

China's Energy Restructure and Carbon Dioxide Abatement

Angang Hu

Center for China Study,
Chinese Academy of Science &
Tsinghua University

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I. Background: China is changing
its growth pattern

Characters of China's Economic Transition ,1995-99

- Less capital investment, energy consumption and pollution emissions per unit economic output.
- Emerging new growth pattern from factor-concentrated growth to knowledge-based growth.

- Economic growth mainly depends on new industries with lower energy consumption and pollution emissions during the 9th FYP, such as industries of Information, Tourism, Banking and Insurance, Education. Tertiary Industry raised 2.8 percent GDP during this period.

- Industrial pollution was controlled in the 9th FYP, major pollutants emissions have declined 15-25 percent since 1996 by SEPA reports.
- Pollution emissions measured by unit GDP or industrial output have been rapidly declined.
- These changes mainly benefit from large scale economic restructure especially energy restructure.

China's Economic Indicators, 1990-99

Unit: %

Indicators	The 8 th FYP	The 9 th FYP
GDP Growth	12.0	8.3
Fluctuation Coefficient	17.5	12.0
Employment Growth	1.2	0.9
Gross Fixed Investment Growth	36.9	11.2
Finance Revenue Growth	16.3 (3.4)	16.5 (14.7)
Finance Expenditure Growth	17.2 (4.3)	18.4 (16.6)
Consumer Price Inflation	12.9	1.8
Retail Price Inflation	11.4	-0.1
Energy Production Growth	4.4	-3.3
Energy Consumption Growth	5.9	-0.5
Consumer Goods Retail Sale Growth	23.2 (11.8)	10.6 (10.7)
Export Growth	19.1	10.9
Import Growth	19.9	11.3

Note: fixed price in bracket

II. China's Energy Structure Adjustment

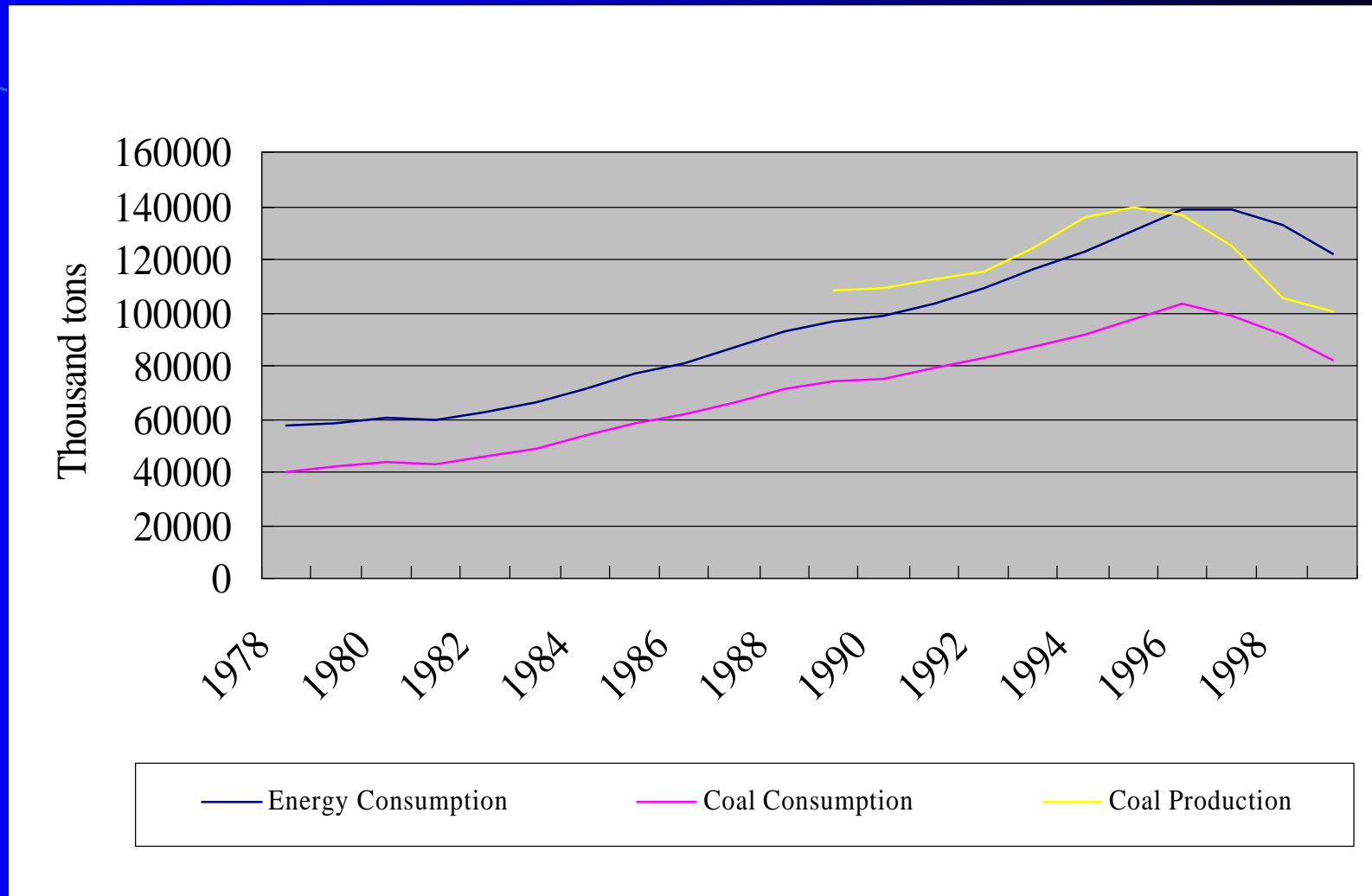
- Coal-burning remains the chief contributor of air pollution; motor vehicle emissions will increase in the next 10 years.
- Energy efficiency has improved and coal consumption has declined. Because of this, CO₂ emissions were much less than projected in the early 1990s.

