

**ETSAP Fall Workshop/Joint China-IEA Seminar
on “Energy Modelling and Statistics
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**China’s Energy Supply and Cost Analysis
—An EFOM Model Application and Uncertainties**

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**Main Challenges and problems
on China’s Energy Security Supply**

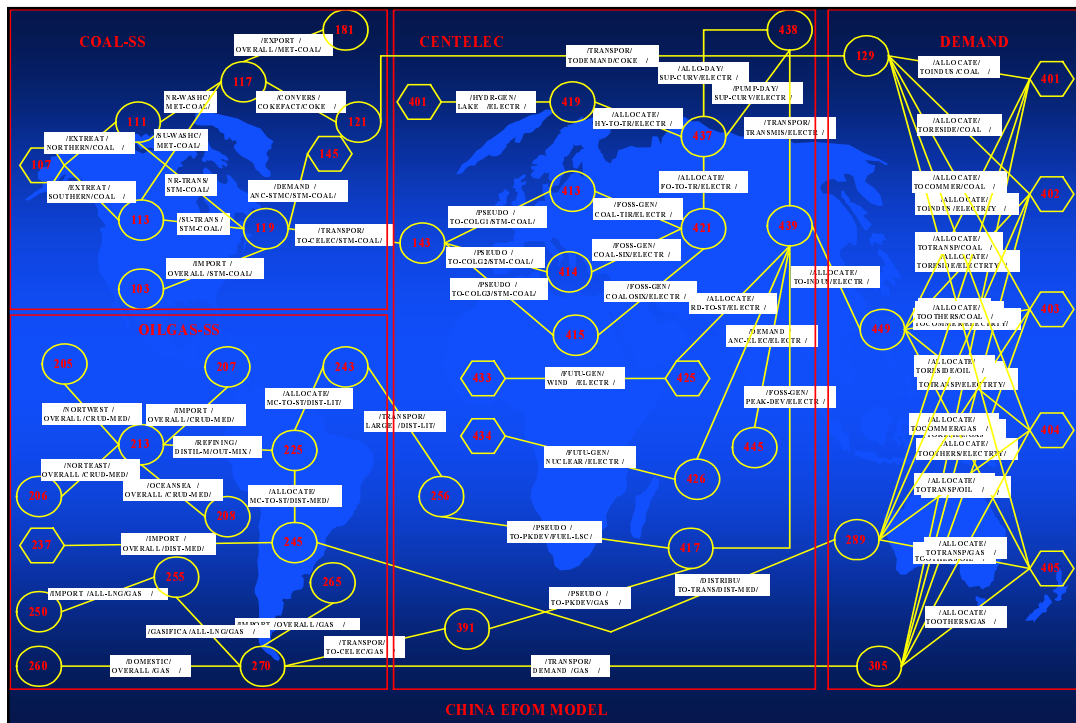
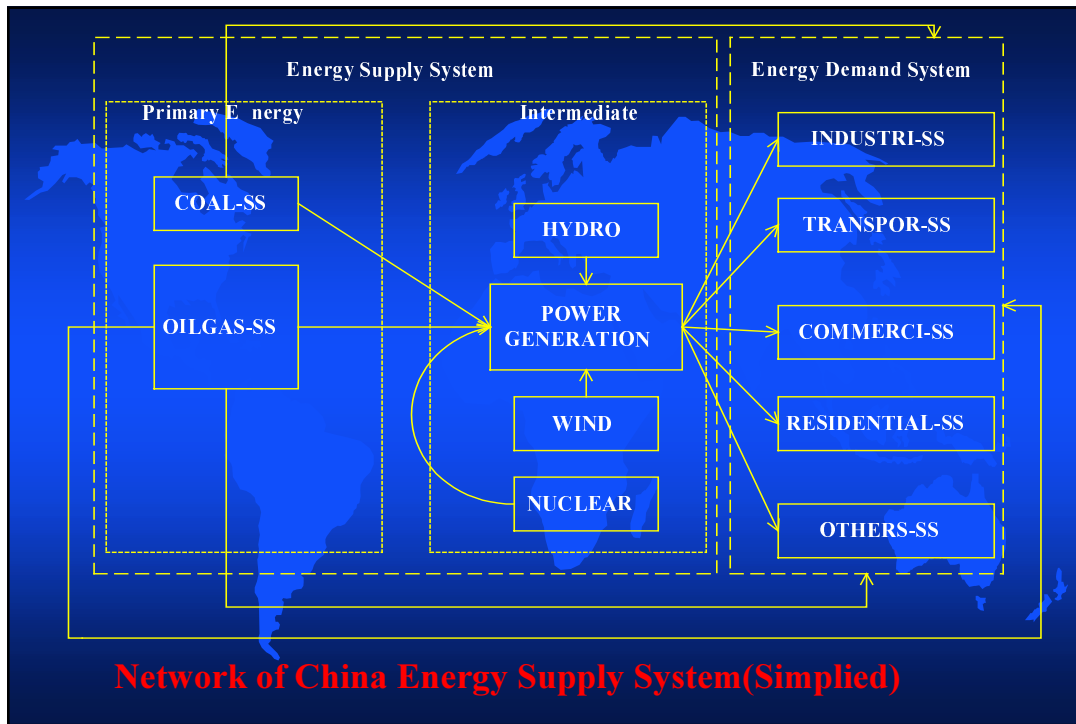
- Irrational energy mix and heavily depend on coal with more and more problems(mine accidents, production & supply cost)
- Oil supply will be mainly depend on import
- Electricity grid and supply infrastructure , advanced and clean power generation technology need huge investment
- Serious energy and transport problems in large cities in China
- Great regional difference in Energy resource, supply, demand, this resulted in high cost
- Lacking national integrated energy policy, quickly-responsive energy information system
- Non-timely local energy information

