



中国科学院
CHINESE ACADEMY OF SCIENCES

***ASIA CLEAN ENERGY FORUM 2016,
CCS Way Forward in Asia - Manila***

CCS Ready in China -

be Prepared to New Generation of CCS Technology

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Outline

- 1. Why we need CCS Ready**
- 2. The potential of CCS Ready**
- 3. How to implement CCS Ready in China**
- 4. Summary**

1. Why we need CCS Ready

Challenges facing Coal-relied China

Bottle-neck of Energy Efficiency

SCPC、IGCC 42%~45% << NGCC 55%~60%

Traditional Pollutants Emission

70%~80% SO₂, NO_x, PM2.5 etc.

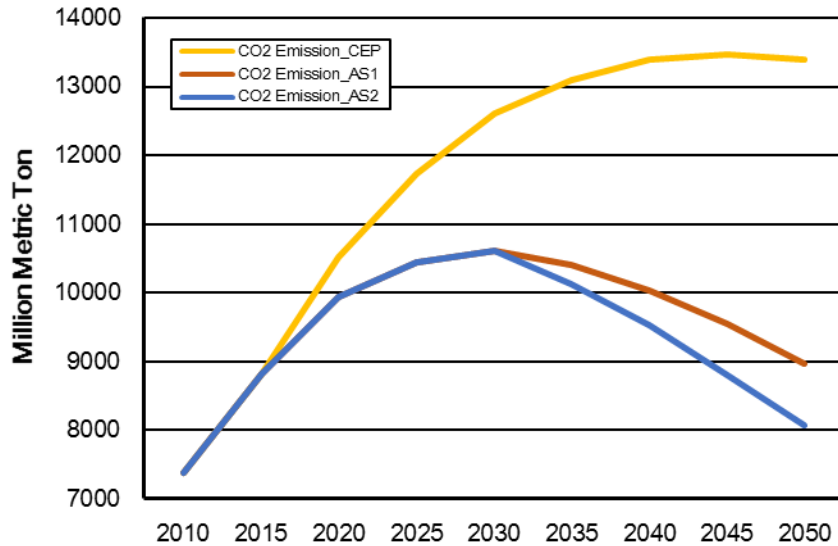
GDP Loss: 7% (1995), 13% (2020)

Green House Gas (CO₂) Emission

As the biggest concentrated CO₂ resources, coal power plants accounts for 45% of total emission (9 billion tones in 2014).

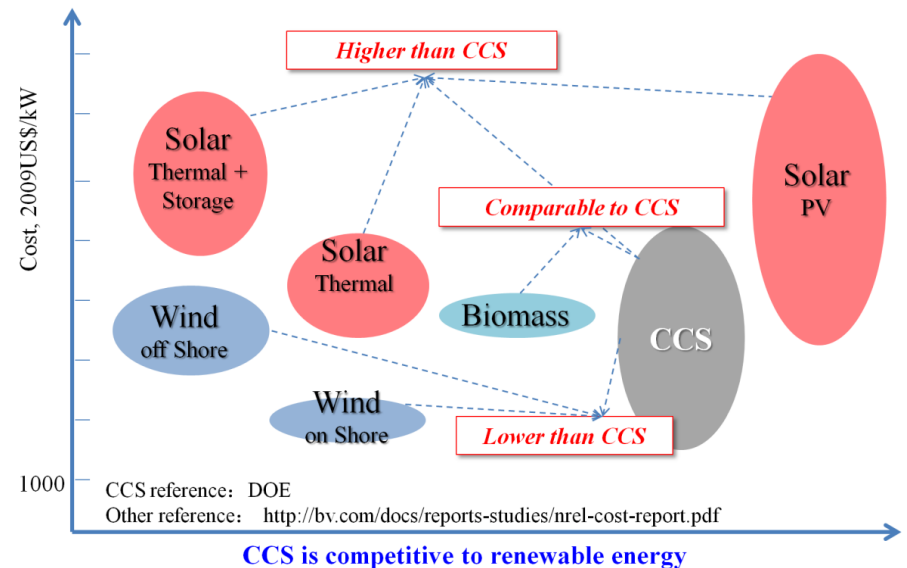
China need the technologies utilizing coal in low carbon way

