Baseline-setting for the Power Sector in China

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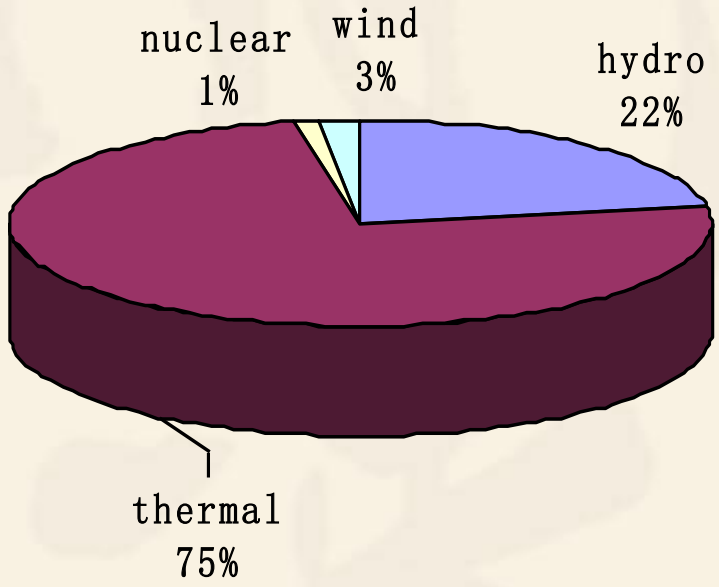
May 27, 2012, Cologne

Outline

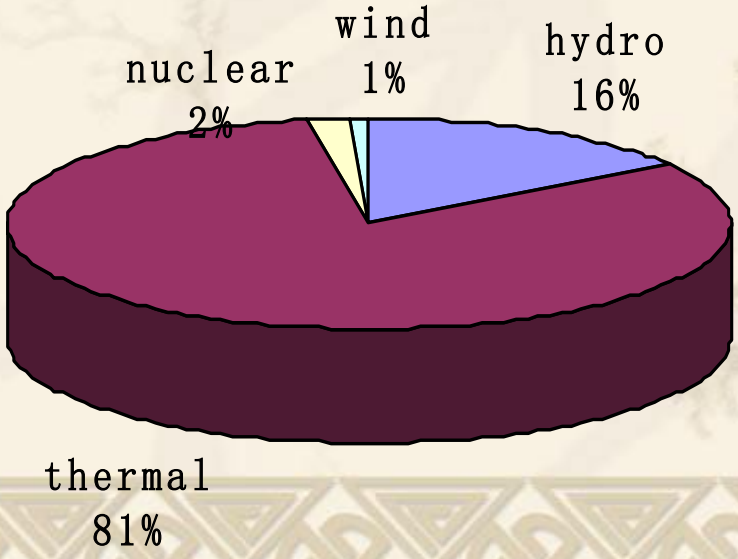
- Overview of China power sector and its emissions
- Experiences on setting baselines for China's power sector
- Approaches and considerations of power sector in pilot ETS
  - Use of baseline methodology for offsets
  - Challenges of power sector in ETS
  - Policy development of pilot ETS

