HUNTER

UNITED NATIONS UNIVERSITY

UN DESA International workshop on

Global urbanization, internal migration, population distribution and development

21-23 January 2008

Globalization and urban environmental change in the Asia Pacific Region

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Background

Socio-ecological system change over time

- The social or human sphere has dramatically changed over the past 150 years in terms of absolute size and intensity of activities as well as in relative size and interaction with the ecological sphere;

- The implication is that the social sphere has grown and has increasingly linked (in more, deeper and more complex ways) to the environmental or ecological sphere;

Globalization

- Globalization is defined as:

  "…the *widening*, *deepening* and *speeding up* of worldwide interconnectedness in all aspects of contemporary social life, from the cultural to the criminal, the financial to the spiritual" (Held, et al, 1999)

- Globalization is not a single variable but a complex set of phenomena, captured in a large number of different variables

Globalization

- Previously indicators of the widening and deepening focused on,

Globalization

- Emphasis on socio-ecological development includes additional indicators such as increasing number and size of impacted ecosystems, spread of diseases, movements and concentrations of toxics, air pollutants, energy supplies, invasive species, etc;

Globalization

- Widening processes have attributed to the formation of a world city system in which urban regions articulated to the system are connected through economic, political, social and biological (genetic, species, population, etc), ecosystem services, waste/emissions flows;
- Deepening processes have attributed to “world city formation” or the accumulation of the world’s capital in the major metro region and increased consumption of ecosystem services, increased interference with biogeochemical flows, more intensive reliance on social responses as ecosystem functions deteriorate, etc

Globalization

- The speeding up of interconnections have been facilitated by advanced technologies in telecommunications and transport and indicators of increasing speed include, for example, in the speed of transactions (and the lower relative costs of communications and people and goods movement)

- Increasing rates of change can also been observed in the socio-ecological systems, which are changing faster than previously experienced

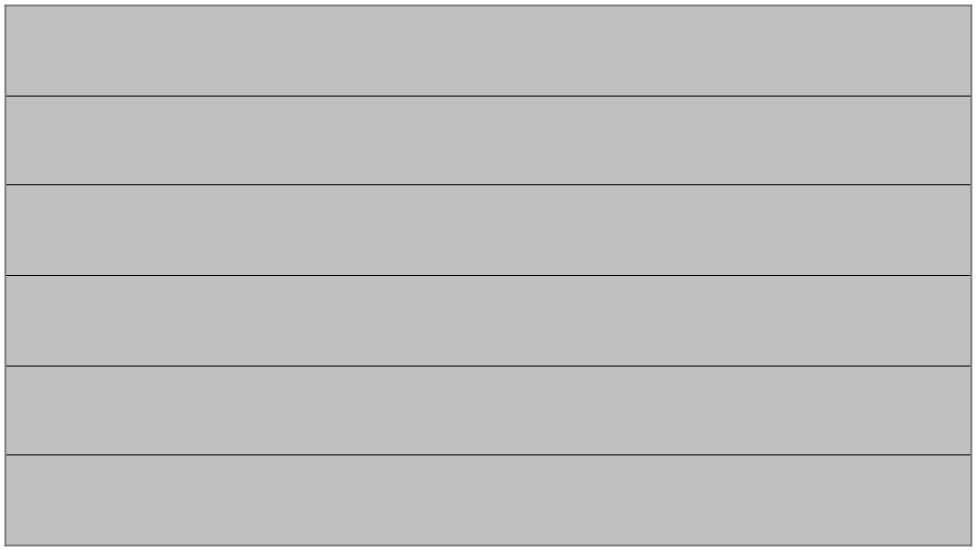
Globalization

- Moreover, changing speeds and timing also influences the patterning of “environmental transitions” (McGranahan et al, 2001). In the past the transition from one set of environmental conditions to another took a longer period of time than it does today and occurred in a more simultaneous fashion.
- Given current patterns experienced by rapidly developing world cities, relationships that define the structure of urban environmental transition may no longer exit;

