GOOD GOVERNANCE IN THE WATER AND SANITATION SECTOR

Peter Rogers
Harvard University

Presented at the session on “Water and Development in Asia Cities: Challenges and Good Practices for Urban Water Management”

Sustainable Water Management in Cities: Engaging Stakeholders for Effective Change and Action.
UN Office to Support the International Decade for Action
“Water for Life” 2005-2015,
15-17 December, 2010, Zaragoza, Spain

Abundance of Terms and Concepts

- Sustainable water management
- Stakeholders
- Good governance: Poor governance?
- Contradictory roles of government
- Definition of Civil Society
- General principles for utility governance
- Governance of Water Utilities
- Sustainable water management (Dublin)

General principles for utilities governance

1. Establish clear rights and responsibilities for all consumers and providers
2. Economic assessment of long term affordability of public and privatized services;
3. Extensive social debate to reach consensus on potential private sector participation;
4. Design of an adequate system of subsidies to ensure the needs of the poor are satisfied;
5. Incorporation to the extent possible of effective competition.

If Significant Private Sector Participation is envisaged

- Design to take maximum advantages of economies of scale and scope;
- Assurance of reasonable rates and returns, transferring efficiency gains to the consumers;
- Control of price changes;
- Provision of timely and adequate information to consumers and regulators, including state of the art regulatory accounting;
- Provision of opportunities for meaningful and opportune users' participation;
- Setting up independent and capable regulatory bodies;
- Design of conflict-solving mechanisms that ensure social, environmental and economic factors relevant to governance are adequately considered when adjudicating conflicts.

Causes of Global Urban Water Crisis

- **Causes of Present Crisis**
  - Increasing and urbanizing populations
  - Increasing wealth
  - Change in weather patterns
  - Increasing demand for ever cleaner water
- **Causes of Pending Crises**
  - Continued growth of population and wealth
  - Climate induced changes in rainfall, sea level rise, and frequency of storms and droughts
  - Protection of non-human ecosystems

Climate Change has a Major Role in Exacerbating the Pending Global Water Crisis, but It Is Not the Only Factor

- Uncertainty of supply
- Continued rapid economic and population growth
- Restoration of environmental flows
- Transboundary water conflicts
- Idiosyncrasy of water institutions

Specific Asian Problems

Water problems in Asia today are severe—one out of five people (700 million) does not have access to safe drinking water and half of the region's population (1.8 billion people) lacks access to basic sanitation. As population growth and urbanization rates in the region rise, the stress on Asia's water resources is rapidly intensifying. Climate change is expected to worsen the situation. According to the Intergovernmental Panel on Climate Change, by 2050, more than one billion people in Asia alone are projected to experience negative impacts on water resources as a result of climate change. Experts project that reduced access to fresh water will lead to a range of consequences, including impaired food production, the loss of livelihood security, large-scale migration within and across borders, and increased geopolitical tensions and instabilities. Over time, these effects will have a profound impact on security throughout the region.

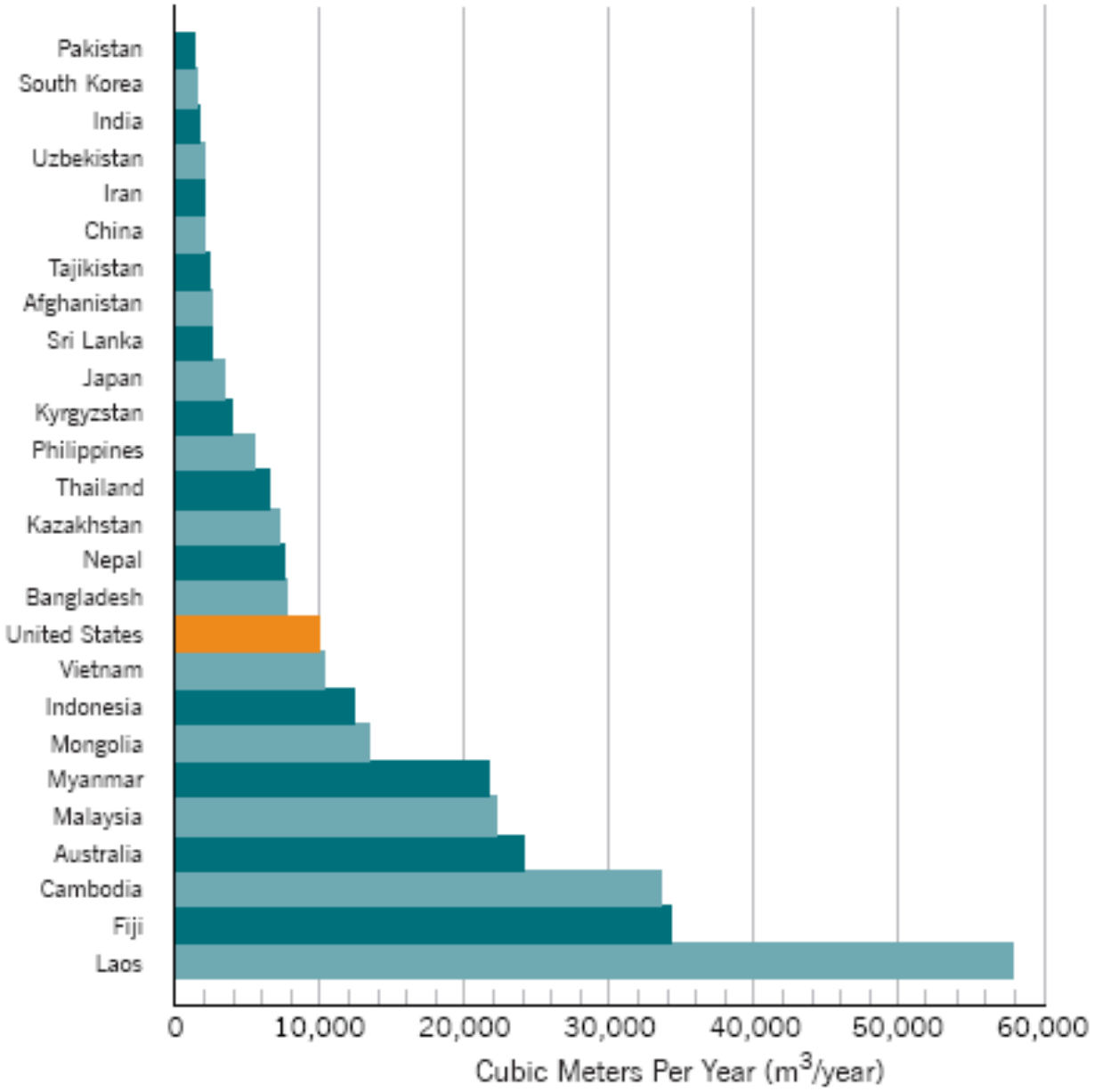
Asia Society, Asia's Next Challenge: Securing the Region's Water Future. 2009, p.9

What's Different Over the past Centuries?

- Since the Medieval warming period (900–1300), we have added 6 billion people.
- The majority of the Earth's population now is far wealthier than in previous times.
- By 2050 there will be 9 billion humans seeking resources on the globe.
- Even without global warming, we would need major adaptation strategies to cope with this huge population increase.
- In the past warm periods the human population was mobile and could move into more congenial regions; now we have national boundaries.
- By 2007 the majority of the world's population were urbanized and with less flexibility to move.
- The next 3 billion will be urban dwellers.