I. Overview of China power sector 2010

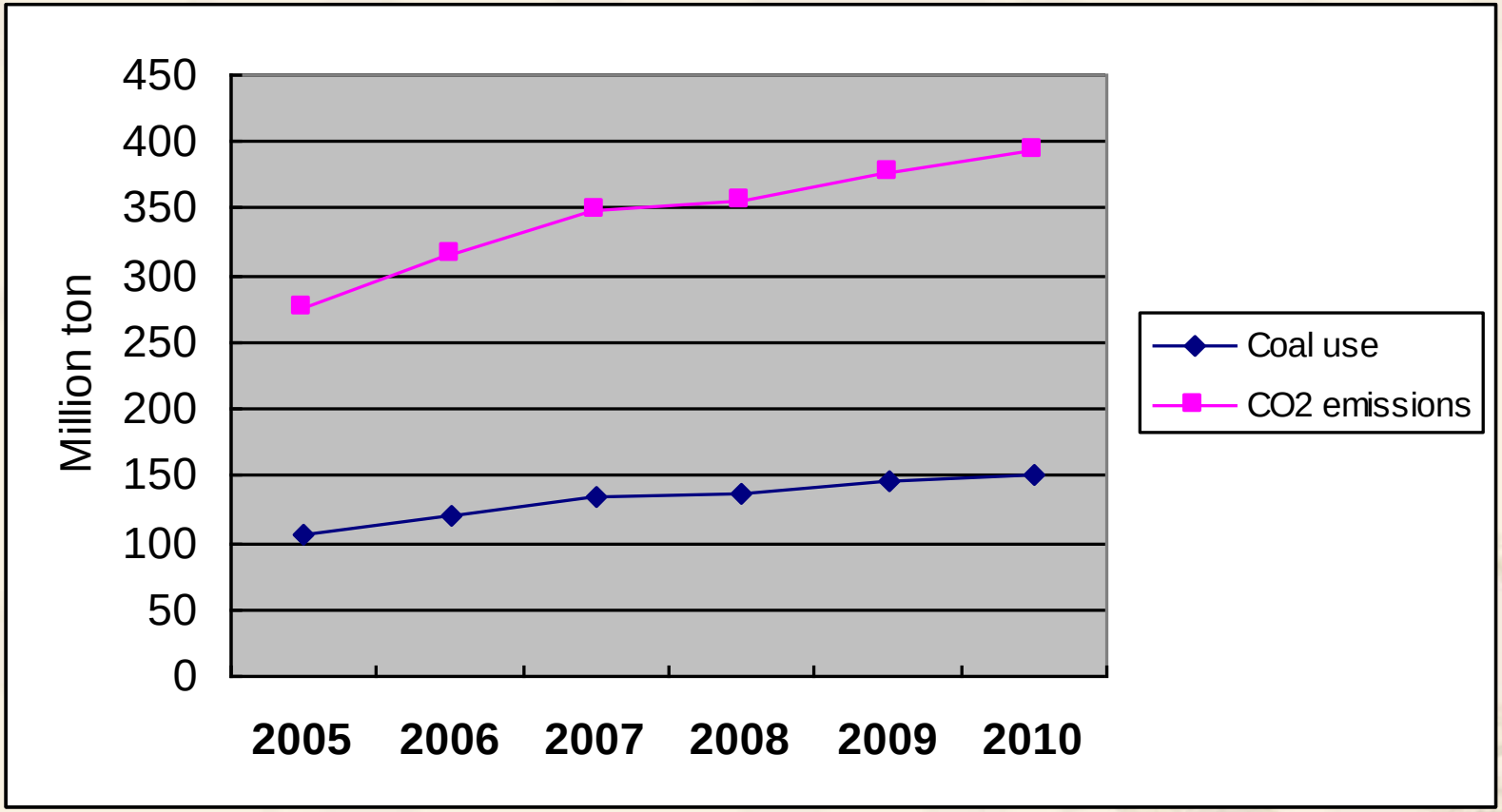
- Installed capacity：966GW、+10.6%



- Generation：4227.8TWh, +14.85%



CO2 emissions



Regional power grids

II. Experiences on setting baselines for China's power sector—project based

- CDM Methodological Tool: **“Tool to calculate the emission factor for an electricity system”**
  - operating margin (OM): is the emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity and the .build margin.
  - build margin (BM): is the emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity.

Baseline emission factors of regional power grid in China

	$EF_{grid,OM,y}$ (tCO_2/MWh)	$EF_{grid,BM,y}$ (tCO_2/MWh)
North China power grid	0.9803	0.6426
Northeast power grid	1.0852	0.5987
East China power grid	0.8367	0.6622
Middle China power grid	1.0297	0.4191
Northwest power grid	1.0001	0.5851
South China power grid	0.9489	0.3157

Baseline emission factor for ultra supercritical power generation technology

- **ACM0013 :** “Consolidated baseline and monitoring methodology for new grid connected fossil fuel fired power plants using a less GHG intensive technology”
- The project activity is the construction and operation of a new fossil fuel fired grid-connected electricity generation plant that uses a more efficient power generation technology than what would otherwise be used with the given fossil fuel category
- The average emissions intensity of all power plants *j*, corresponding to the power plants whose performance is among the top 15 % of their category
  - have been constructed in the previous five
  - have a comparable size to the project activity, defined as the range from 50% to 150% of the rated capacity of the project plant
  - operated in the same load category

Baseline emission factors

tCO_2/MWh

	600MW	660MW	1000MW
North China power grid	0.7968	0.7957	0.7766
Northeast power grid	0.7946	0.7946	0.7946
East China power grid	0.7806	0.7796	0.7435
Middle China power grid	0.7945	0.7910	0.7910
Northwest power grid	0.8245	0.8222	0.8292
South China power grid	0.7995	0.7926	0.7898

III. Approaches and considerations of setting baselines for pilot ETS

- Offset: CDM project-based baseline emission factors can be used for voluntary emission reduction projects to offset pilot ETS
- Challenges for setting caps for power sector
  - Rapid growing sector, development needs and environmental constrains
  - Not liberalized power market: production, supply, fuel, fixed electricity price
  - Strong resistance from the industry
  - Fuel choice limited
  - Data availability

Approaches for cap-setting

- Intensity target vs. aboslute target
- Overall cap vs. individual cap
- Historical based vs. best (average) technology based data
- Technical needs: plant/unit level energy consumption, fuel quality data, emission factors
- Practice of pilot provinces and cities
  - Develop sound data base, historical and projection, tools
  - Develop acceptable individual relative/absolute based allowances

Thanks

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