Comparative widening

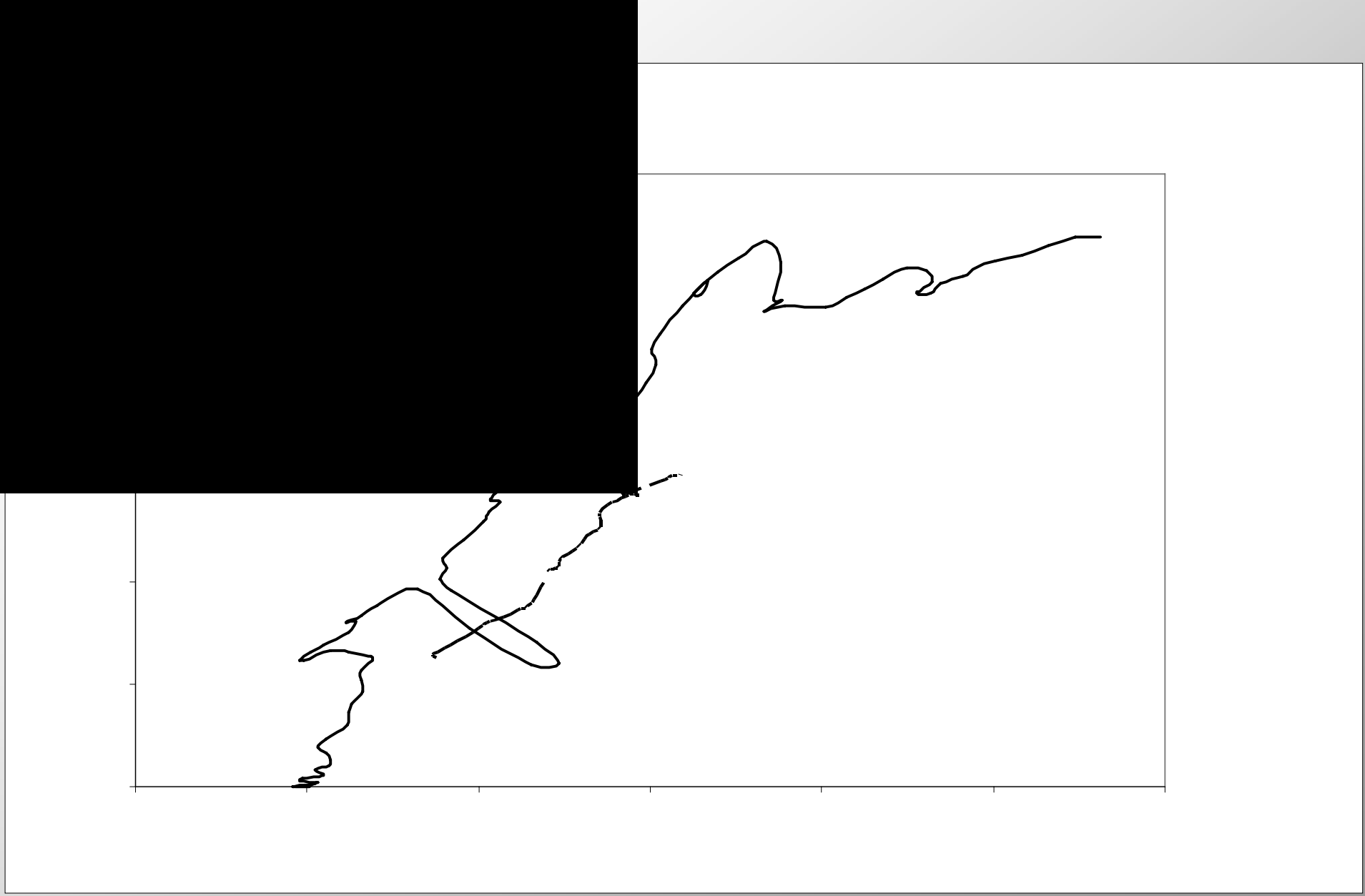
- Some changes within urban regions of the Asia Pacific are being experienced at lower economic or urbanization levels than in the past
  - Major development patterns, such as urbanization, are occurring at lower levels of income
  - Technologies are diffusing at lower levels of income
  - Ecological degradation, such as transportation CO2 emissions, is occurring at lower levels of income
  - Shifts in energy sources are occurring at lower levels of urbanization