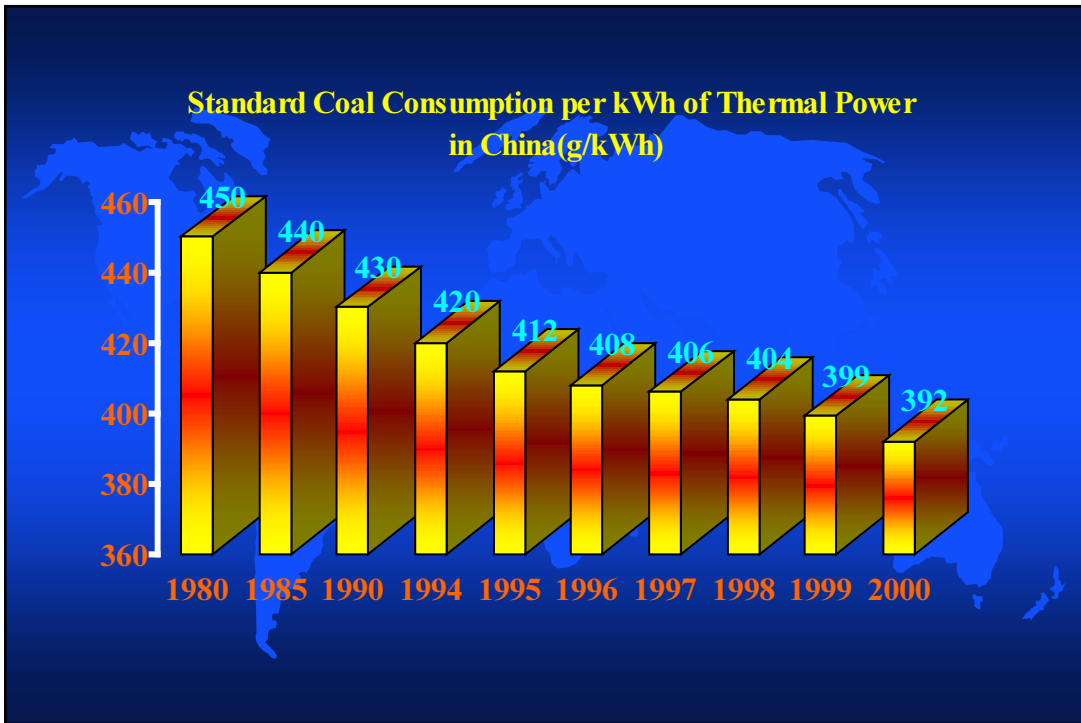
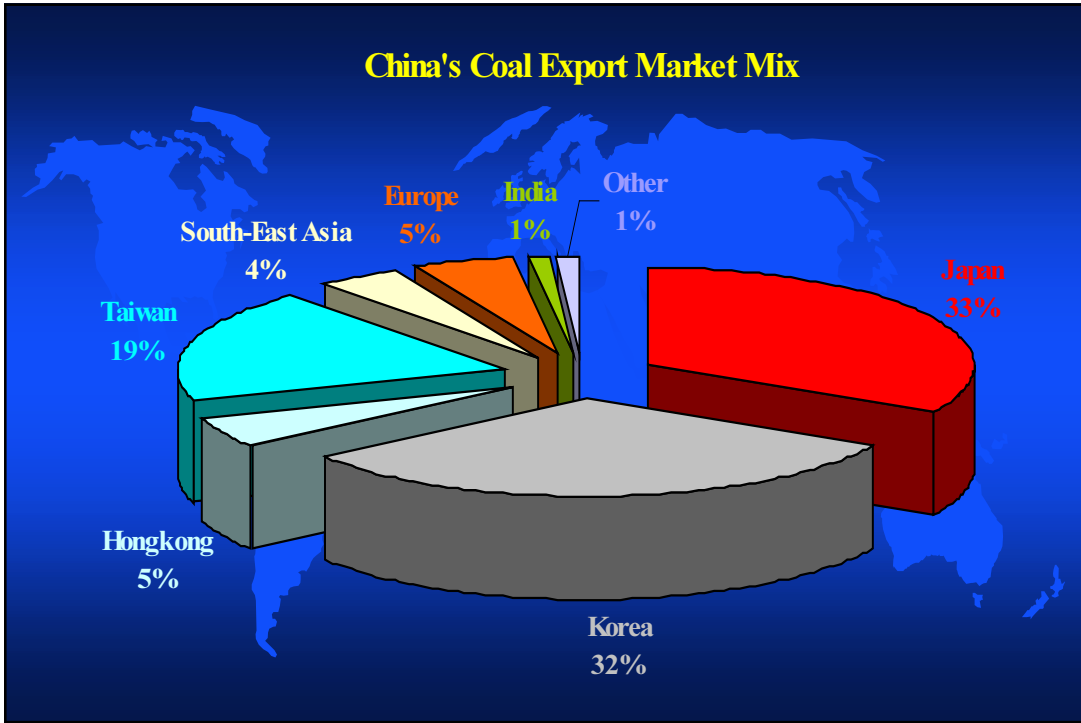
Main concerns in China's Energy Supply and Cost

