

CHINA'S MITIGATION TARGET: OPPORTUNITY AND CHALLENGE

Fei TENG

Associate Professor, Institute of Energy,
Environment and Economy, Tsinghua
University

2010/07/12

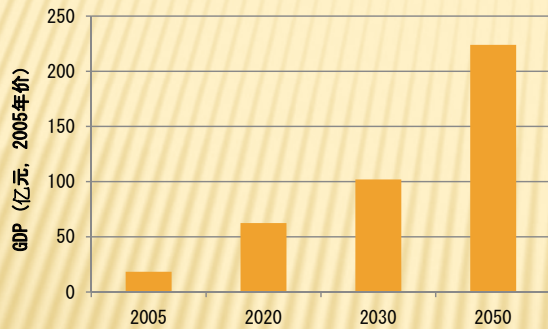
Yohohama, Japan

OUTLINE

- ✘ Energy and emission trend in China
- ✘ Why intensity target ?
- ✘ Why 40-45% ?
- ✘ Is it Significant ?
- ✘ Future Challenges

ENERGY AND EMISSION TRENDS

1. Fast growing economy will continuously drive growth of energy consumption and related emission



GDP growth rate

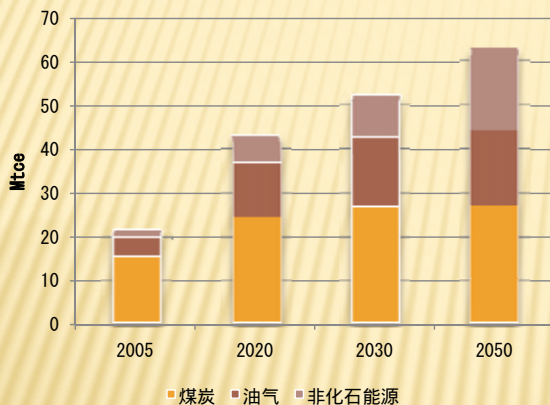
2005 ~ 2020 : 8.5%

2020 ~ 2030 : 6.0%

2030 ~ 2050 : 3.8%

Year 2050: GDP per capita will reach 20000 \$ (2005 price)

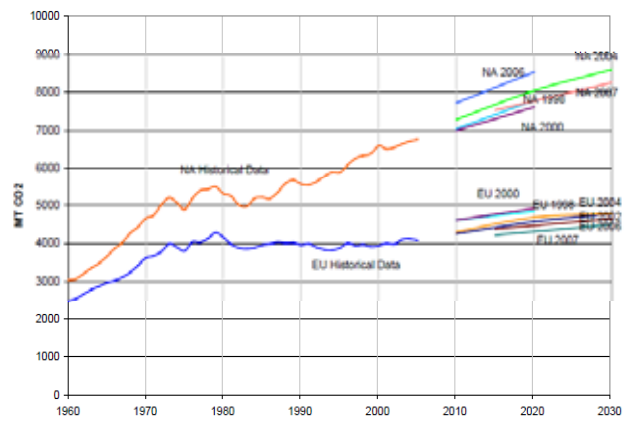
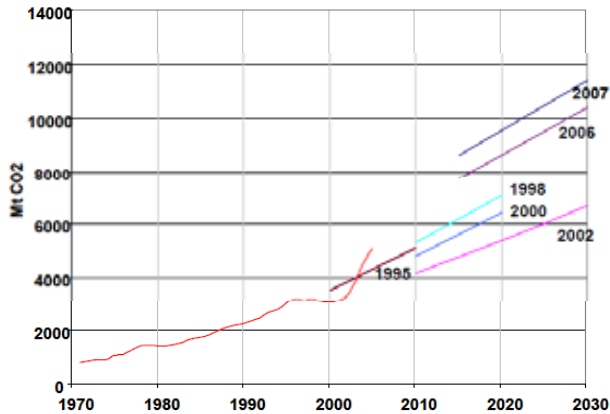
ENERGY AND EMISSION TREND



- ▶ Even energy intensity decrease by 40% and 80% in year 2020 and 2050, energy consumption will still double and triple at that time.
- ▶ Production of coal will achieve 4 billion tons in 2030, breaking resource and environment capacity limitation.
- ▶ Dependence rate of oil will achieve 65-70%.

WHY INTENSITY TARGET ?