Comparative changes in urbanization levels: USA and selected Asian economies



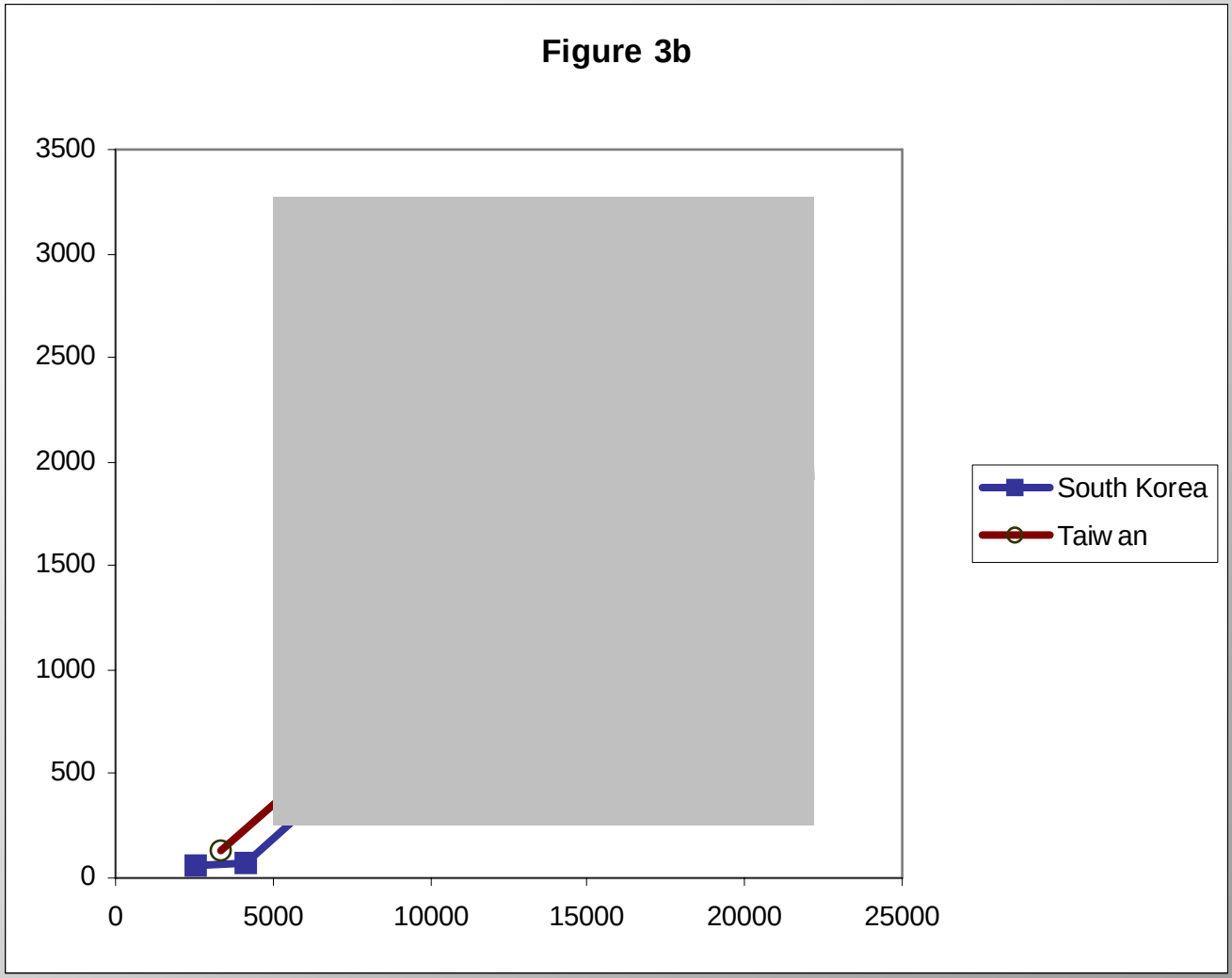
Comparative deepening

- For some impacts changes are less intensive per capita, but potentially larger in absolute value. For other impacts changes are more intensive per capita;
  - For some nations in the region transportation-related CO