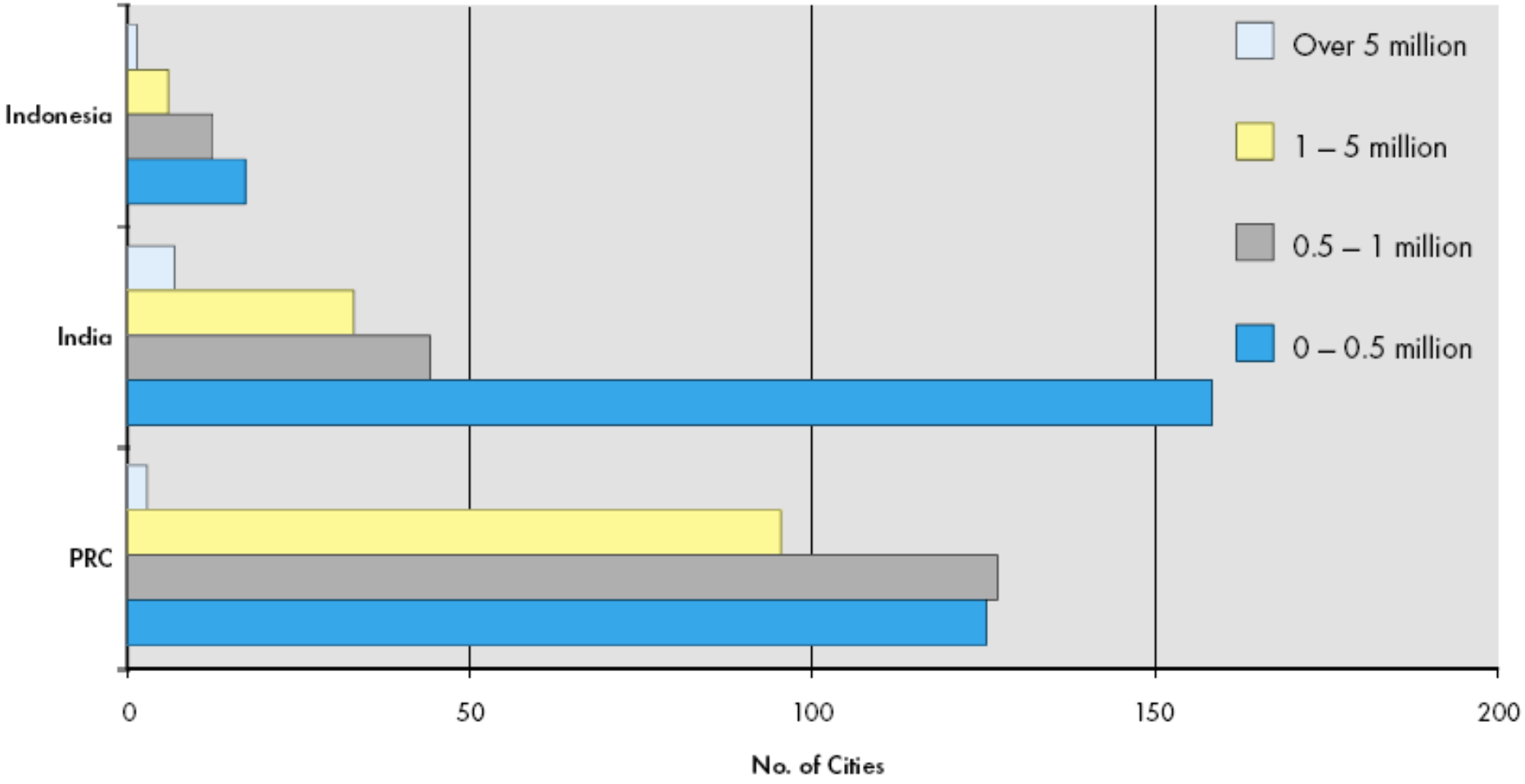
Uneven Supply and growing Urban Demand in Asia

Figure 3. Total Water Availability per Capita[41]

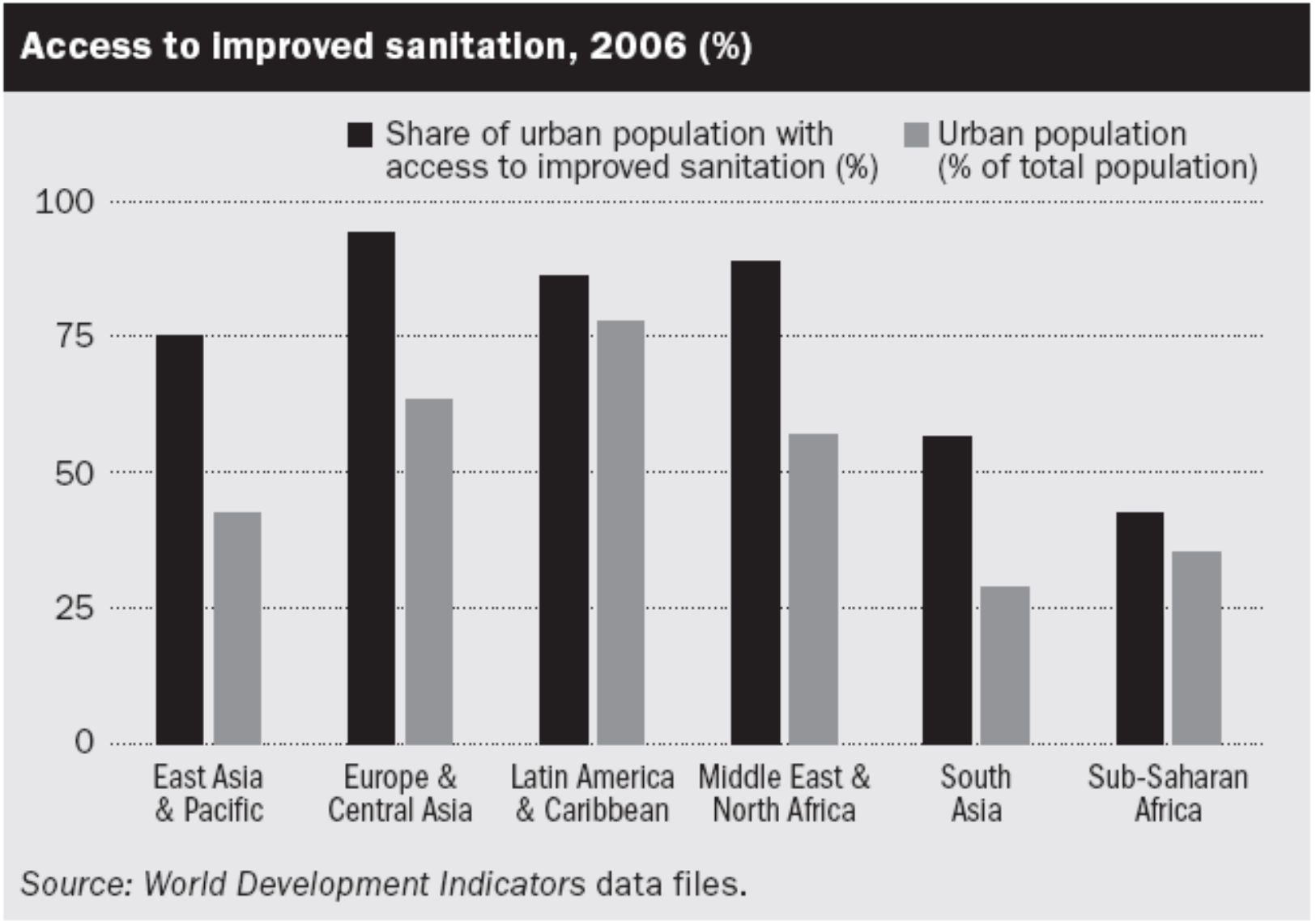


Asia Society, Asia's Next Challenge: Securing the Region's Water Future. 2009, p.45