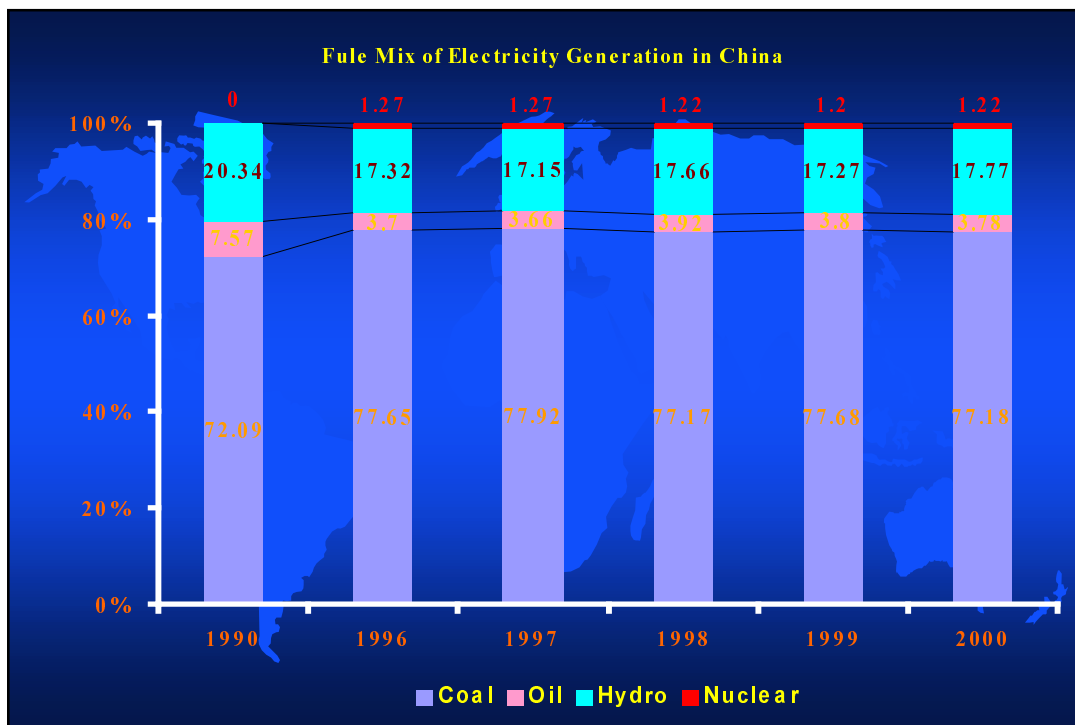
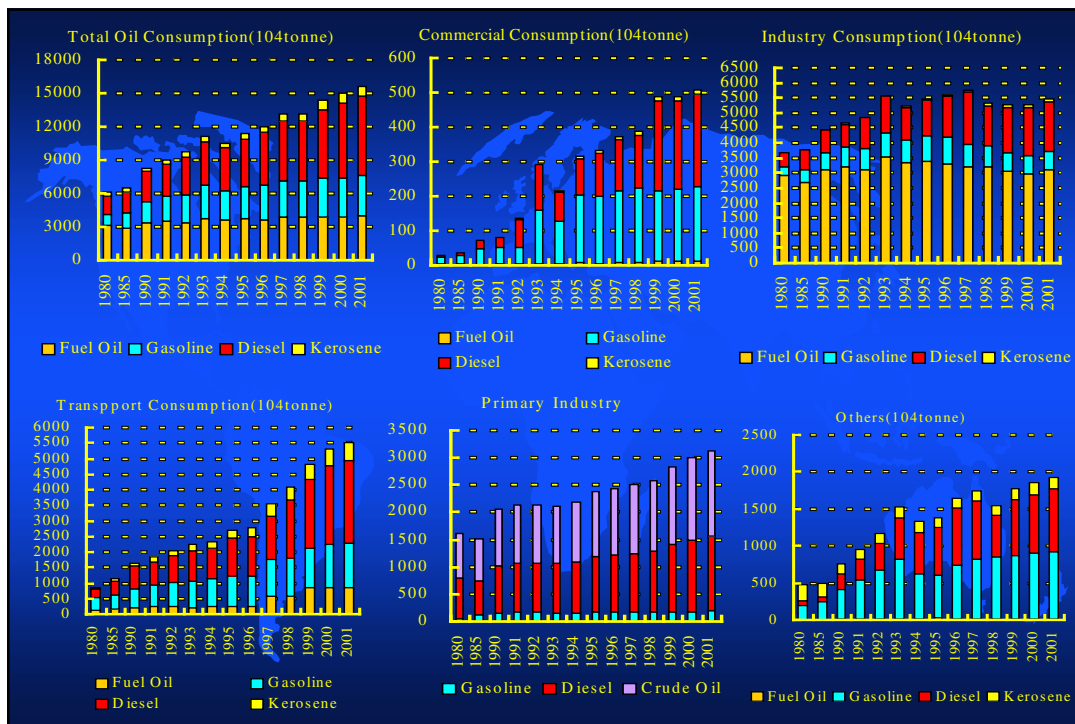
- How to understand and estimate China's energy demand ?
- What is the possible energy mix and available sources for China in the future?(inertia?)
- How to solve China's oil & gas supply, where is the sources and what is the possible cost?
- How much investment are inevitable in Electricity grid and supply infrastructure , advanced and clean power generation technology , etc.?
- How to solve serious energy and transport problems in large cities in China?
- How to face and improve environmental performance?