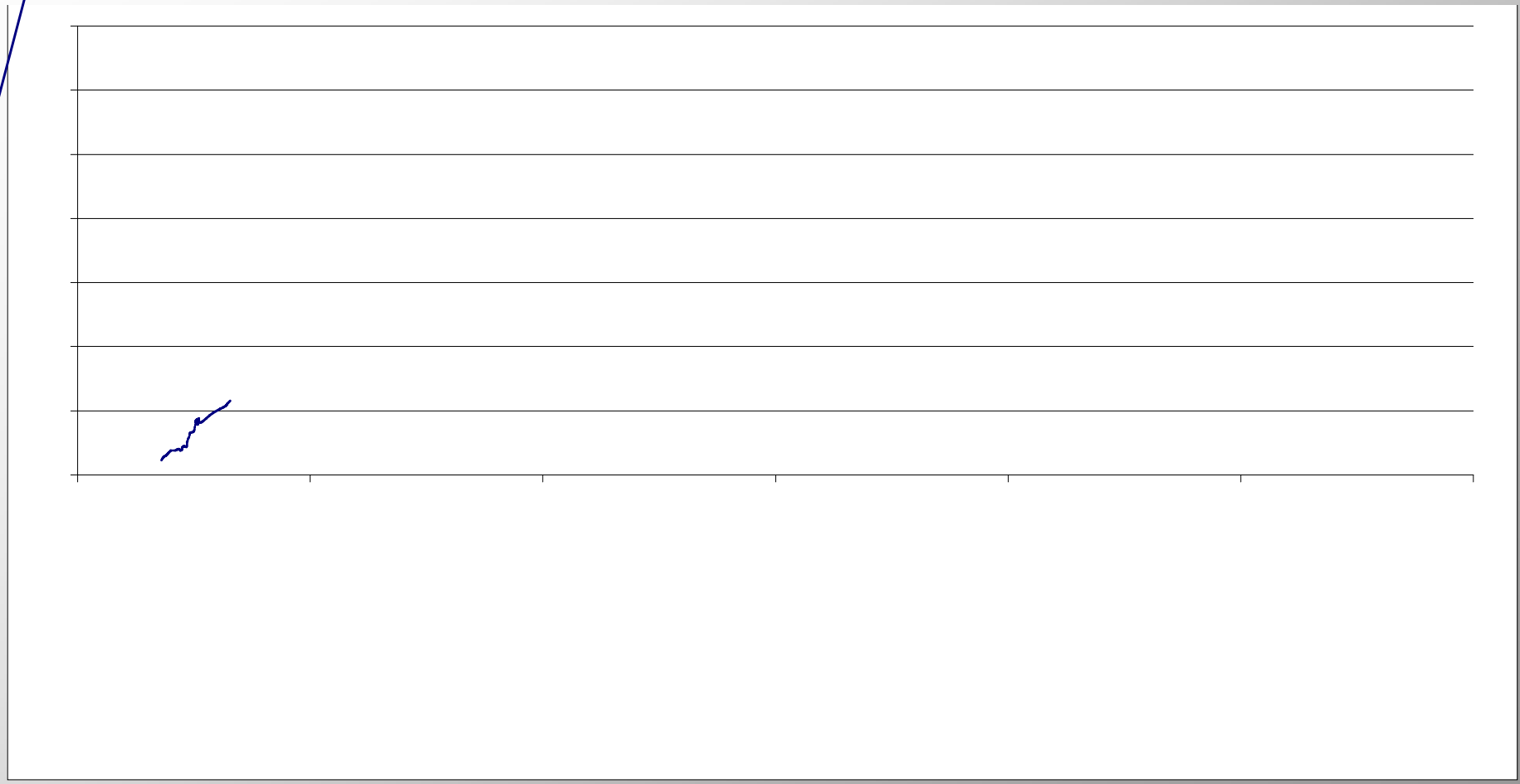
Group A – low emitters

Group B – medium emitters



Source: Marcotullio and Marshall 2007

Comparative changes in CO2 emissions per capita by GDP

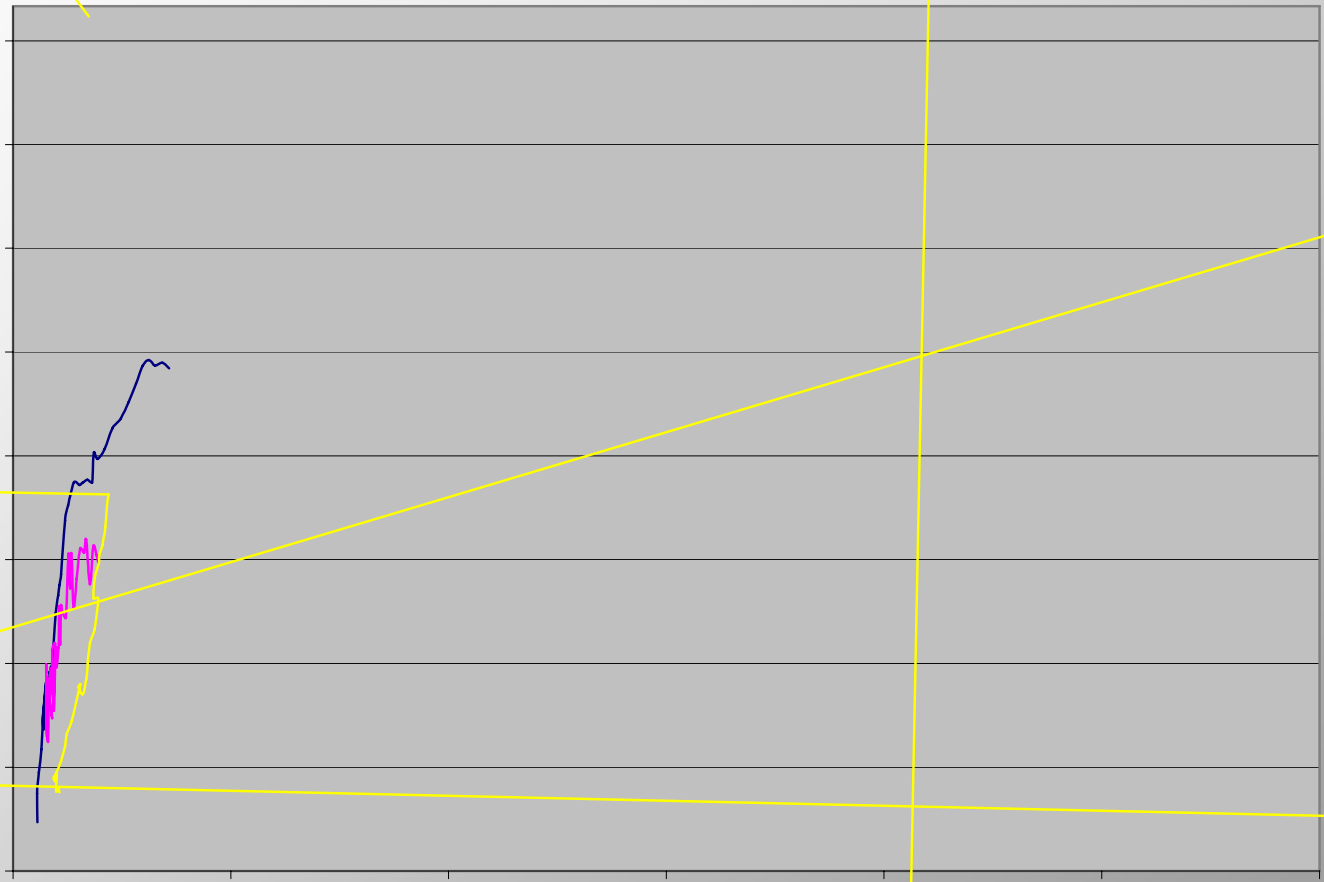


Cumulative impact may be larger

Between now and 2030, a predicted additional 600 million people in developing countries will become middle class bringing the total population in these regions to 1 billion;

By 2040, consumption of motor vehicles in China and India alone is predicted to match total global figures of today (800 million vehicles in use) (Goldman Saks, 2005, *The Economist*, 2006);