Figure 2: City Size for Capital Cities and Urban Agglomerations



ADB, Asian Water Development Outlook 2007, p. 28

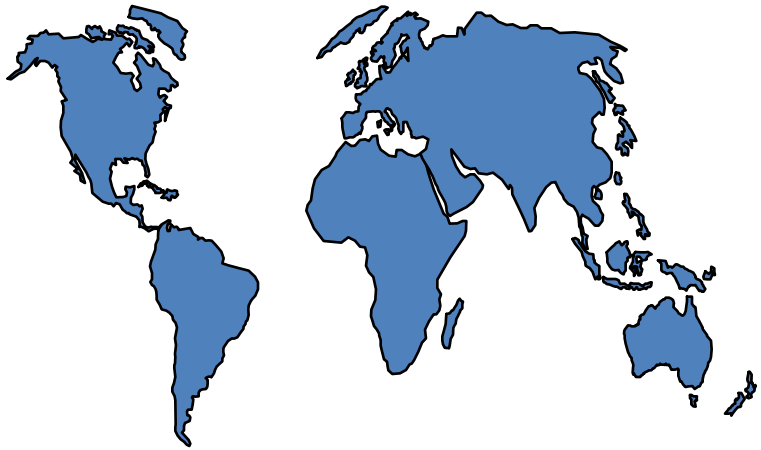


World Bank, Little Green Data Book, 2009.

An old story

Huge needs

- over 1 billion people without safe water, 2 w/o sanitation, 4 w/o sewage treatment
- existing systems are run-down
- Sanitation for 1.2 millions and water for 600,000 additional persons each week over 15 years to meet MDG
- An additional 60 million ha. (+30%) of irrigated land by 2050



No money

➔ fiscal constraints

➔ official aid stagnant (< $3bn/yr, WB $1bn)

➔ public utilities unable to self-finance or to carry debt

➔ private investment: a relative trickle so far

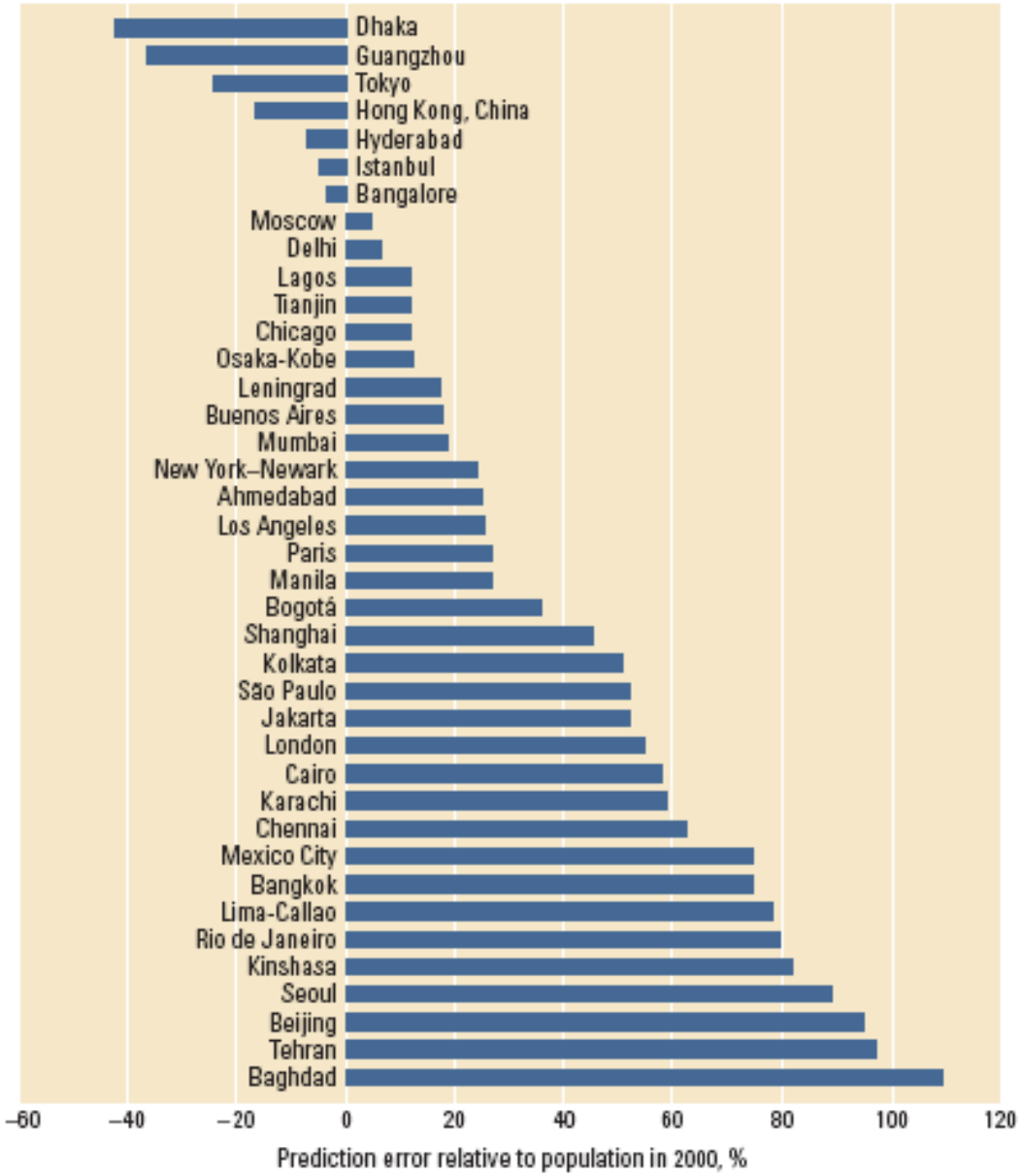
what can we do?

Janssens, J., (2003)

Problems with Forecasts: A Cautionary Tale

Over and Under predictions 1974 to 2000 as a Percentage of the year 2000 Population