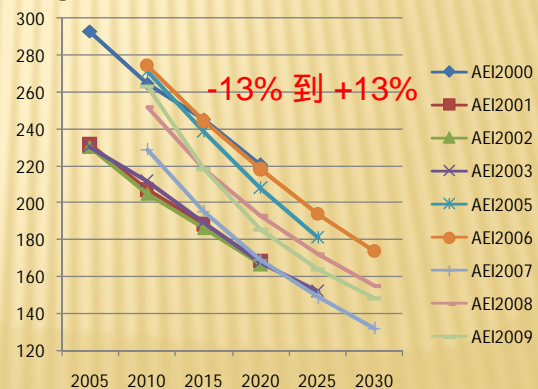
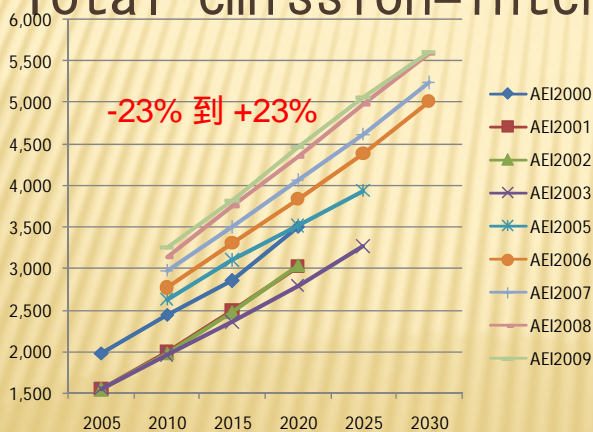
Emission pathway of developing country in the future is more uncertain than that of developed countries.



WHY INTENSITY TARGET ?

An intensity target is less risky than a quantified emission reduction target.

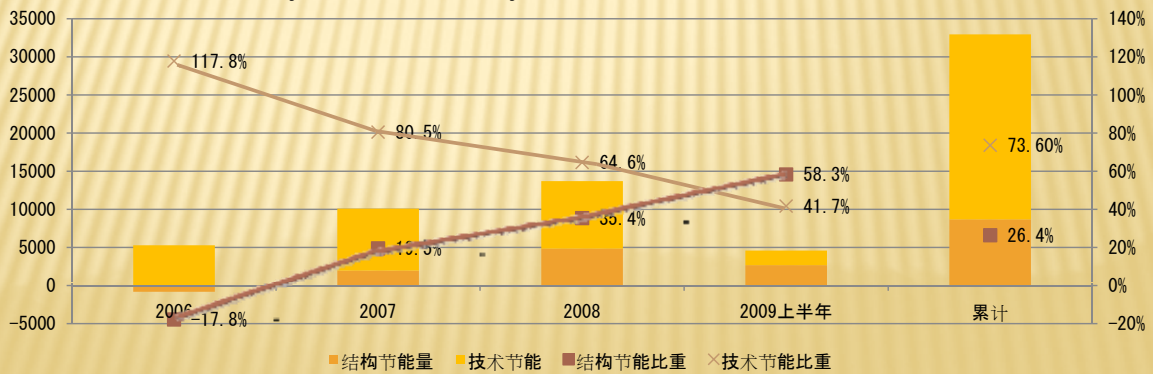
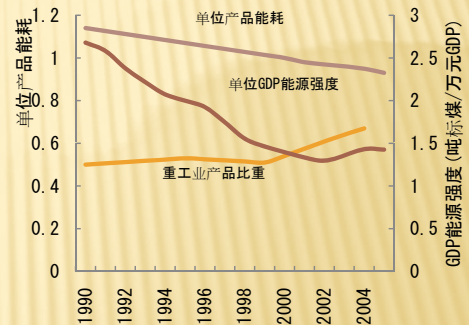
$$\text{Total emission} = \text{intensity} * \text{GDP}$$



WHY 40-45% ?

Perspective from past trend

- + From 1990 to 2005, GDP energy intensity reduce by 47%, with an annual rate of 4.1%.
- + From 2005 to 2008年, GDP energy intensity reduce by 10.1%, with an annual rate of 3.5%.
- + Based on annual reduction rate of 3.5%, GDP carbon intensity will reduce by 40-45%.