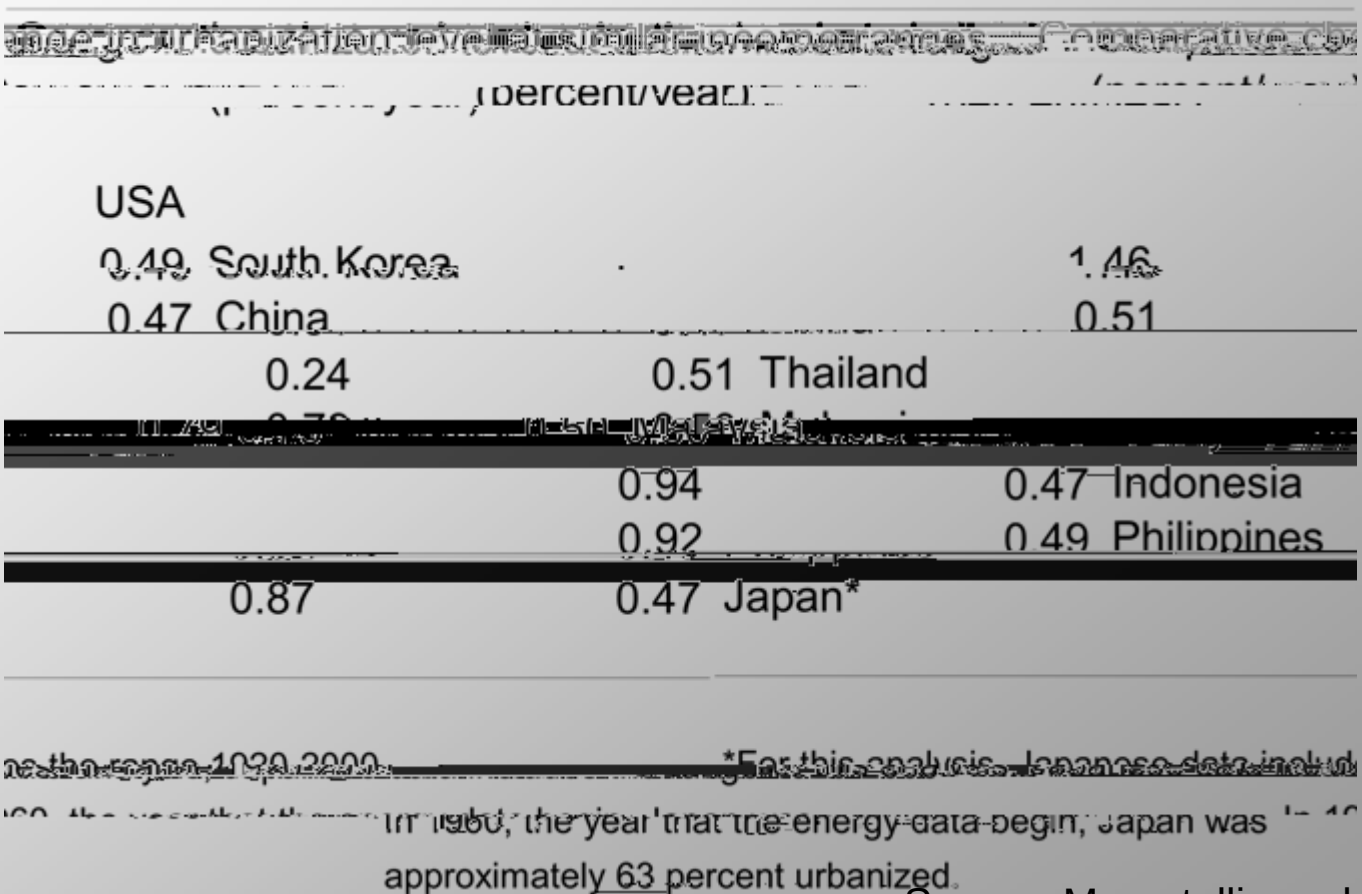
Average Daily Consumption per Capita by GDP



Comparative speeding up

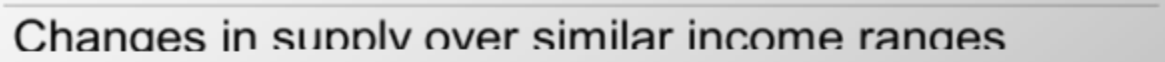
- Changes are more rapid than previously experienced;
  - Speed of urbanization is faster in many Asia Pacific nations when compared to the developed world
  - Growth in energy supply is faster

Comparative speed of urbanization: USA and selected Asian economies



Source: Marcotullio and Schulz 2008

Comparison in speed of increases in energy supply: USA and selected Asian economies