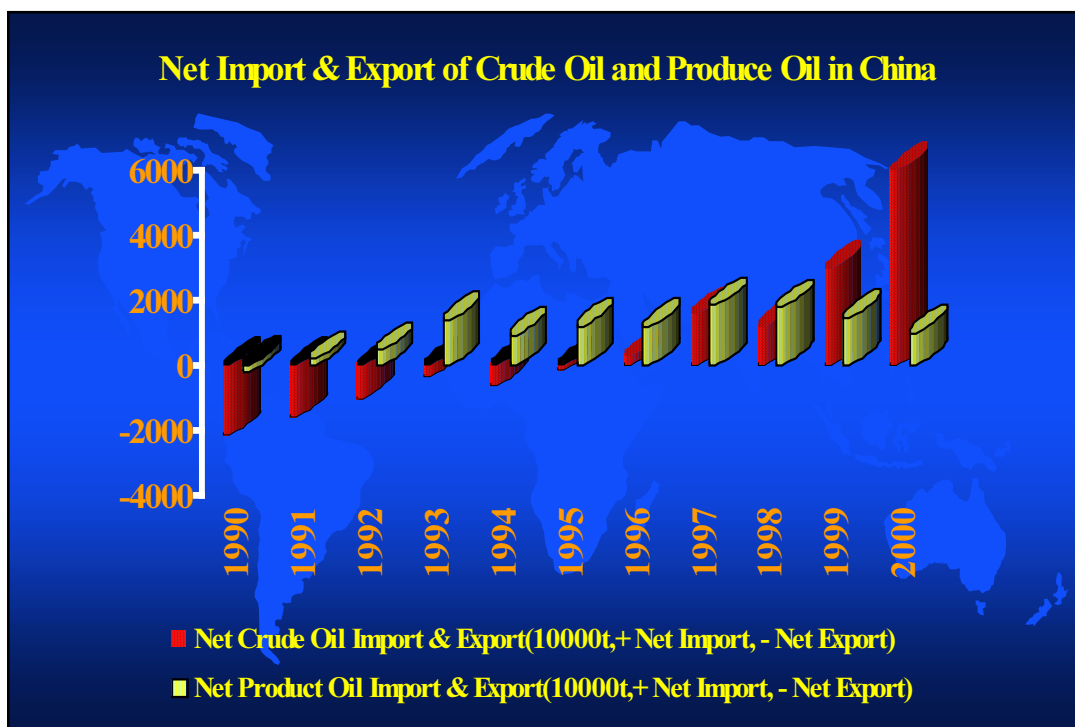
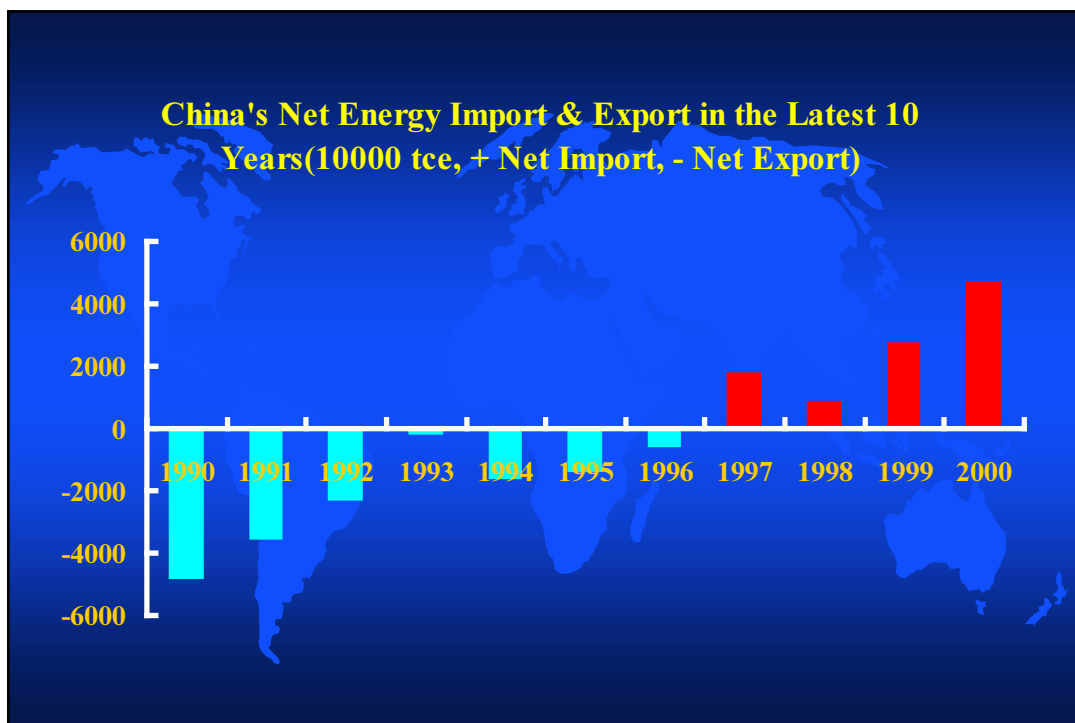
Main concerns in China's Energy Supply and Cost