The future of CCS in China



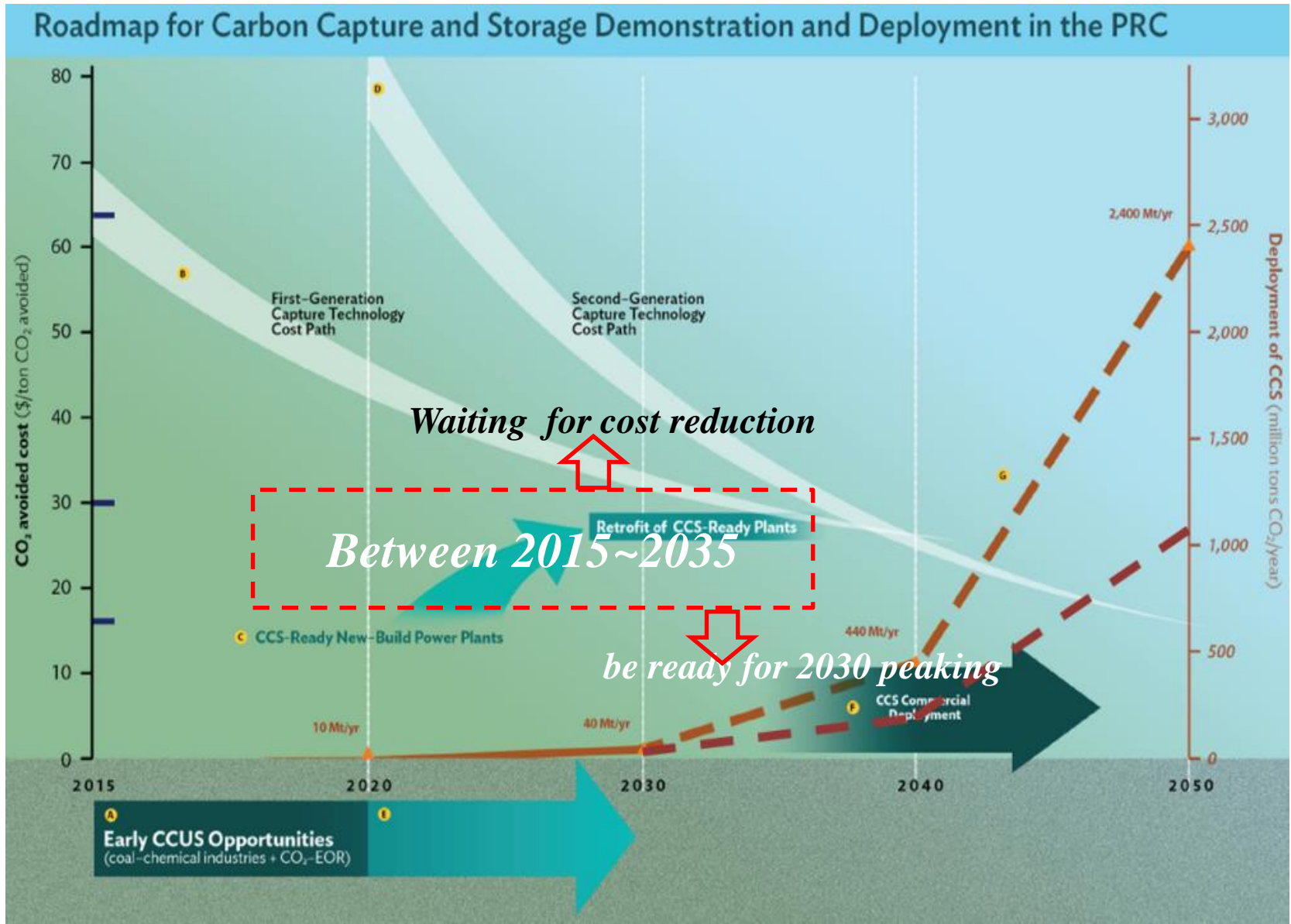
The **competitiveness** of CCS to other CO₂ emission reduction technologies