Trends in Energy Consumption

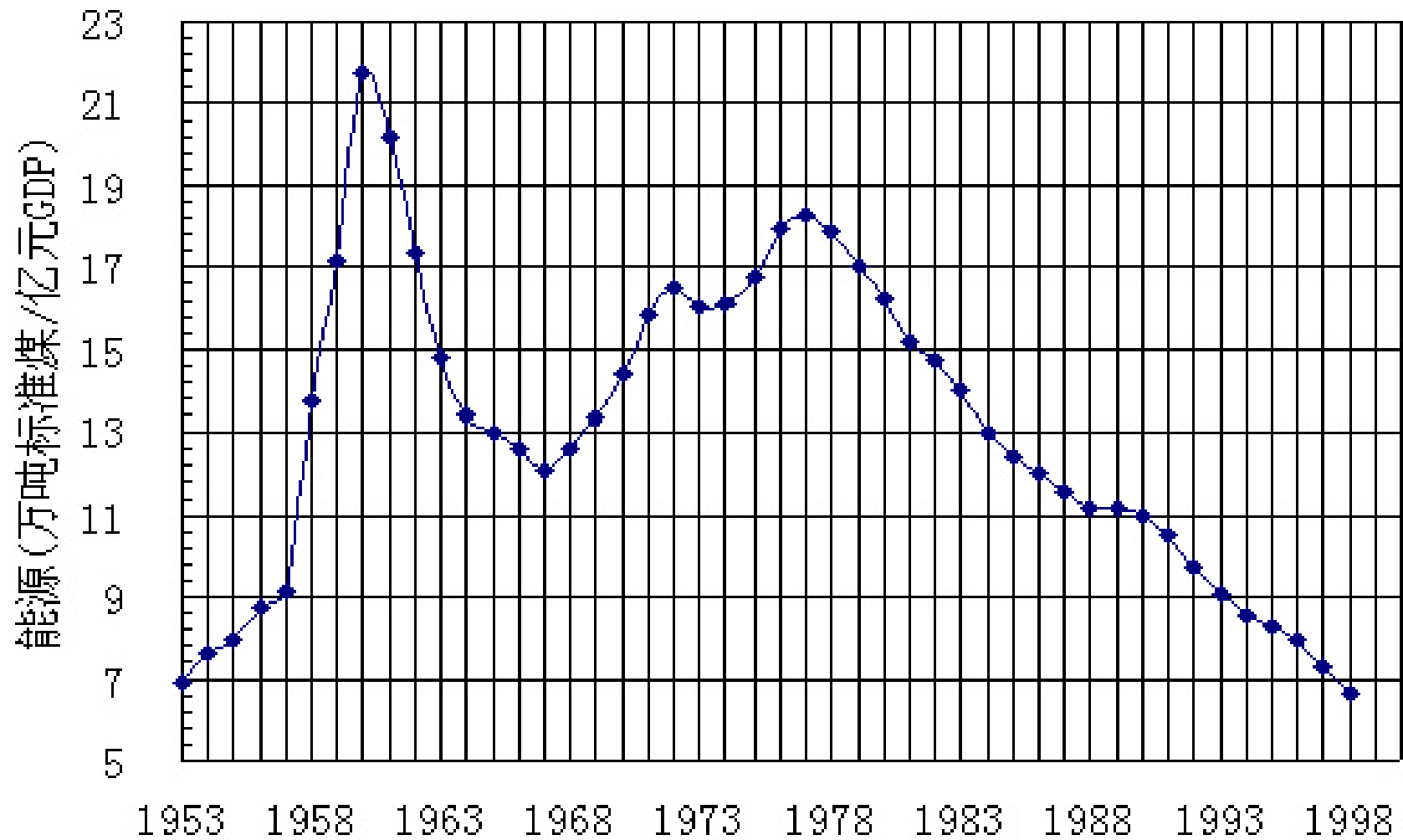
Energy consumptions present negative growth during the 9th FYP. The aggregate reduced 7.6 percent in 1999 relative to 1995.