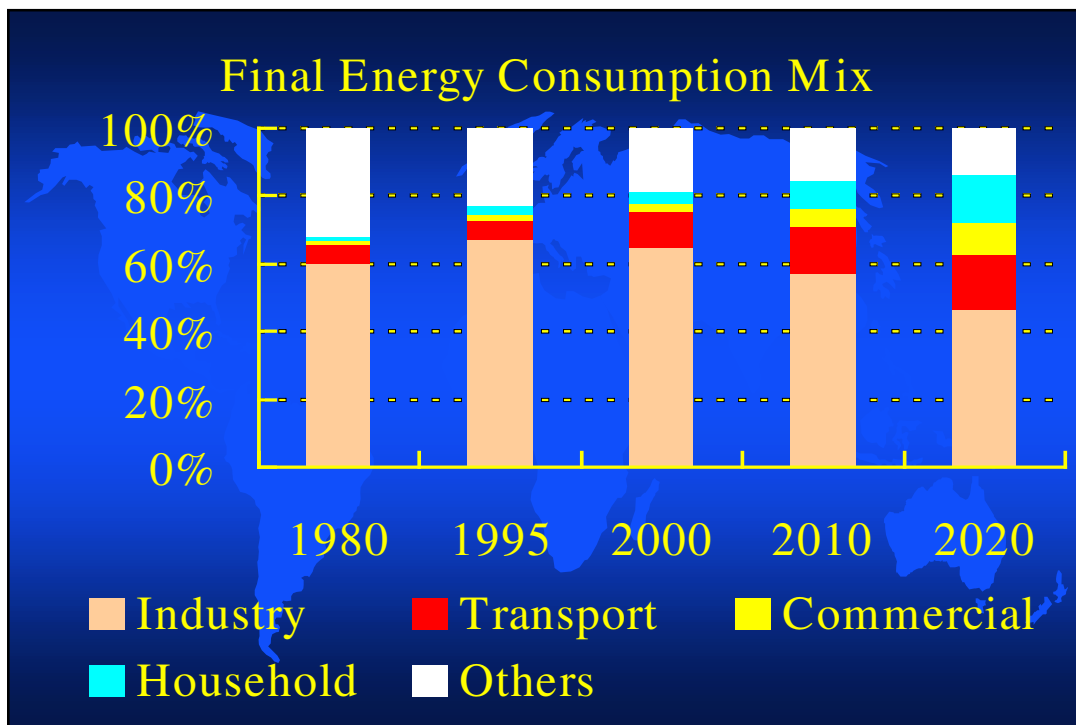
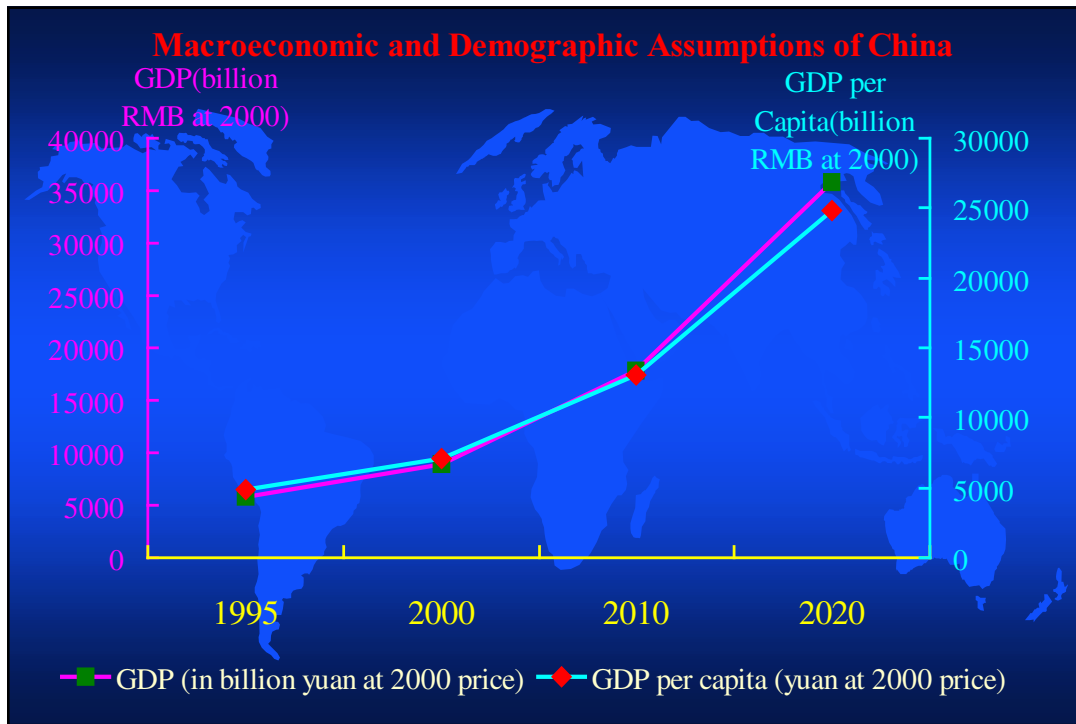
- Milestone 1995/2000/2010/2020
- What is the possible energy mix and available sources for China in the future?(inertia?)
- How to solve China's oil & gas supply, where is the sources and what is the possible cost?
- How much investment are inevitable in Electricity grid and supply infrastructure , advanced and clean power generation technology , etc.?
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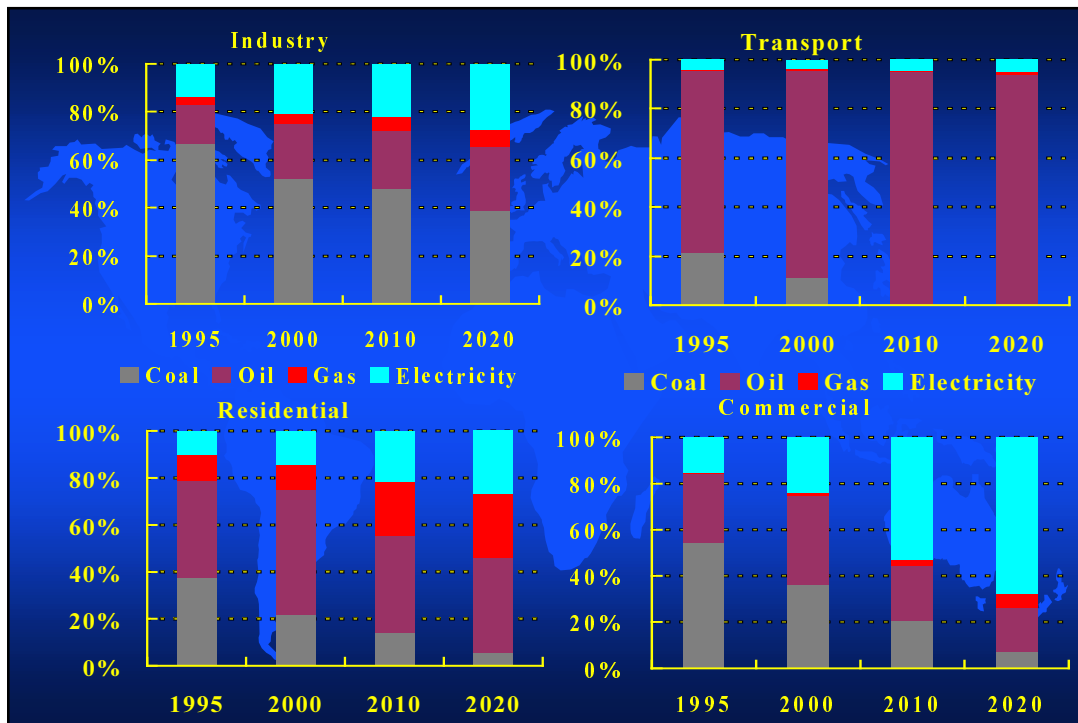
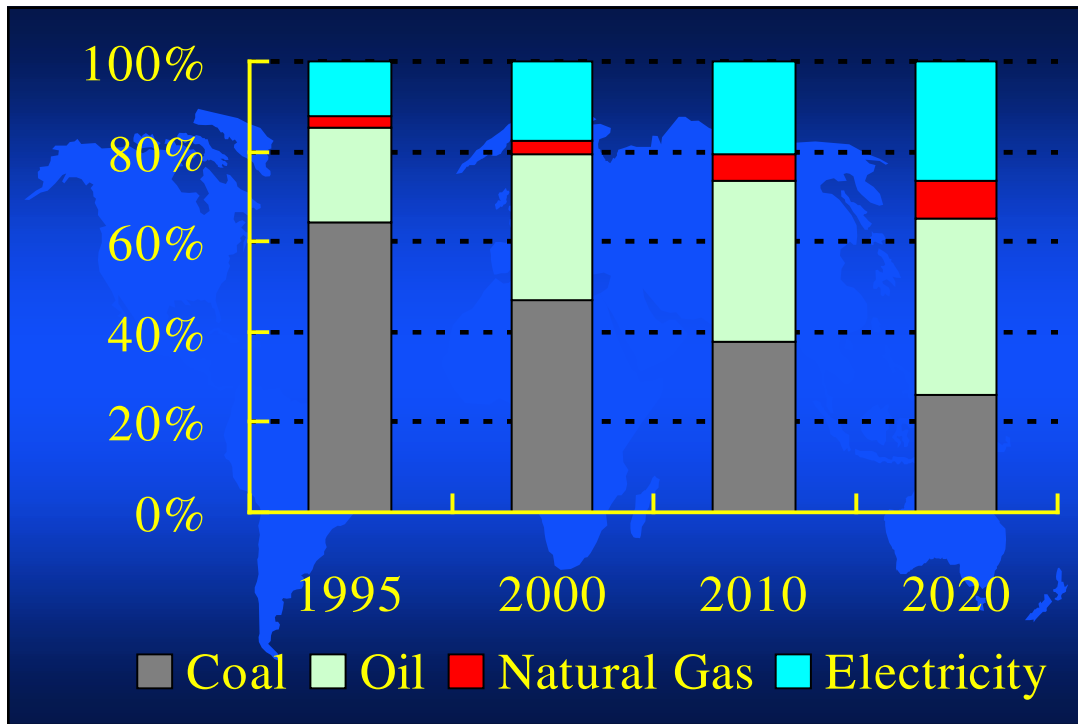