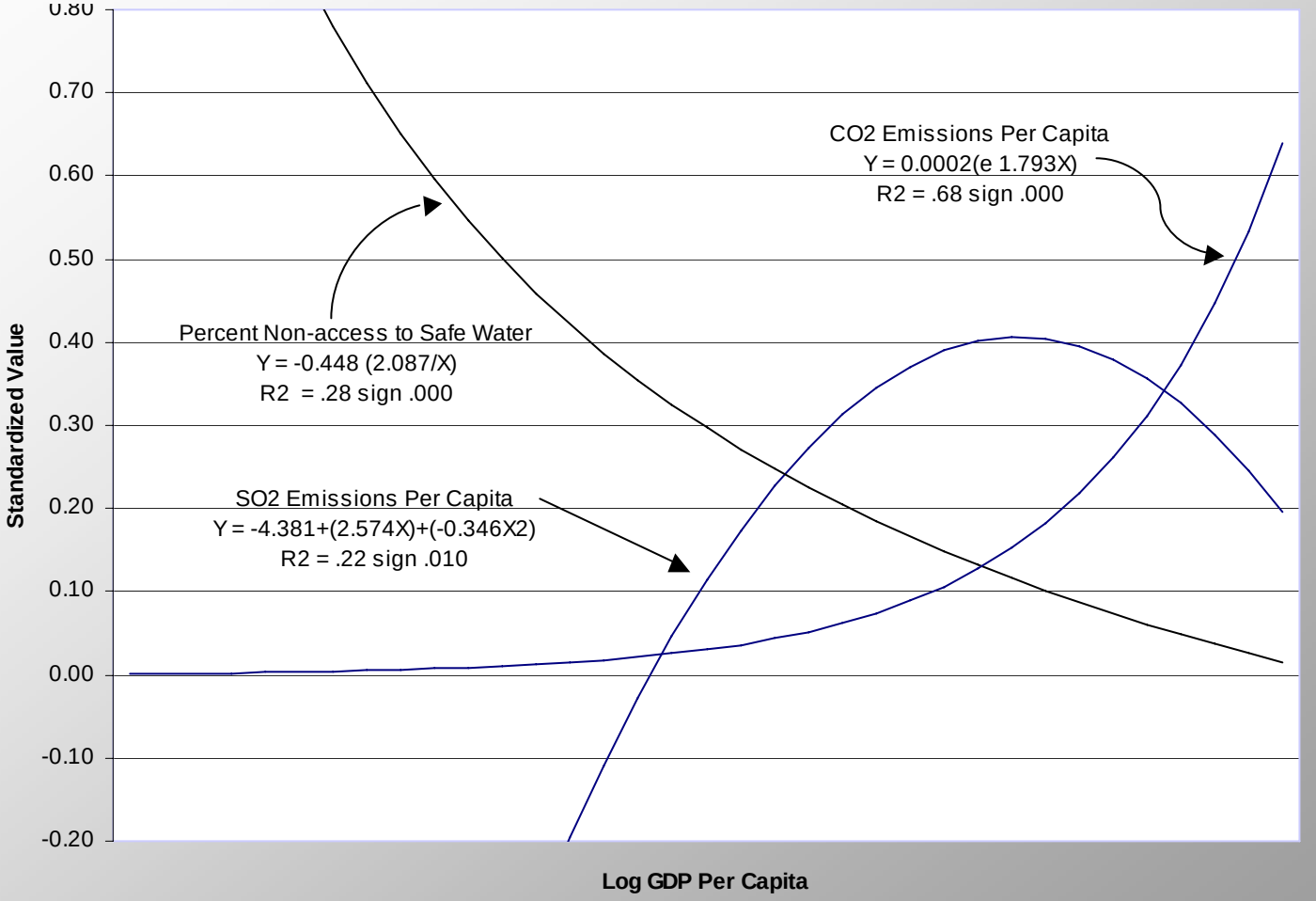


Source: Marcotullio and Schulz 2007

Comparative speeding up: timing of impacts

- Previously experienced sequential development patterns are now experienced simultaneously
    - Sets of multi-scale environmental conditions within urban populations of different income in the region
    - Multi-scale urban water related conditions in Southeast Asia

Current Situation
Urban Environmental Transitions



Source: Marcotullio and Lee, 2003

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The End