Figure 7.1 The growth of cities has been grossly overestimated

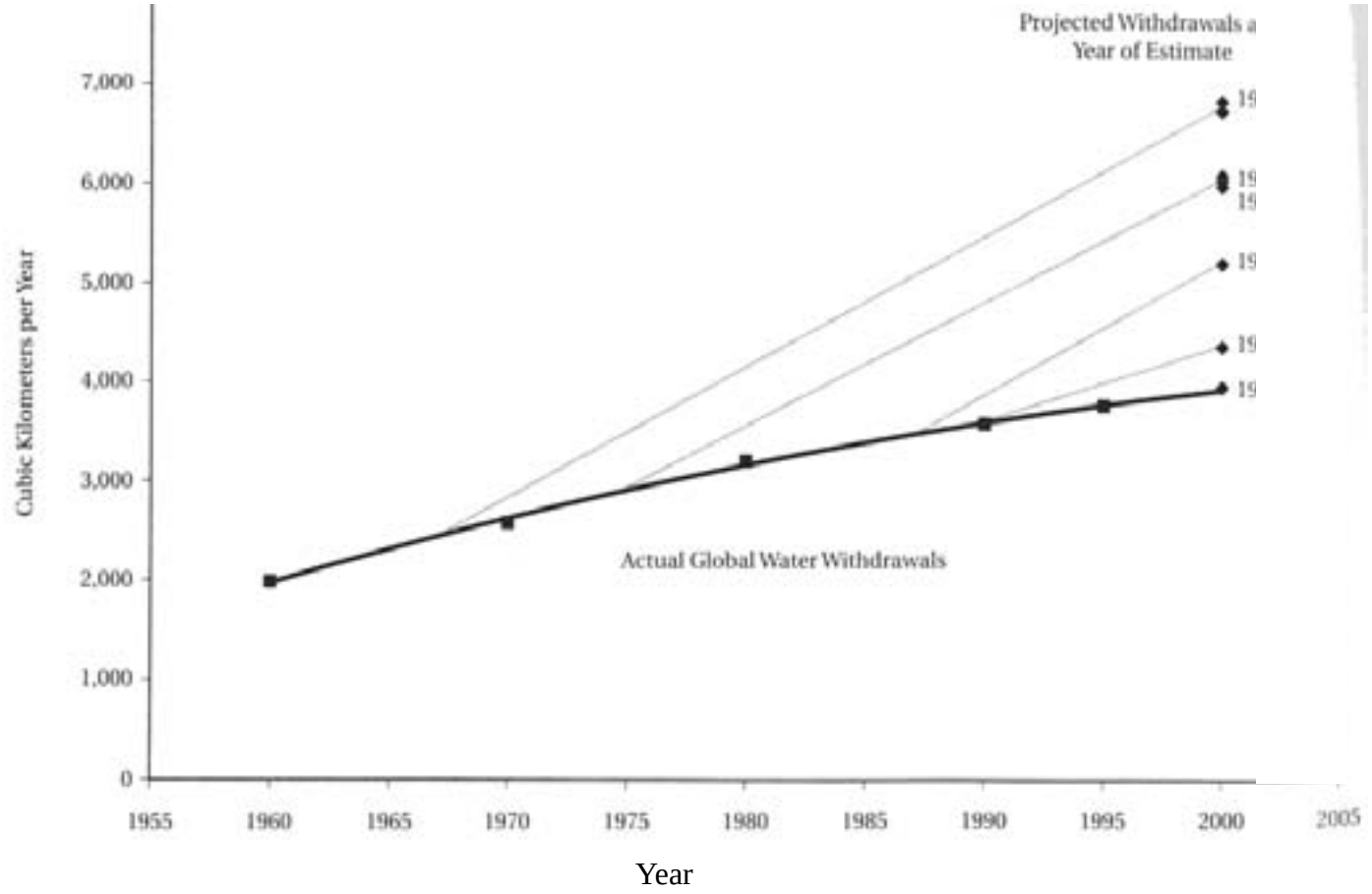


Source: Satterthwaite 2007.

Note: Comparison of predictions in 1974 with estimates of city populations in 2000. Bar indicates the extent to which the city population was overpredicted in 1974 relative to its size in 2000. A negative number indicates that a city size was greater in 2000 than predicted.

WDR 2009, p. 199

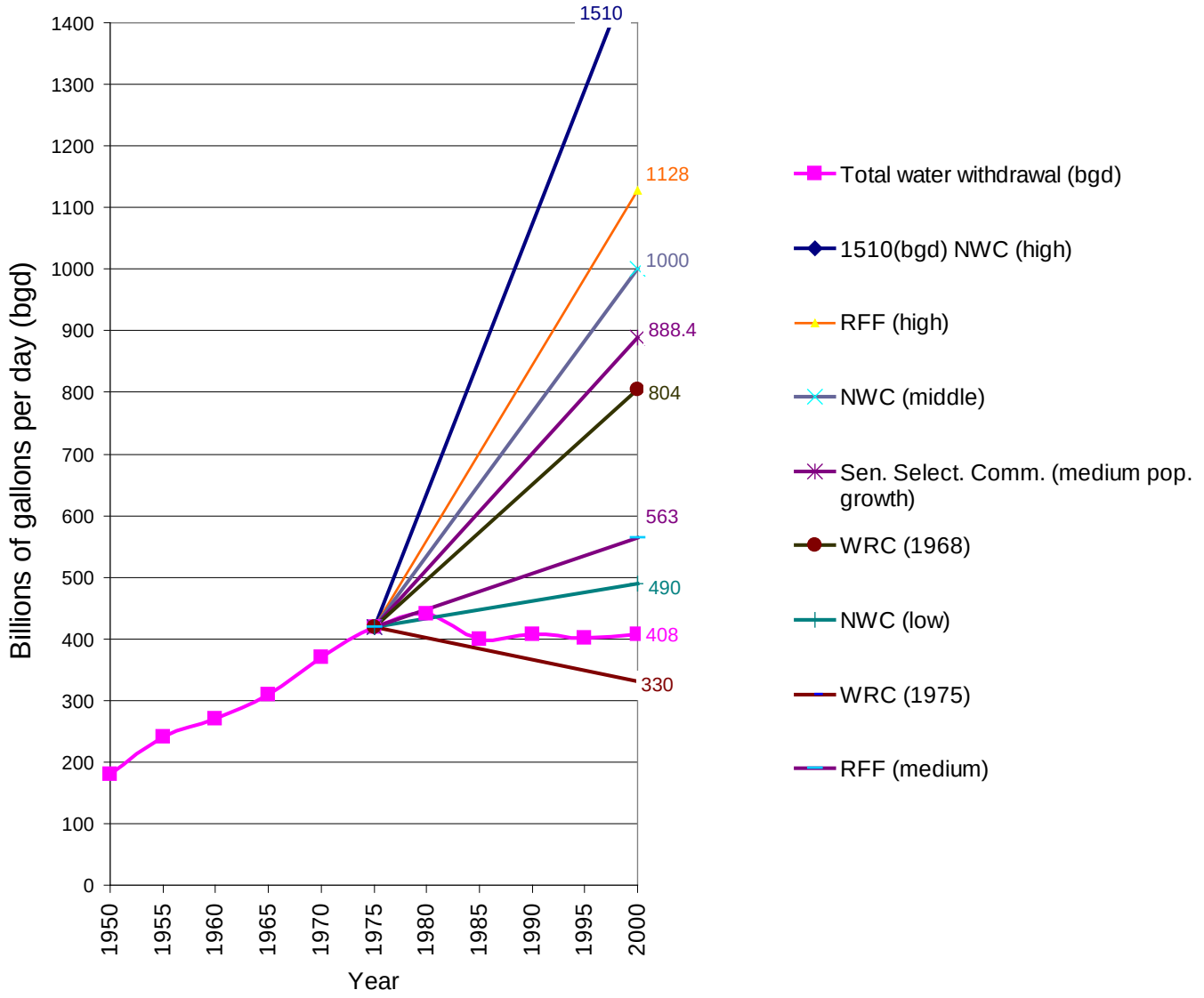
GLOBAL WATER WITHDRAWAL FORECASTS 1950-2000



Shown here are estimates of global water withdrawals from the year 2000. These eight estimates were made between 1967 and 1996. The earliest estimates predicted far greater water demands than have actually materialized.