The **urgency** and priority of Climate Change Mitigation



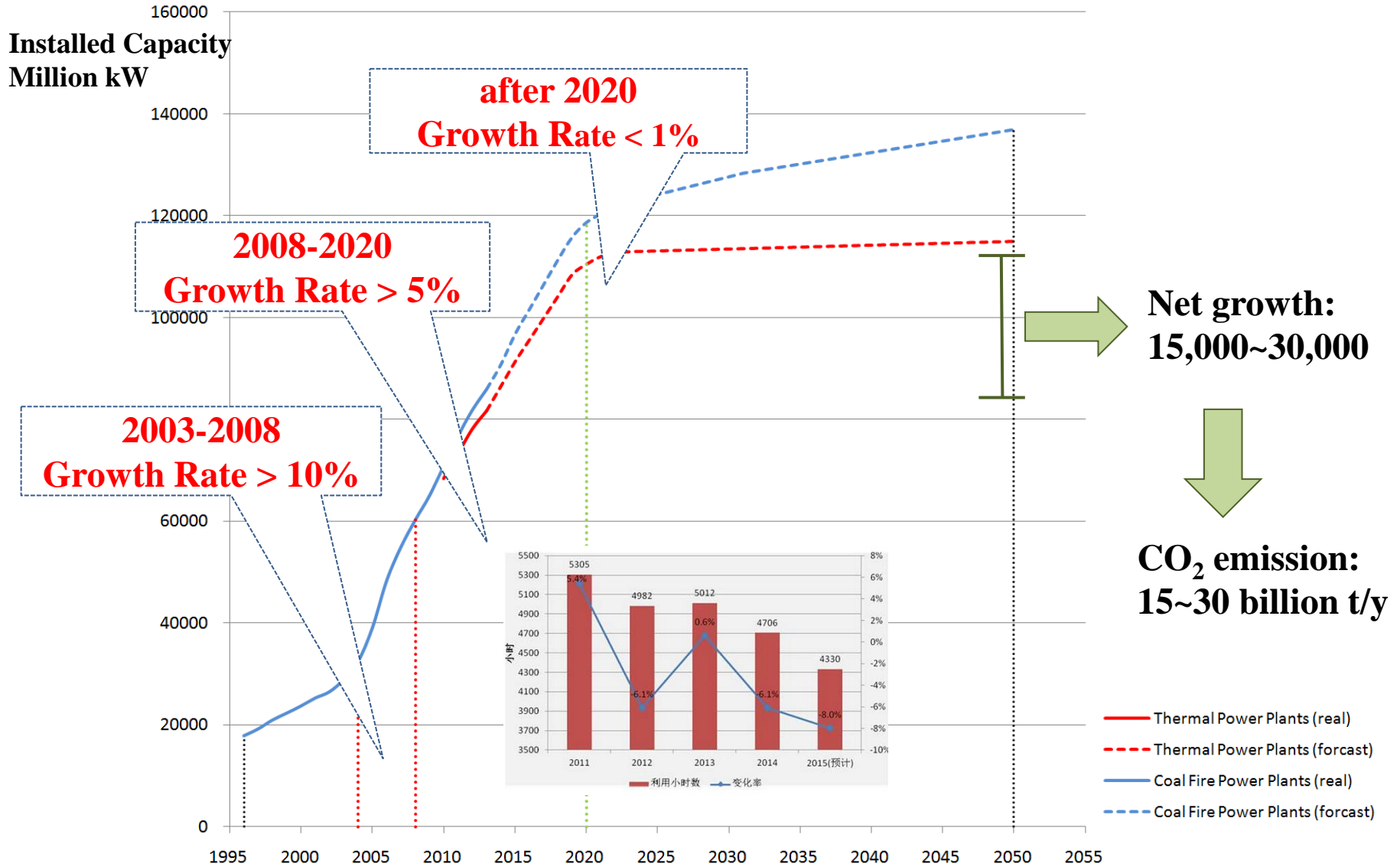
National CCS Roadmap for China

issued by Dec. 2015, COOP21, Paris

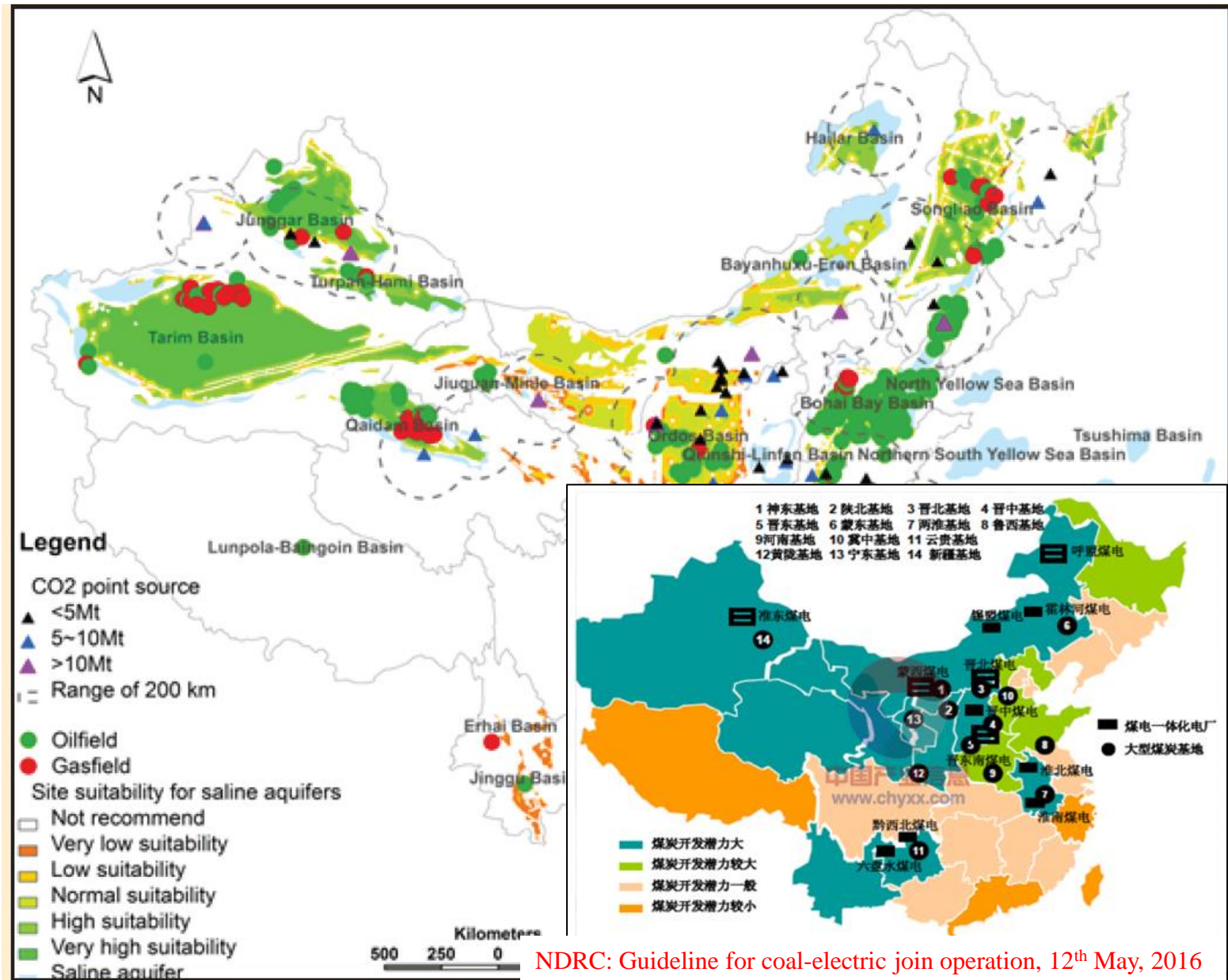


