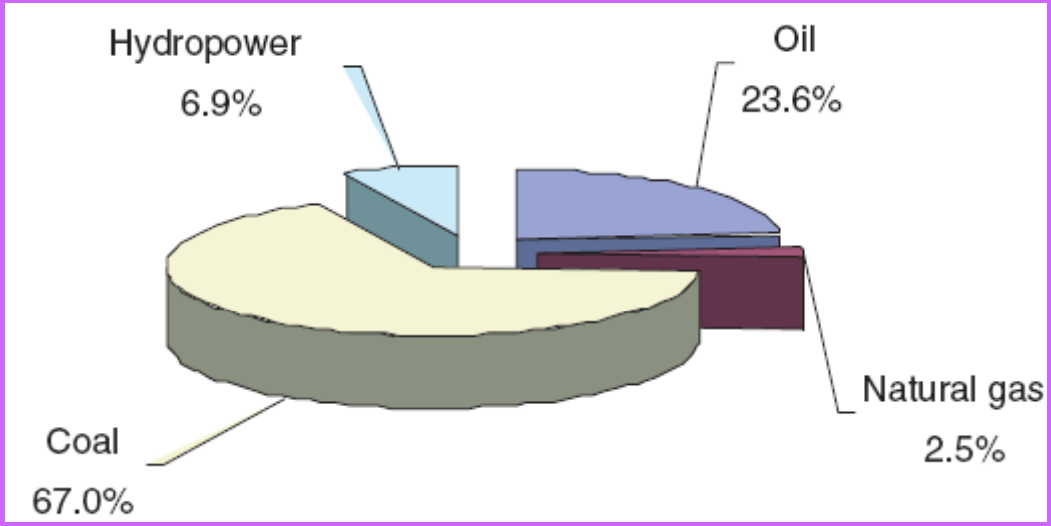
Unit: GW

	Capacity	Share	Year-on-year increase
China's Total Power Capacity	713		14.36%
—Thermal	554	77.72%	14.59%
—Hydro	145	20.33%	11.49%
—Nuclear	8.85	1.24%	29%
—Wind	5.5~5.9	0.74%	115%
—Others			

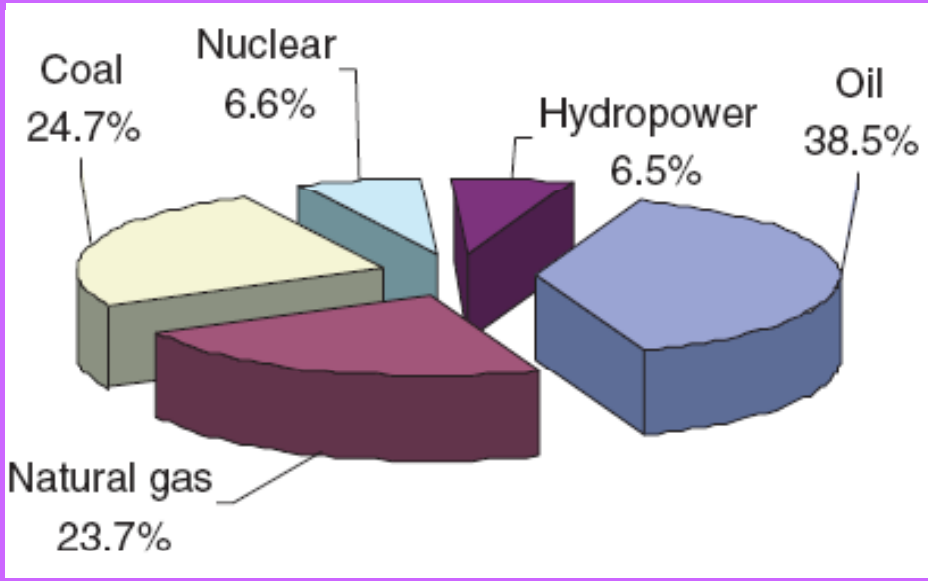
China's Electricity Generation-2007

Unit: TWh

	Electricity	Share	Year-on-year increase
China's Electricity Generation	3255.9		14.44%
—Thermal	2698.0	82.86%	13.82%
—Hydro	486.7	14.95%	17.61%
—Nuclear	62.6	1.92%	14.05%
—Wind	5.2	(Grid-connected)	



Consumption mix of China's primary energy



Year: 2004

Consumption mix of the world's primary energy

China’ total amount of energy consumption in 2007 reached 2.65 Gtce, second largest in the world in terms of energy use. But the per capita level is only 62% of the world average.