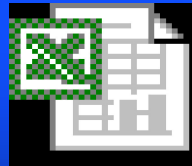








Main Power Generation Technologies Categories & Cost(1995-2020)

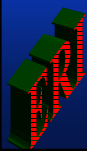


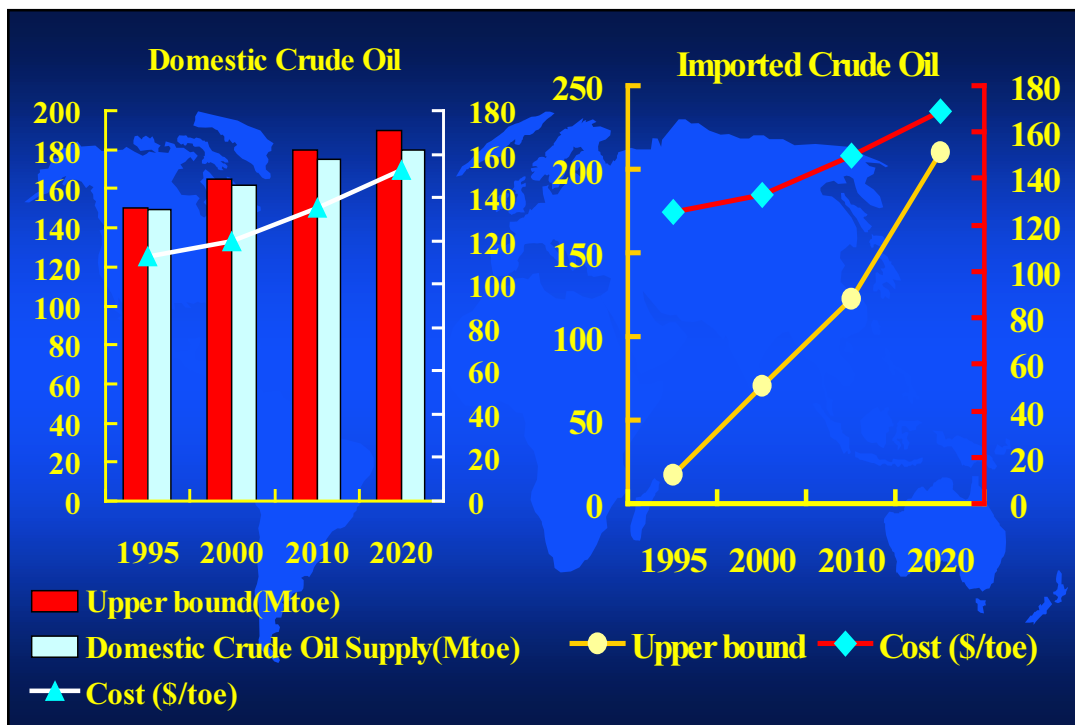
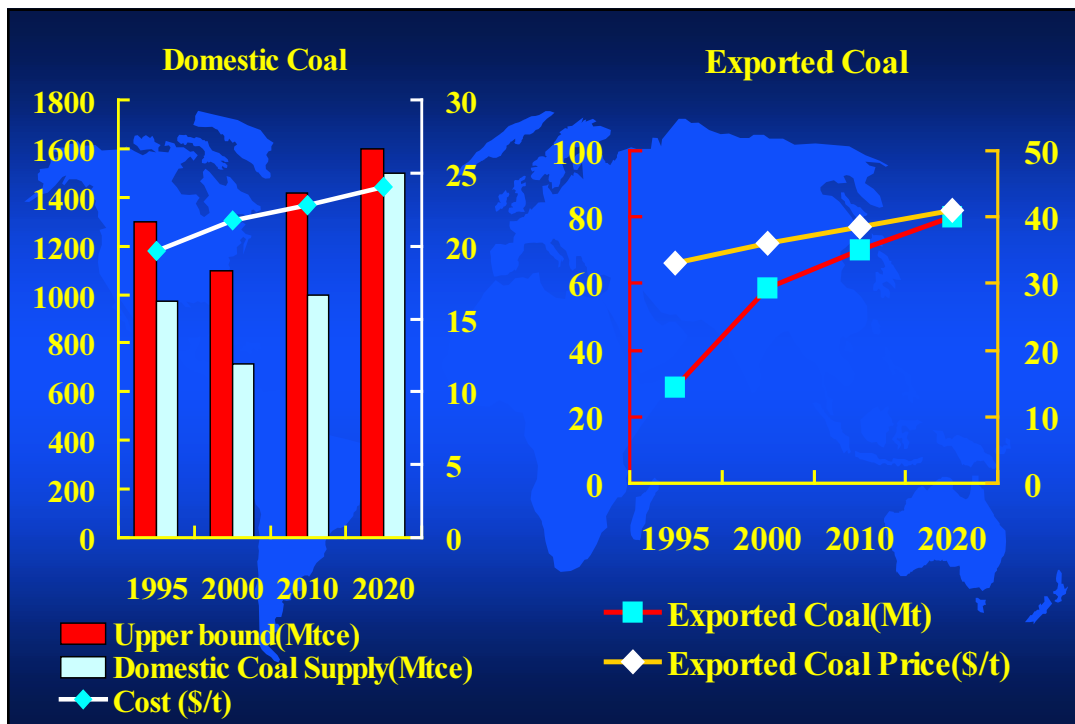