2. The potential of CCS Ready

The trend of coal power industry in China

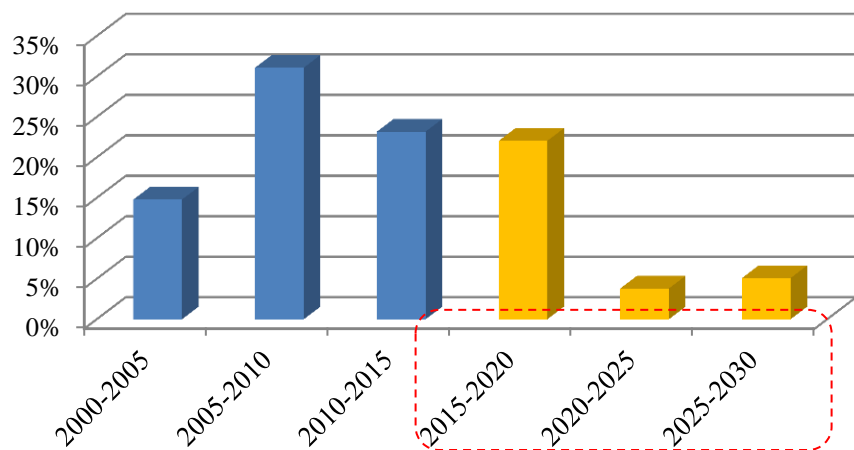


Priority Regions for CCS-Ready power plants

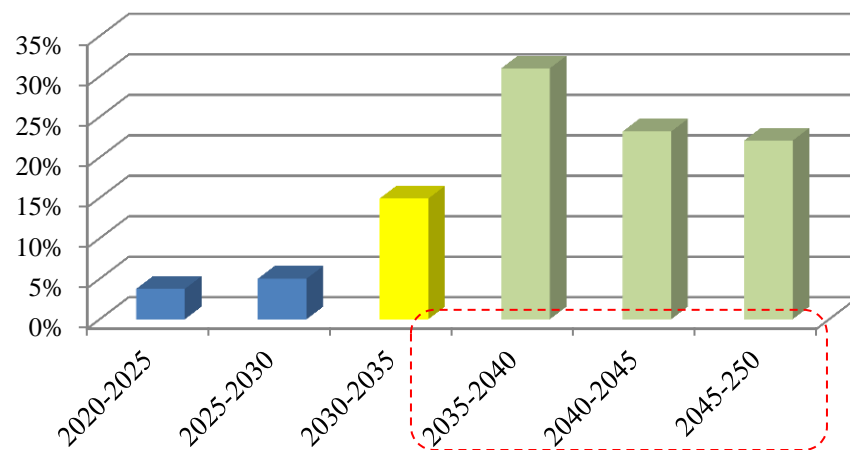