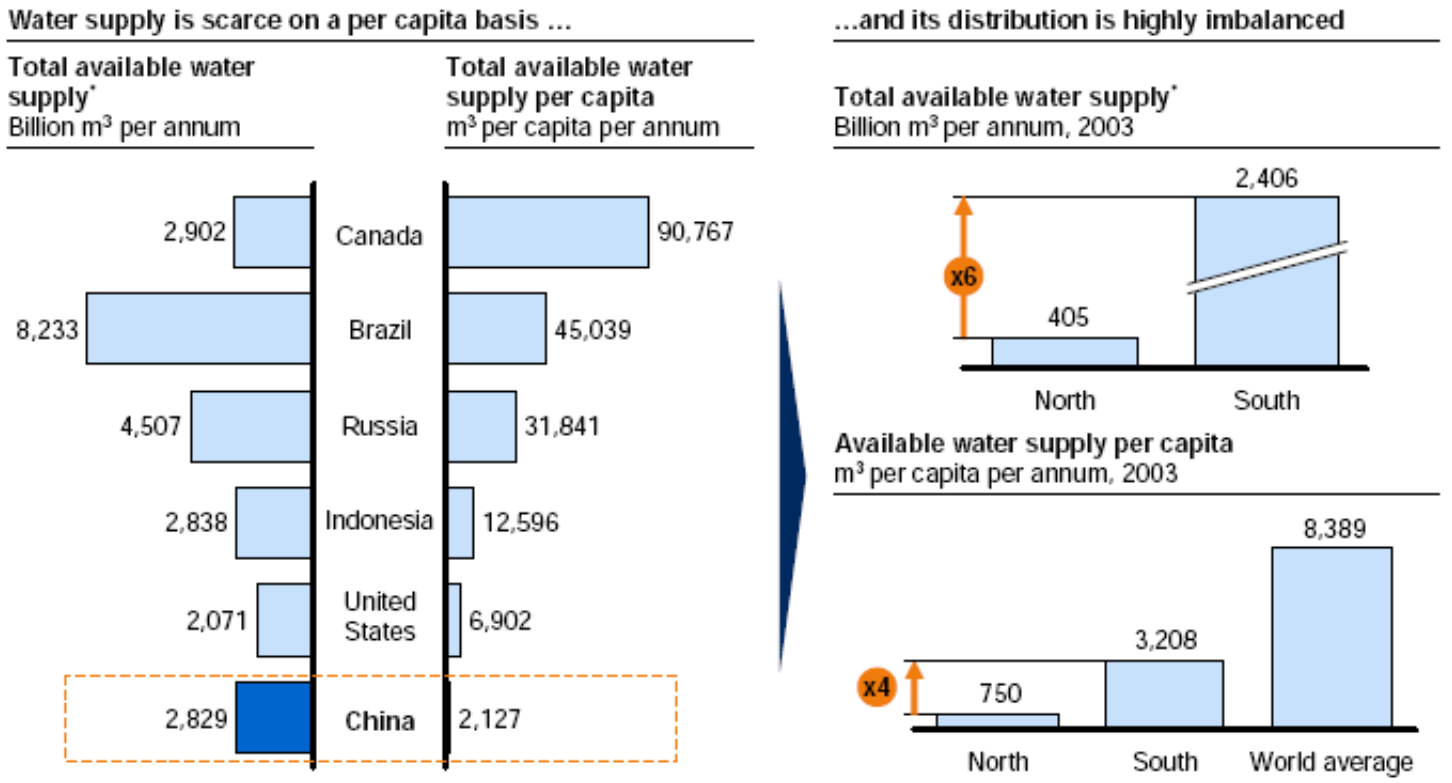
Source. Gleick, (1998)

US WATER WITHDRAWAL FORECAST 1950–2000



Source. Rogers, 1993, with actual 1995 and 2000 added

China has scarce water resources that are unevenly distributed



* Available water supply is defined as renewable water, water resources that can be extracted without endangering long-term supply. Total water available is the sum of surface water and aquifer water, which exceeds the amount that can be harnessed for human use in a cost-efficient way. Based on 2003–07 average.

Source: Food and Agriculture Organization Aquastat; "Addressing China's growing water shortages," World Bank, 2006; McKinsey Global Institute analysis

McKinsey Global institute, Preparing for China's Urban Billion, McKinsey & Company, 2009, p. 434

China's Urban Growth until 2025

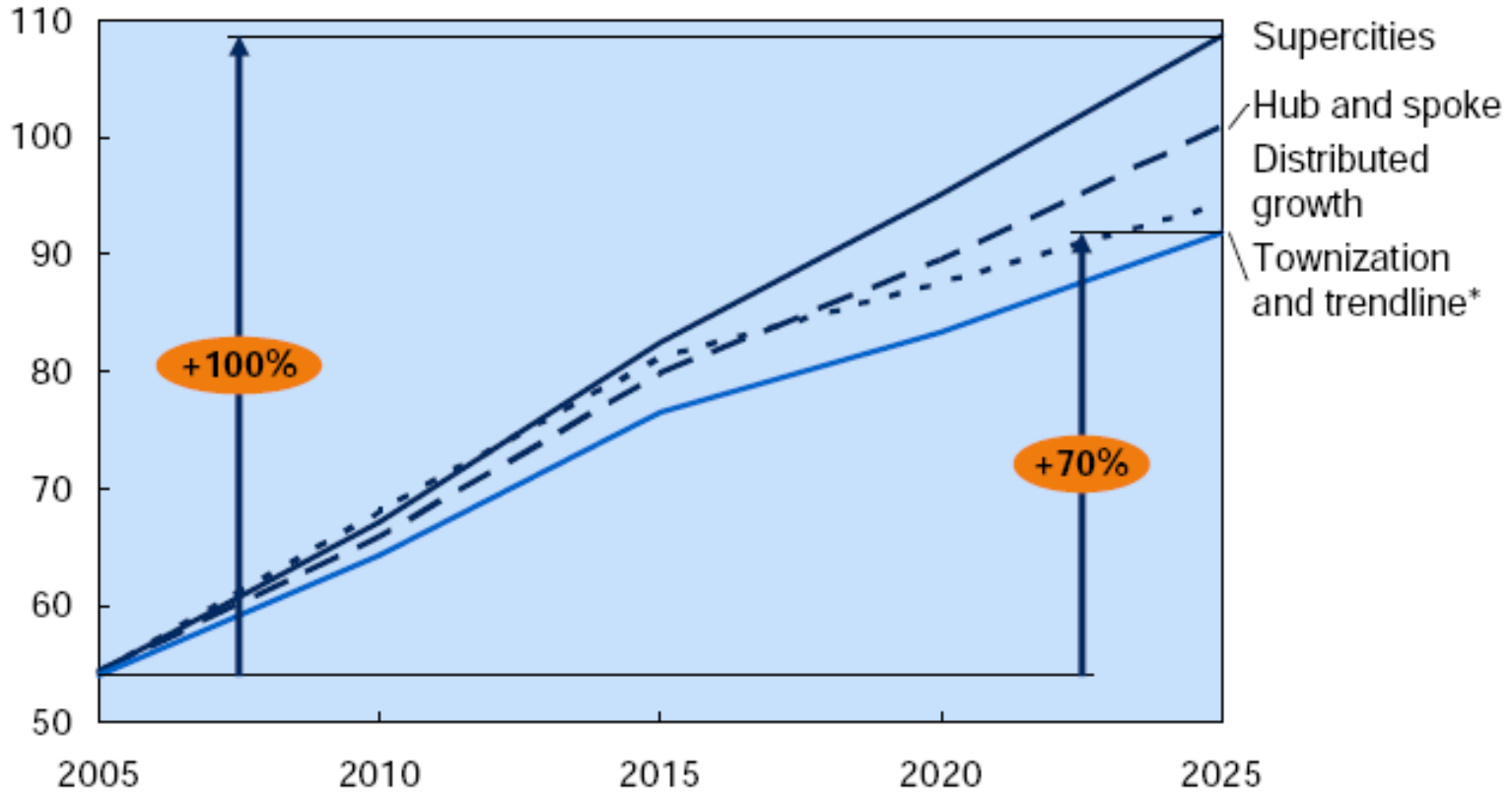
- 350 million people added to urban population
- One billion urban dwellers
- 221 cities with more than one million people
- Five billion square meters of road paved
- Forty billion square meters of floor space built
- 50,000 skyscrapers; equivalent 10 New Yorks
- 170 mass-transit systems built
- GDP increased by a factor of 5

McKinsey Global institute, Preparing for China's Urban Billion, McKinsey & Company, 2009, frontispiece.