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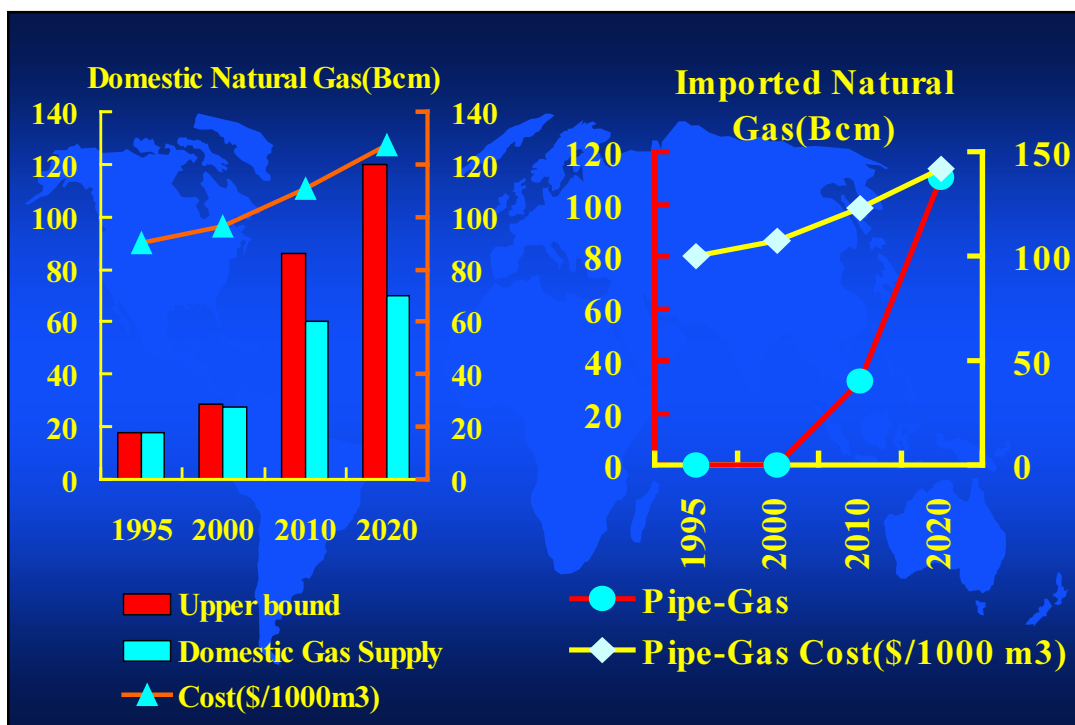
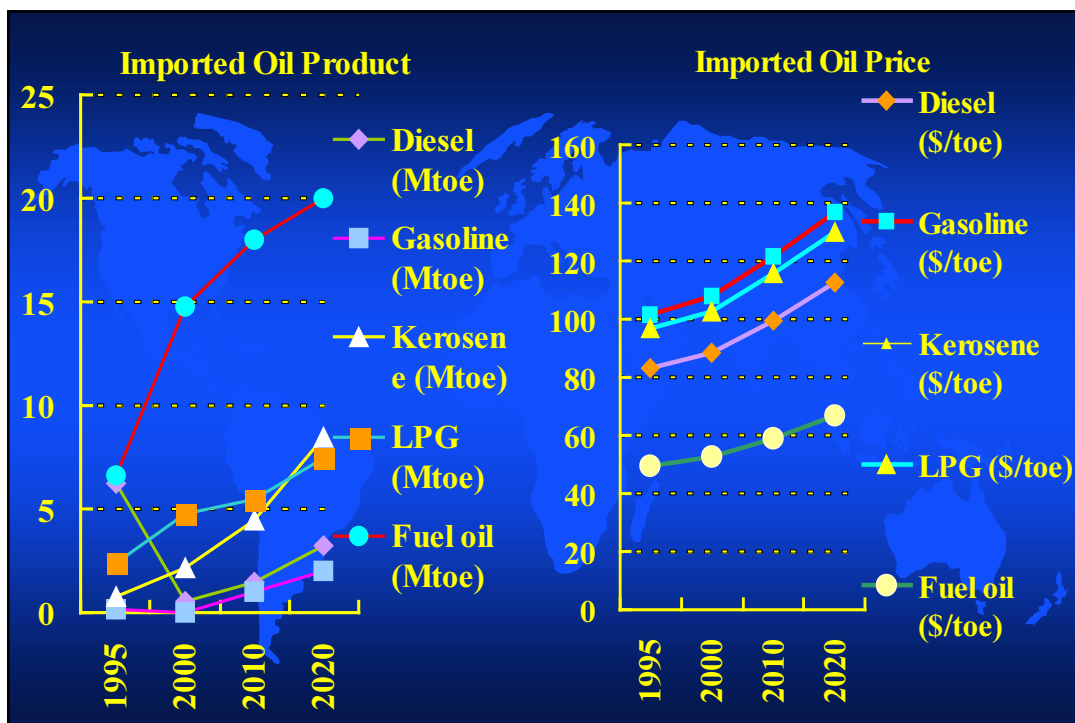
Length of China's Electricity Transmission Lines & Cost (1995-2020)