Remarkably, coal consumption abatement is very obvious, reducing 16.3 percent during 1996-99.

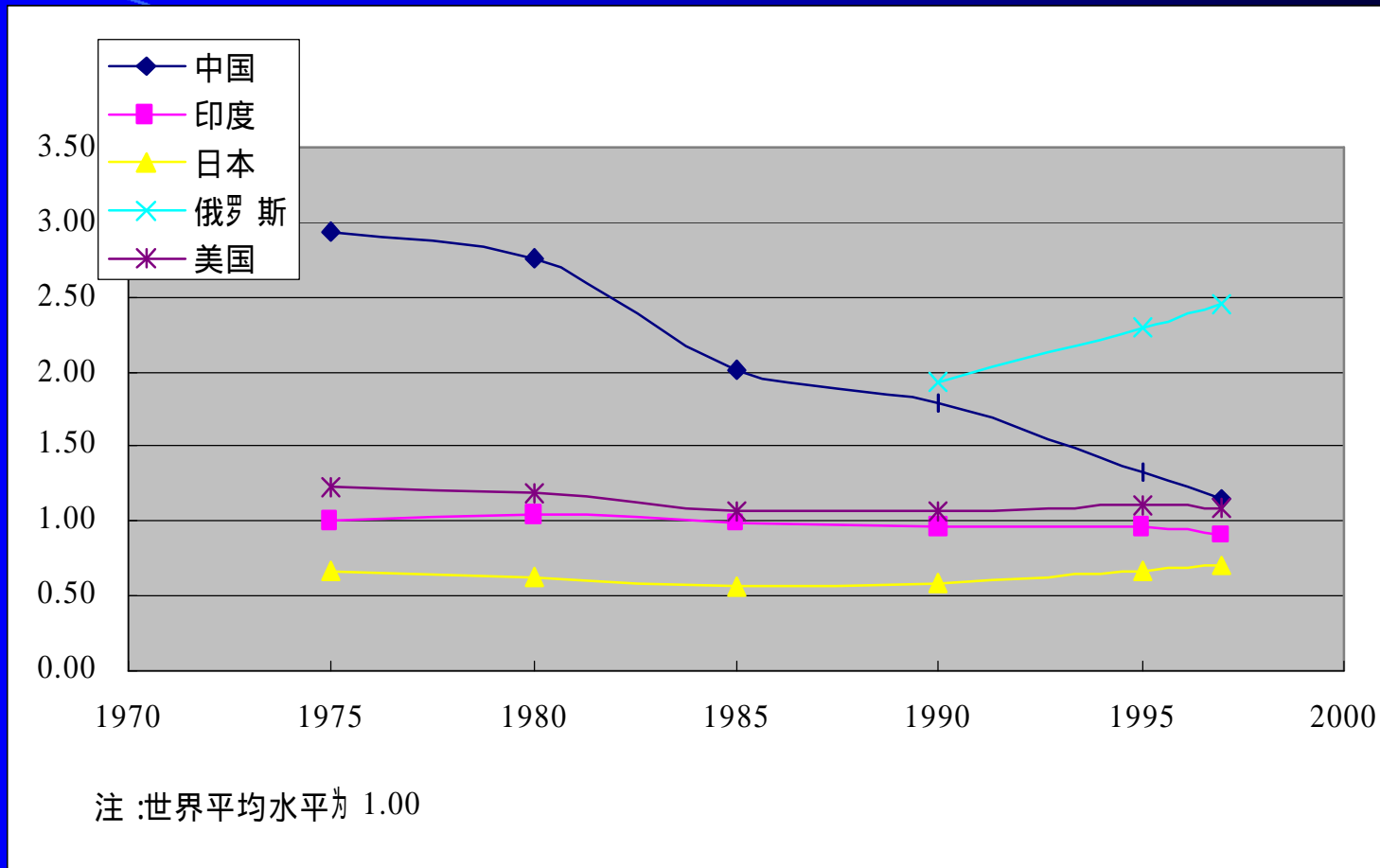
Trends in Coal Consumption, 1978-99



Change in Energy Density, 1953-98



International comparison in energy Density (Energy/GDP)



III. Situation of China's Carbon Dioxide Emissions

Air Pollution

- Emission of major air pollutants peaked in 1995. Emission declines since then: SO₂ by 16%; dust by 33%; industrial TSP by 37%; CO₂ by 17%.

Trends in CO₂ Emission Density

Carbon Dioxide Emissions per unit GDP rise from middle 1960s to late 1990s, and then decline obviously.