Per capita energy consumption in 2007:

World: 2.38 tce

China: 1.87 tce

[1]. Some High-Profile National Policies and Measures

❶. Targets for reducing energy intensity(20%) and major pollutants (10%) has been specifically set out for the country during the 11th Five-Year Plan period(2006-2010).

❷. China's National Climate Change Program has been officially announced by the central government to help build a resource-efficient and environmentally sound low carbon society.

❸.Active participations in the international G8/APEC events and other global activities for combating climate change.

[2]. Institutional rearrangements and capacity building

❶. China's National Leading Group on Climate Change (the prime minister heads this group)
❷. a new department responsible for climate change affaires in the NDRC
❸. Local competent authorities to coordinate climate change efforts and CDM project implementation at the provincial levels

[3]. Mid- and long-term planning for energy developments

❶. China's energy development strategies
❷. China's nuclear power development program
❸. China's renewable energy development program
❹. China's power industry development program
❺. China's coal development program
……

[4]. China's efforts to improve the energy mix

❶. Deployment of clean coal technology: IGCC, SC-USC(100GW), PFBC
❷. Development of nuclear power: 40GW in operation and 18GW under construction by 2020.
❸. Acceleration of hydro power development: 300GW by 2020
❹. Energy efficiency improvement and conservation on the demand side.
❺. Other renewable energies such as wind and solar power, as well as biomass use

Renewable energy development by the 2020

Wind power	30GW
Biomass power	30GW
Solar power	1.85GW
Solar heater	$3x10^8m^2$
Biogas use	$4.40x10^{10}m^3$
Biomass fuel(solid)	50 Mt
Liquid biofuels (non-grain)	10Mt(oil equivalent)

[5]. China's industrial restructuring for a more balanced development of economy and environment

❶. To increase the share of tertiary industry
❷. To phase out the inefficient and outdated technological processes
❸. To shut down small-sized polluting producers of raw materials
❹. To develop new products with high value-added profits
❺. To introduce clean production system
……

[6]. China's strong actions to close those small-capacity and heavy-polluting generating sets

❶. Small sized power generating sets have been shut down, cumulative amount reached 15GW in 2007.
❷. Unit capacity ≤ 50MW;
❸. Unit set ≤ 200MW if its life time expires
❹. Unit set ≤ 100MW with a 20-year operation
❺. Unit sets with coal intensity higher than the provincial average level by 10% or national average by 15%
❻.Those units which fail to meet relevant environmental requirements.

The Chinese government has stepped up the enforcement to shut down those small-capacity coal-fired generating sets, and in some cases, even put teeth into law for removing heavy polluters.

Shut-down capacity

In 2006: 3.14GW
In 2007: 14.38GW
In 2008: 8.36 GW
(from January to June)

The cumulative capacity that has been shut down since 2006: 25.87GW

Some actions already taken in China since 1980s

❶. Total energy saved through the conservation programs in China has amounted to 800 Mtce, equivalent to 1.8 Gtce emission reduction of CO2 between 1991 and 2005.

❷.Coal has dropped to 69.1% in China's primary energy mix in 2005 from 76.2% in 1990.

❸.Carbon sinks also contribute significantly to the carbon absorption between 1980 and 2005:

- Forestation: 3.06 Gt
- Forest management: 1.62 Gt
- Prevention against emissions from deforestation: 430 Mt

❹. China's population has been reduced by at least 300 million due to the birth control policy implemented since 1970s, about an emission reduction by 1.2 Gt CO_2-eq.

Some actions already taken in China since 1980s

❺. Amelioration of grassland 24 Mha, reclamation of alkaline and degraded land 52 Mha.

❻. About 90% typical forest system and national key animals and plants have been well under protection, the protection zone area accounts for 16% of the country's total.

❼.About 22 Mha desertified land has been well reclaimed through ecosystem recovery programs

The central government is pushing hard for meeting the targets for 2008:

❶. To shut down those small-capacity coal-fired generating units: up to 13 GW (in total)
❷. To eliminate the inefficient and backward/obsolete production capacity for the following energy-intensive product types:

Production capacity phase-out for the year 2008

Unit: Mt

—Cement	50
—Steel	6
—Iron	14
—Electrolytic aluminum	0.15
—Ferrous alloy	0.8
—Small coke	15
—Plate glass	6 million box(heavy)
—Paper making	1.06

China has so far set up prohibitively high standards for engaging in the production in those 8 energy-intensive sectors.

To enhance the national actions, according to the decision (FCCC/CP/2007/L.7/Rev.1) in COP-13:

“Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner”.

As a developing country, China is still facing enormous challenges ahead, in terms of technology, financing and capacity building. To achieve the sustainable development and global targets, China does need the support in a MRV manner through collaborations.

Thank you, Merci !

Thank you for your attention
Merci beaucoup