Urban water demand will soar under all scenarios, doubling in the case of supercities

Total urban water demand under different scenarios

Billion m^3



* Trendline roughly matches the townization scenario; the small difference in water demand is accounted for by the slightly lower urban population under the trendline scenario.

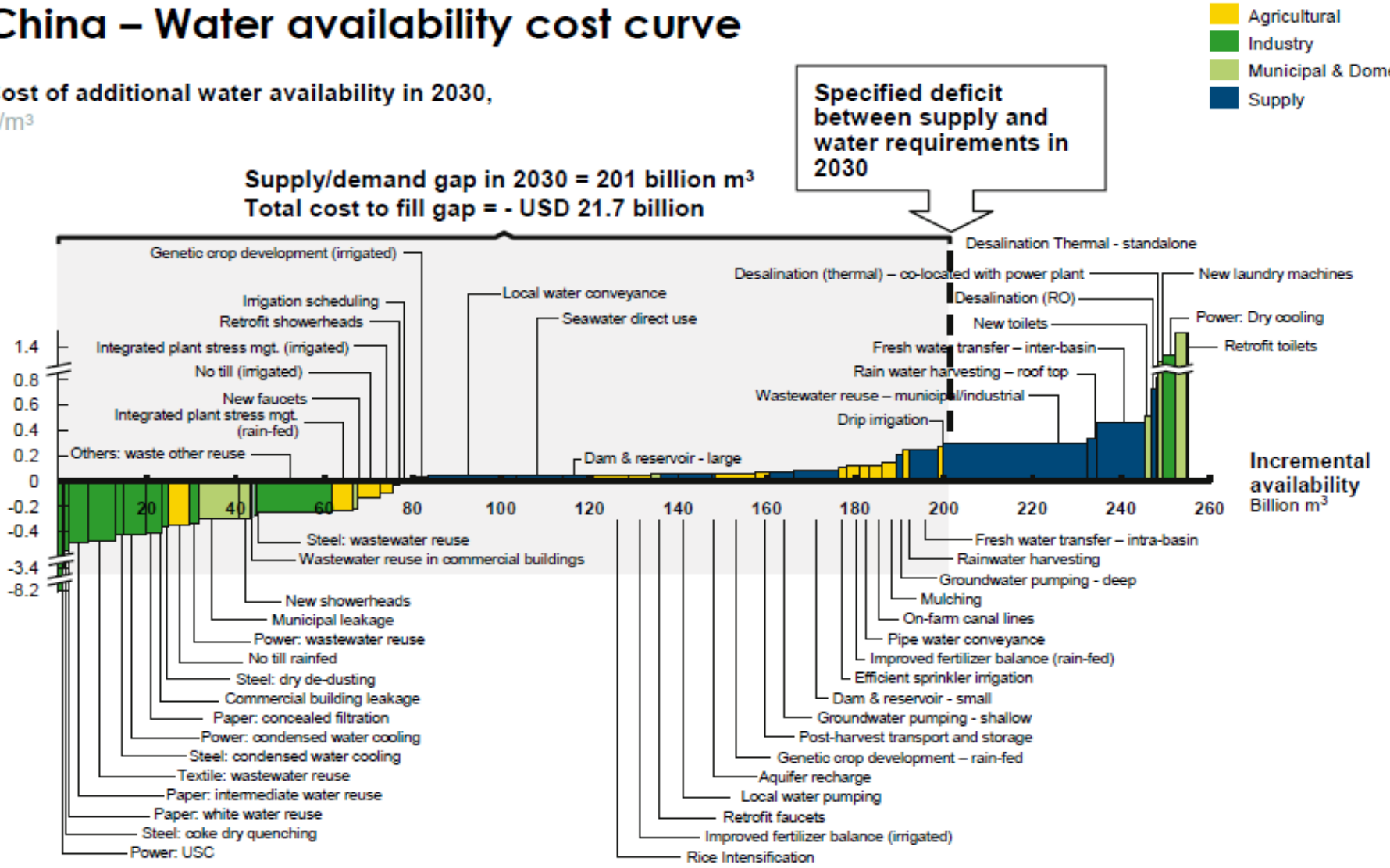
Source: China Water Resources Bulletin; China Urban Construction Statistical Yearbook; McKinsey Global Institute analysis

McKinsey Global institute, Preparing for China's Urban Billion, McKinsey & Company, 2009, p. 437

Exhibit 24

$20 bills lying on the ground!