Potential of CCS-Ready before 2050

2030



2050



By 2030:
25% of installed capacity were build between 2015 to 2030

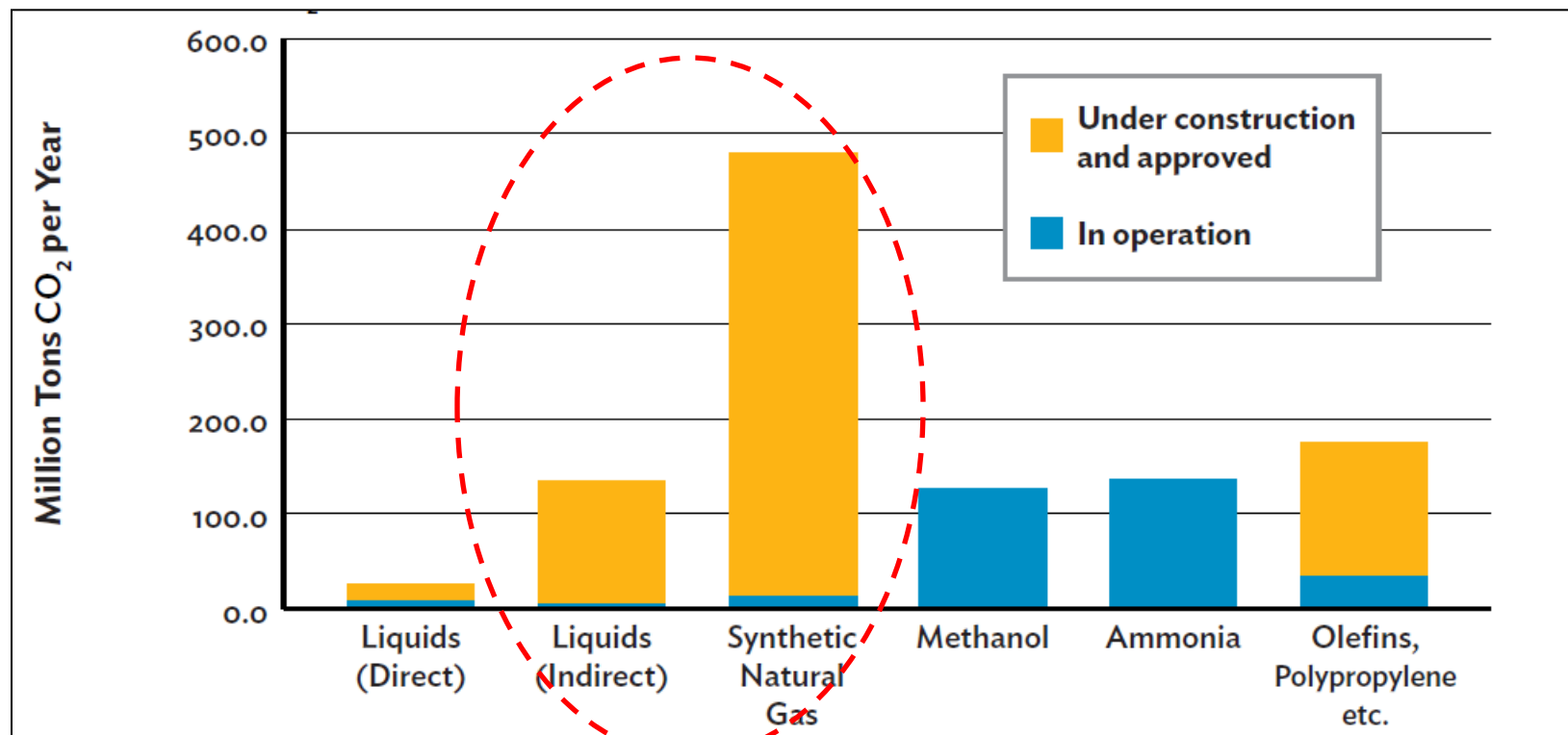
By 2050:
75% of installed capacity were build after 2035