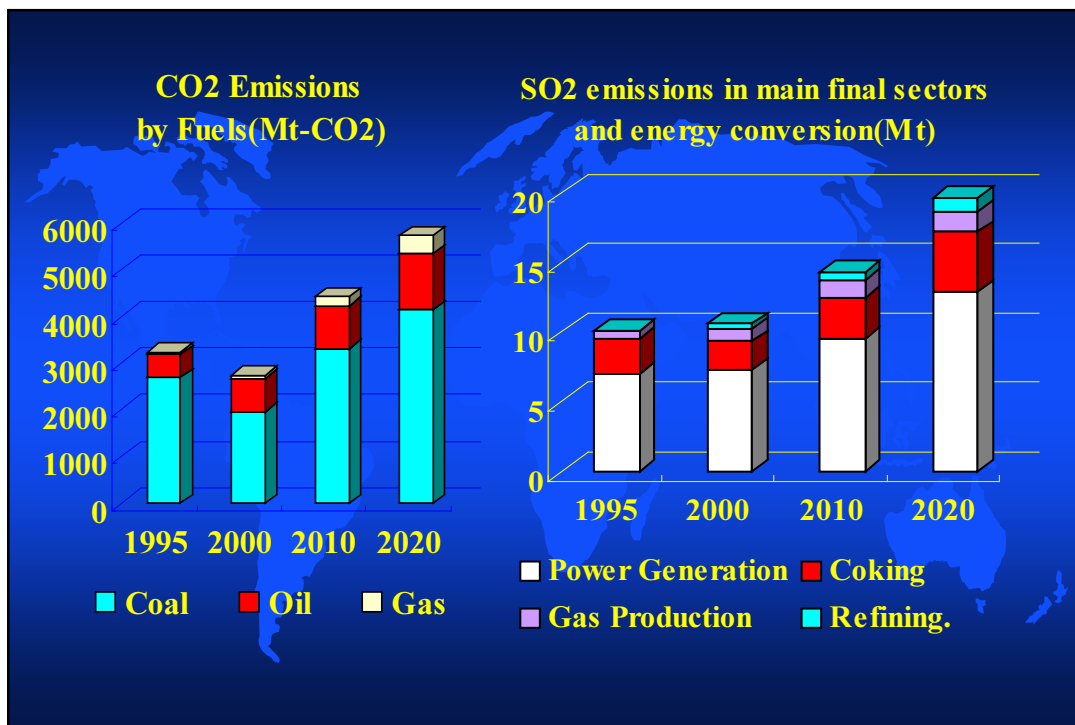
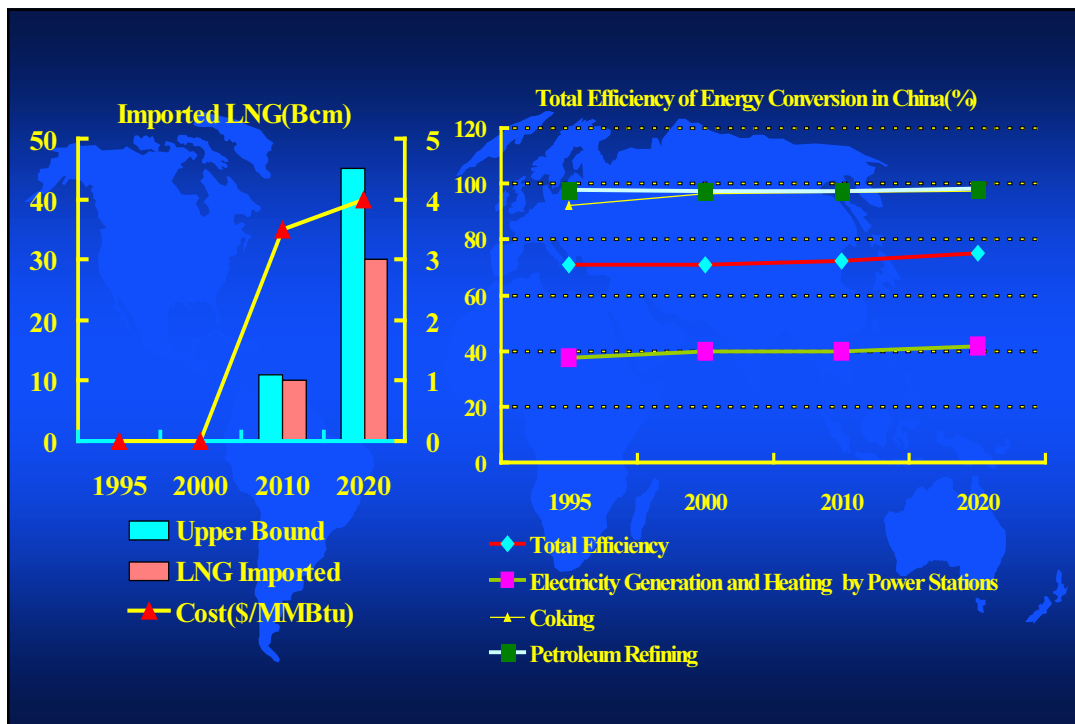


Microsoft Excel
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Uncertainties

- All considered cost categories just the direct, not include the indirect case related with the energy supply in the whole energy chains; for example, the mine and pipelines' accidents, stop production, black-out, losses, etc.;
- Sometimes energy supply infrastructure can not keep in steps with the national & local Planning, many changes often is prior to the planning;
- In the model, whether technologies themselves are specific, whether technology introductions in the future can be correctly defined; both for the flow parameters(limits) and for the time periods(the beginning & the end).
- regional energy transfers is very important in China, difference existed both for resources distribution is not uniform, but also the demand difference, energy price difference, energy consumption habit and related life level

Next Step's Modelling and Energy System Analysis

First Step:

We are now collaborating with EET/IEA to improve the China Markal Model and will give this model a very detailed remarks on all kind of Parameters and Data and will give the explanations for the results scenarios. Then focus on following topics:

- National integrated energy policies and strategy
- National clean energy consumption path & environmental improvement;
- Energy conservation, energy efficiency, energy technology options

Second Step:

We will begin China's local Markal models development, this is very important.

- Energy & transport(environment) in large cities;
- Developed regions's energy system analysis and its high-quality energy demand analysis
- Energy resources(north, north-east) regions's energy situations

Next Step's Modelling and Energy System Analysis

Third Step:

Develop the Multi-regions Markal model to further improve the national model.

Above works need supports from every dimensions:

- Collaboration with International Experts, for example, present experts.
- Domestic supports and collaborations from different institutions
- Let's shake hands firmly and stepping up the new ladder