China – Water availability cost curve



SOURCE: 2030 Water Resources Group

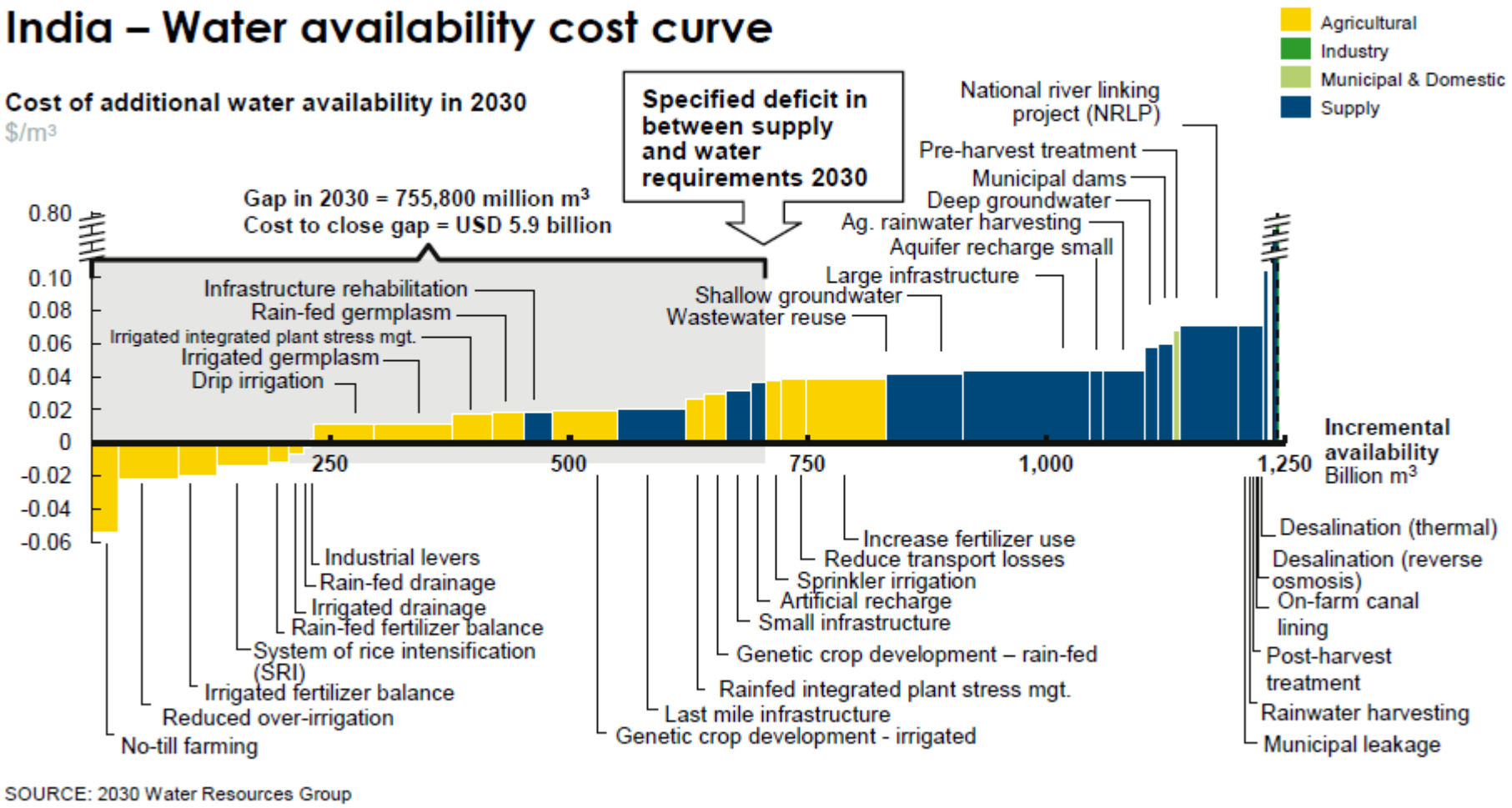
INDIA

India's Urban Growth until 2030

- 350 million people added to urban population
- 590 million urban dwellers
- 68 cities with more than one million people
- 700-900 million square meters of road paved
- 2.5 billion square meters of floor space built
- $1.2 trillion expenditures to meet needs
- 20-times kms of metros subways of last decade
- GDP increased by a factor of 5

More $20 bills lying on the ground!

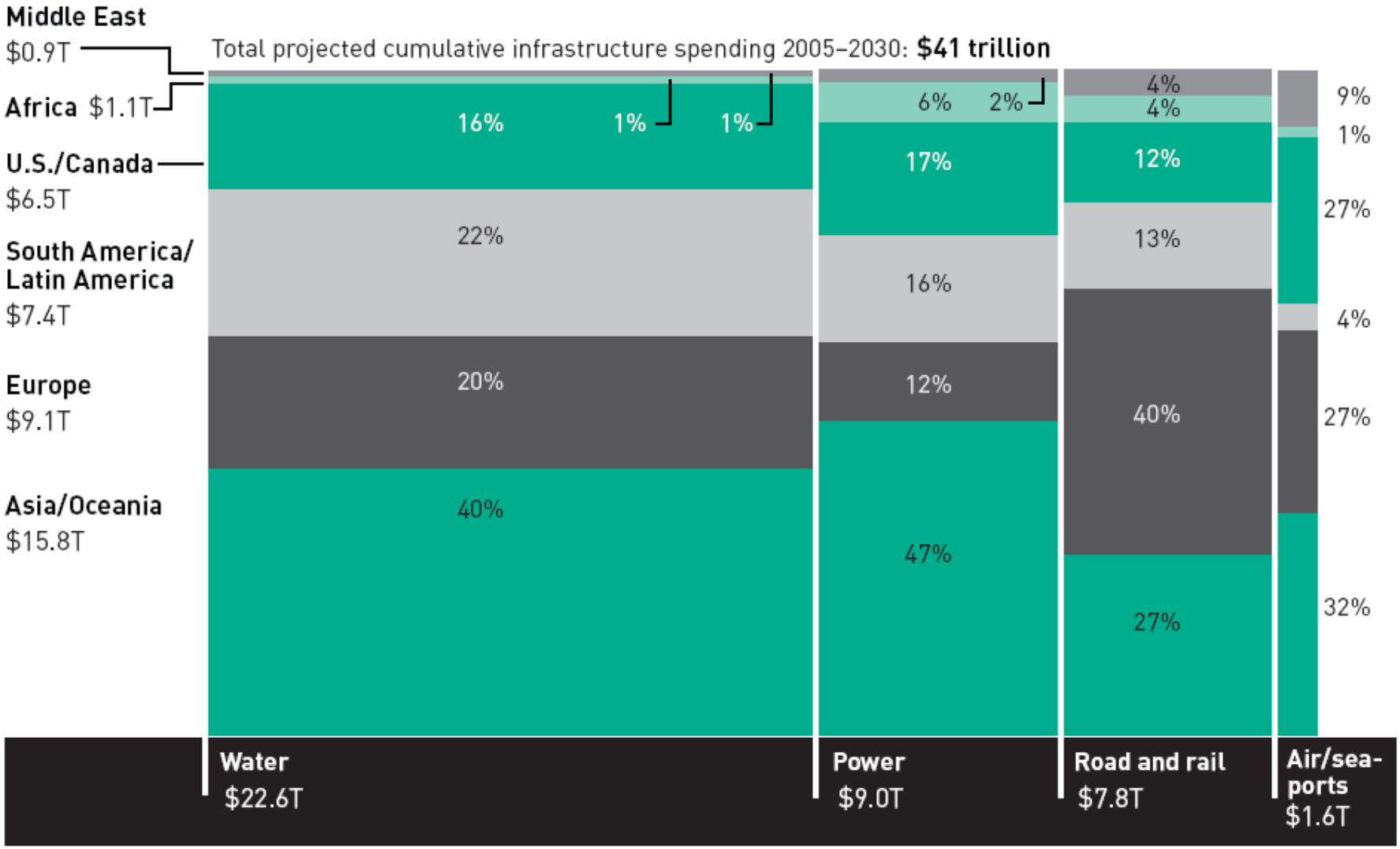
Exhibit V



SOURCE: 2030 Water Resources Group

Exhibit 1: **The Infrastructure Challenge**

Percentages of total projected cumulative infrastructure investment needed during the next 25 years to modernize obsolescent systems and meet expanding demand, broken down by region (rows) and sector (columns).



Source: Booz Allen Hamilton, Global Infrastructure Partners, World Energy Outlook, Organisation for Economic Co-operation and Development (OECD), Boeing, Drewry Shipping Consultants, U.S. Department of Transportation

Current Financial Disaster is Crying out for Government Investment in Infrastructure

- Water and Sewer looks like a good place to invest.
- The Cadmus Group (August 2008) estimated that $1 invested in water and sewer infrastructure increases Gross Domestic Product in the long run by $6.35 (9.7% rate of return).
- One job in water and sewer infrastructure creates 3.68 jobs in the national economy to support that job.
- They claim that these are larger than for highways.

The Infrastructure Challenge: How Large Is It Really?

- The $22.6 trillion global need for all types of water infrastructure from 2005 until 2030 seems like a daunting number, but really how large is it compared with the global GDP and expenditures in other social sectors?

- It turns out to be about 1.5% of annual global GDP, or about $120 per capita.