Hint 1: 2015 to 2030 will be the key period for CCS-Ready

Hint 2: by 2035, new generation of CCS tech. should be Ready

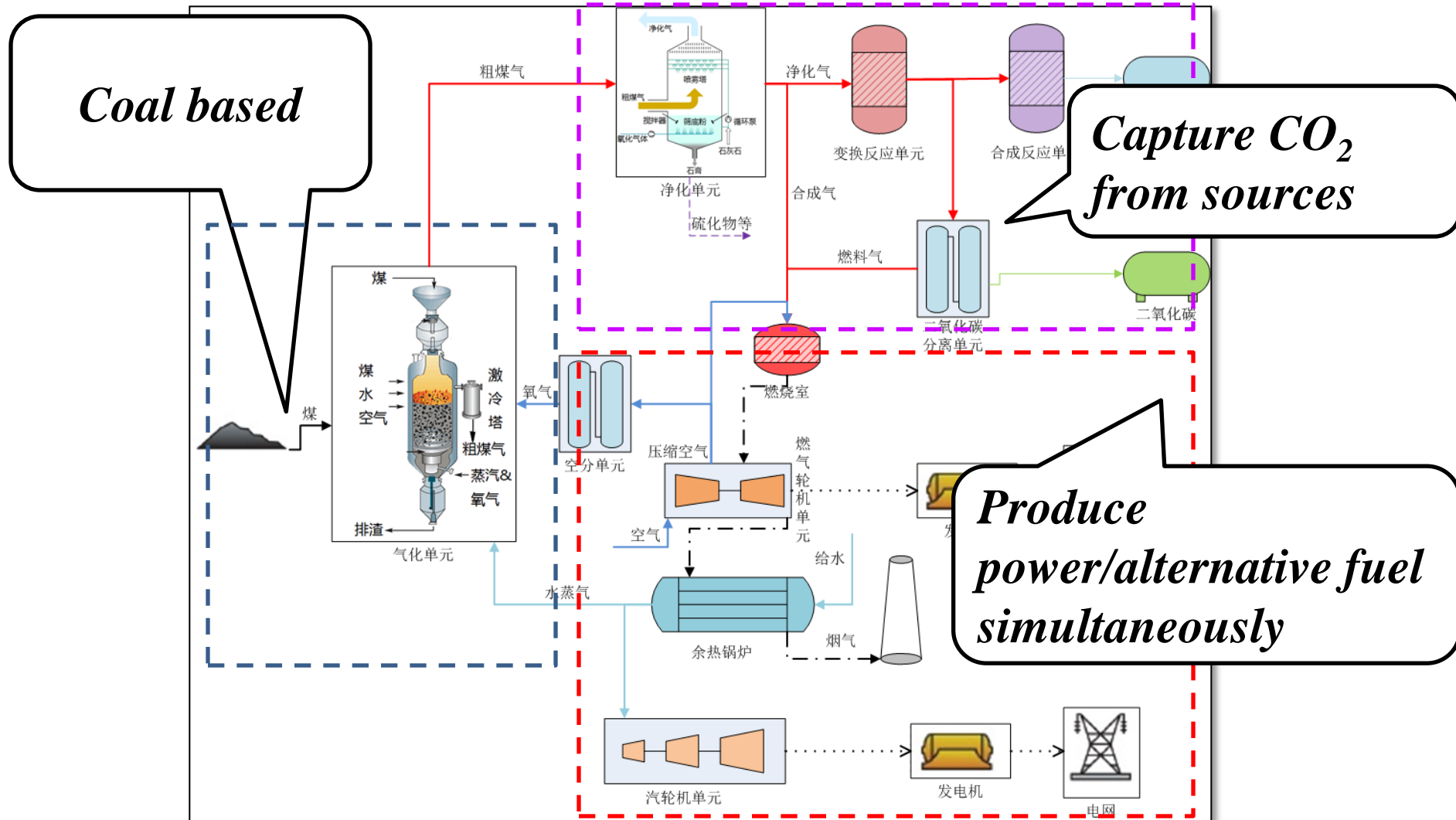
3. How to implement CCS Ready in China

Significant role of coal chemical in China



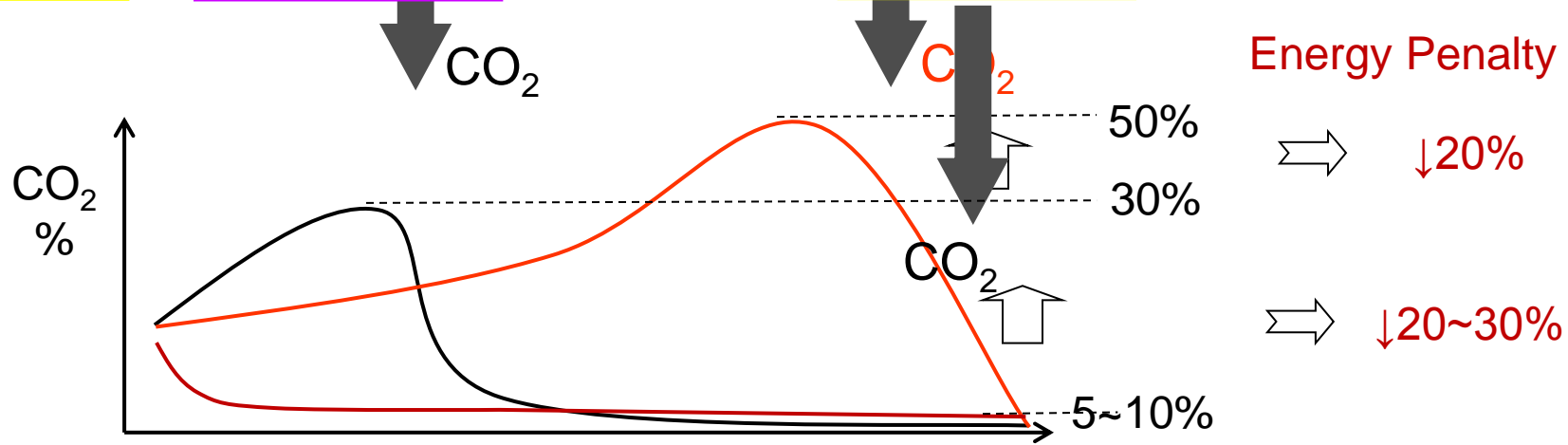
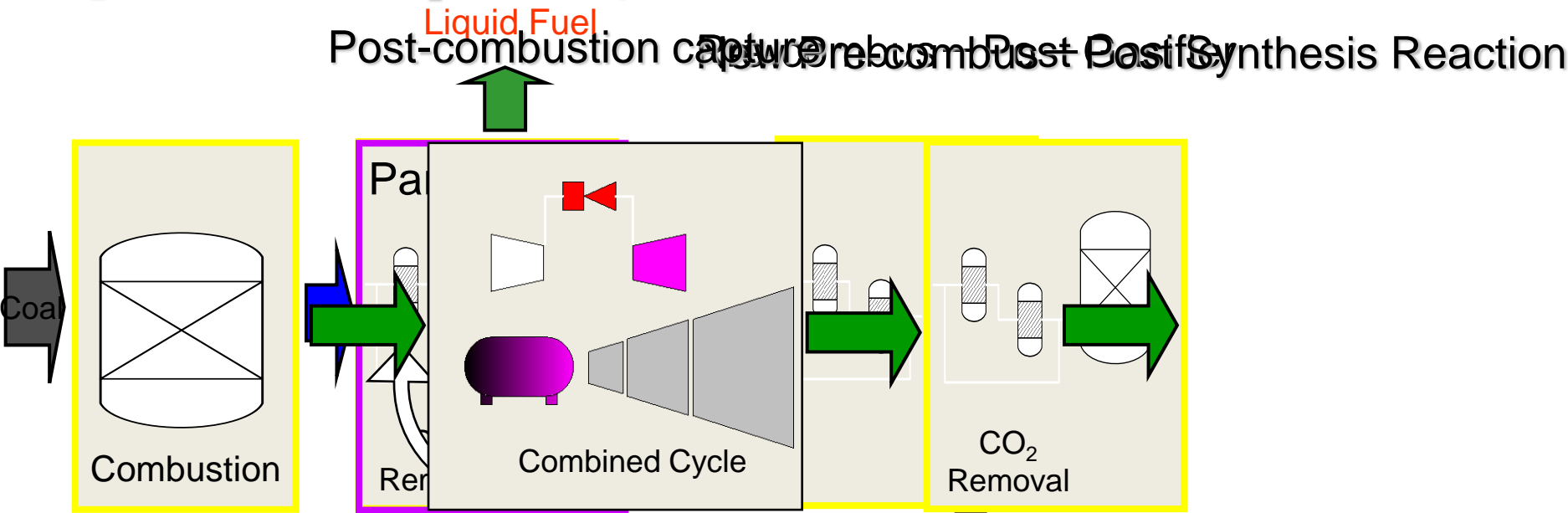
*Opportunity in Coal chemical industry (hundreds millions tones),
especially in alternative fuel production*