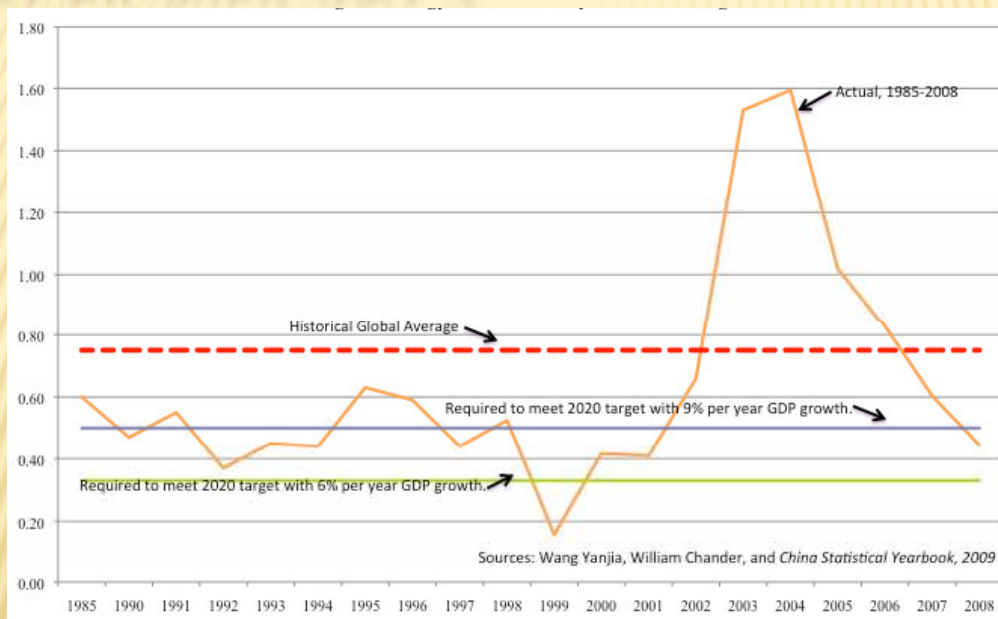
WHY 40-45% ?

From perspective of energy elasticity

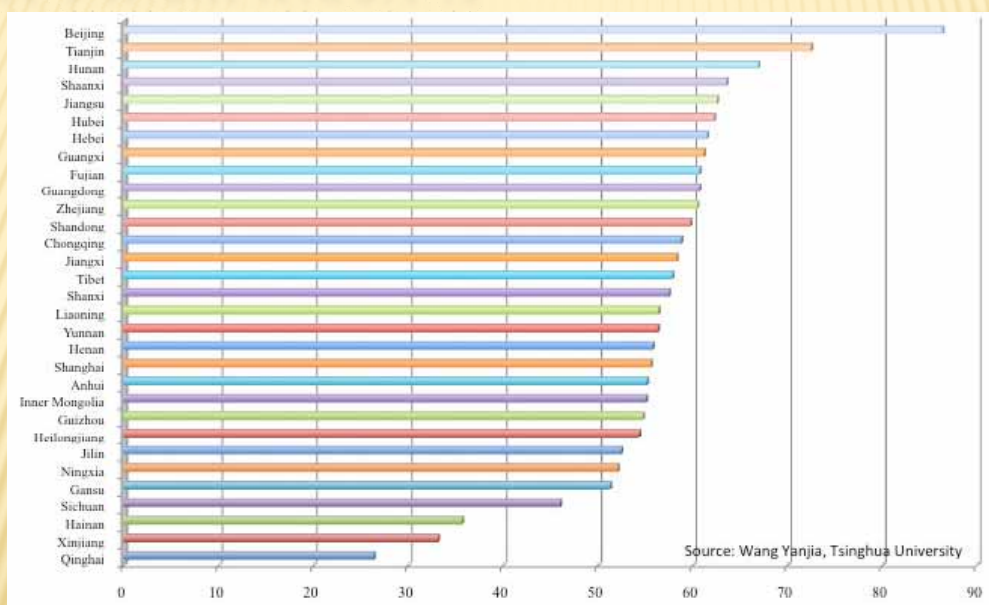
- + From 2005 to 2008, average GDP growth rate is 11.2%, energy intensity decrease by 10.1%, energy elasticity is 0.65
- 2005 ~ 2020年GDP增长与能源消费弹性变化分析

GDP growth rate (%)	9.0		7.5	
Energy elasticity	0.65	0.5	0.65	0.5
Energy intensity reduction by 2020 (%)	35.6	46.9	31.7	41.3
Carbon intensity reduction by 2020 (%)	42.9	52.0	39.5	48.0

IS IT SIGNIFICANT ?



IS IT SIGNIFICANT ?



FUTURE CHALLENGE

- ✘ How to coordinate with forthcoming energy intensity target ?
- ✘ How to coordinate with other mitigation target, like 15% share of non-fossil fuel energy ?
- ✘ How to establish a market based mechanism to achieve such target efficiently and effectively ?
- ✘ How to divide such target at provincial and sectoral level ?
- ✘ How to shift from technical factor to structural factor ?

tengfei@tsinghua.edu.cn

THANK YOU FOR YOUR ATTENTION