New Generation of CO₂ capture technology integrating coal chemical and power



Conceptive of Polygeneration Technology

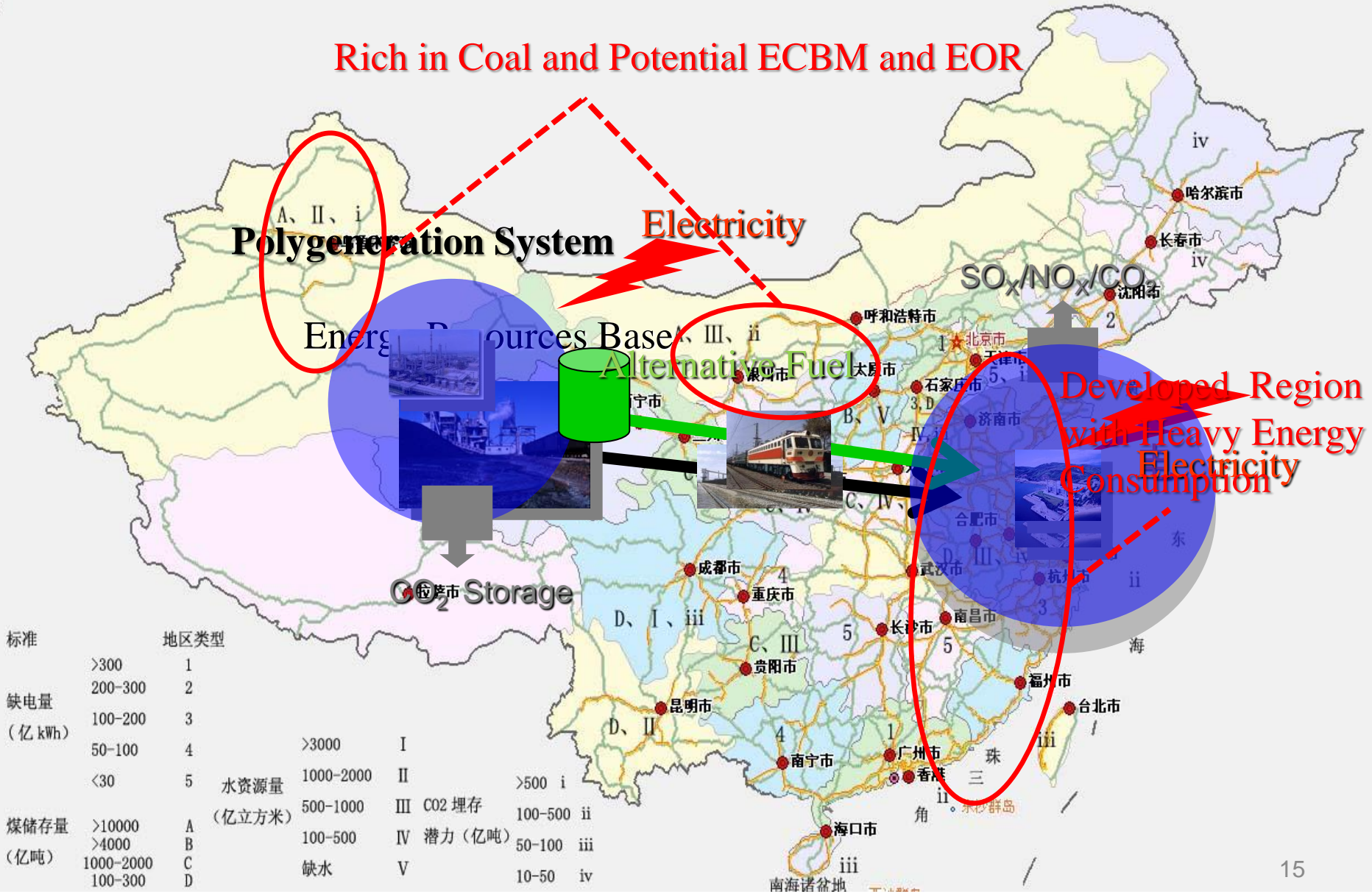
Coal based Polygeneration system for production of alternative fuel and power with CO₂ recovery



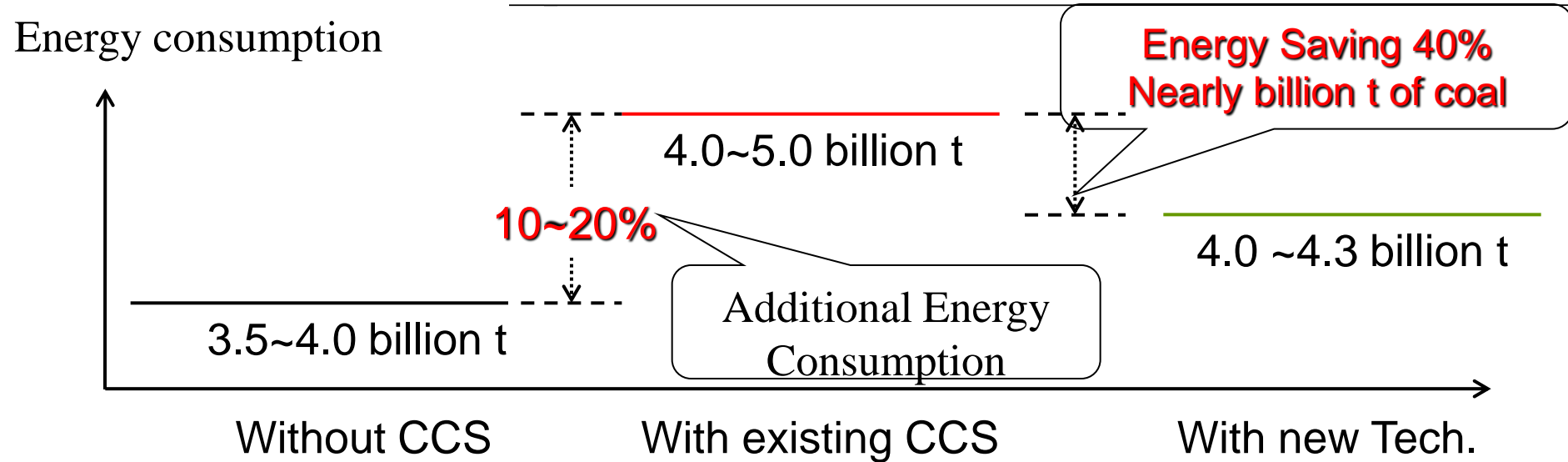
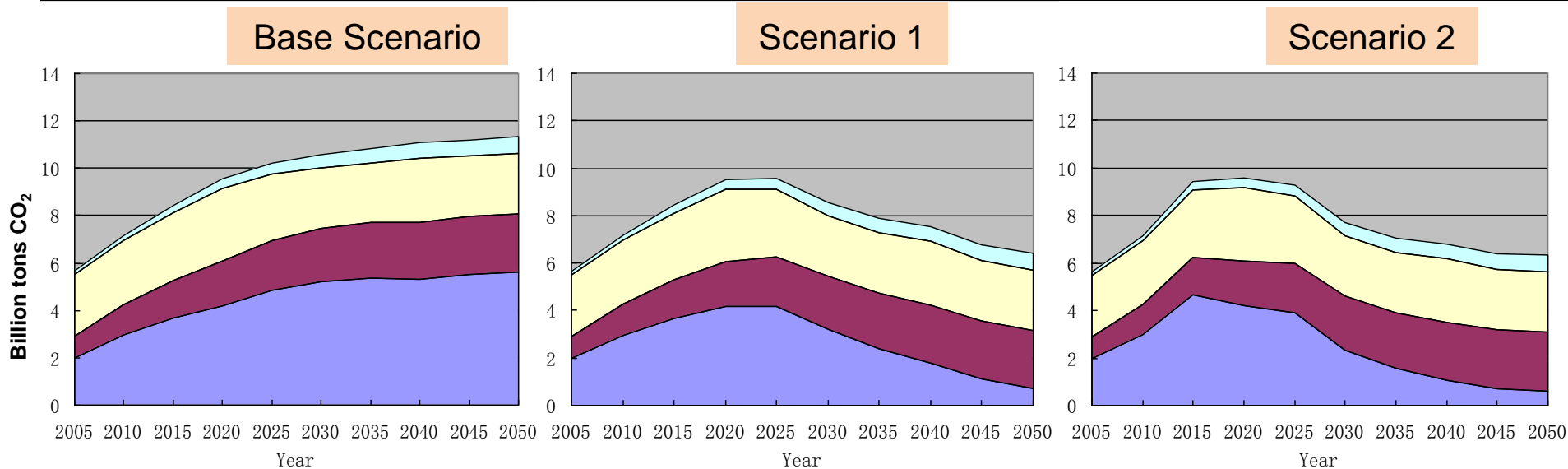
The energy efficiency has been *increased 3~4 percent points*, instead of losing 7~10 percent points.

Integrated Resources Energy Environment Net-work

Rich in Coal and Potential ECBM and EOR



Potential contribution of new technologies



4. *Summary*

- ✓ *From now on to 2030, new build power plants (especially coal-electric joint operation plants in western area) should be CCS-Ready;*
- ✓ *The criterion of CCS-Ready should be revised according to the characteristics of new generation of CCS technologies and specific issues of China;*
- ✓ *Conflicts between energy efficiency and low carbon is the priority issues, which had to be solved through technology innovation.*