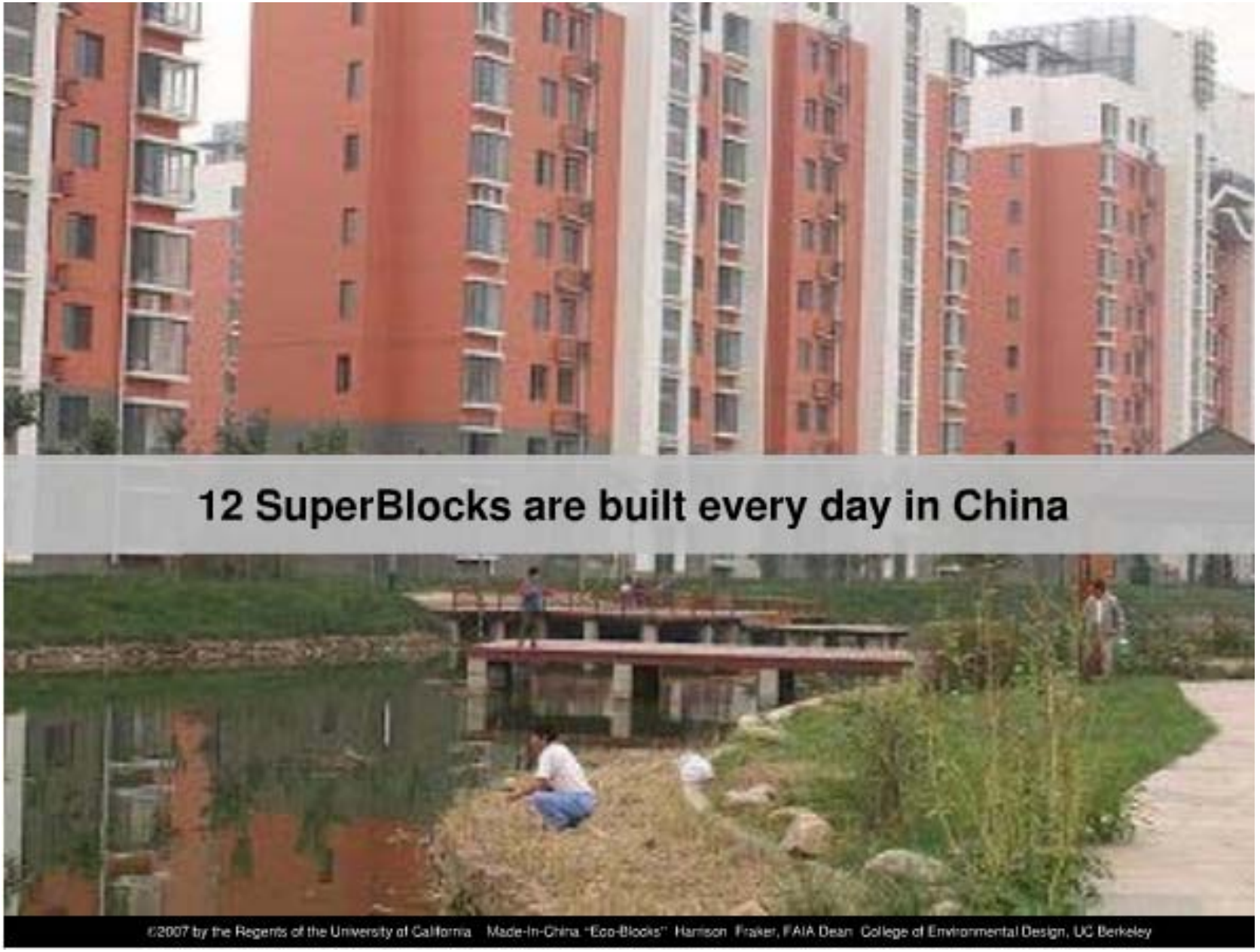
- Global spending on health amounted to 4.3% of GDP in 2005.

To Improve Urban Water Governance

- We need collective action
- Improve water security
- Focus on resource conservation
- Keep striving for higher standards
- Change behavior through incentives
- Poverty should not be an impediment
- The consumer must be involved
- Exploit modern technology and management

A PROPOSAL FOR QINGDAO, PRC

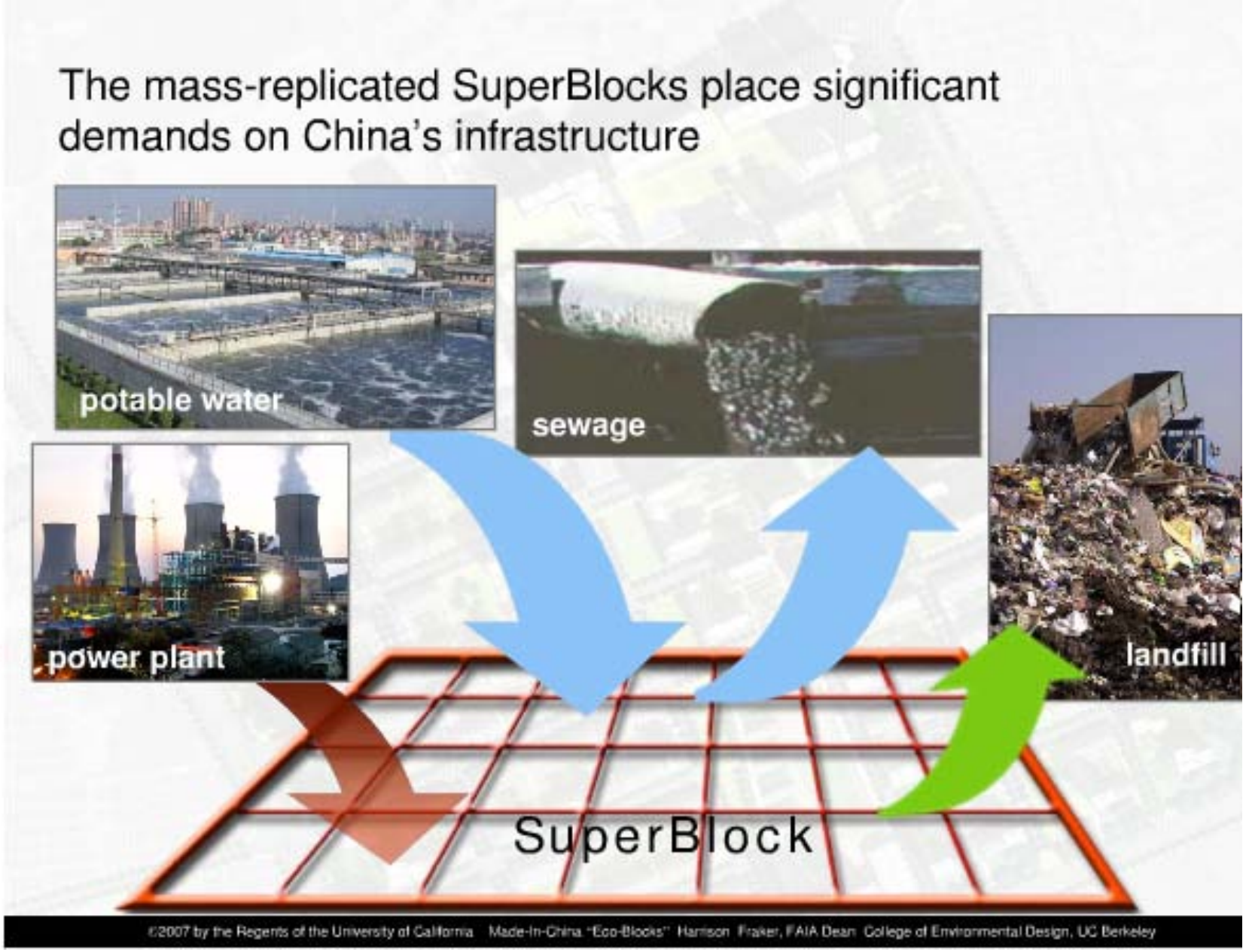
Harrison Fraker, Lawrence Livermore National Laboratory, April 1, 2008



HarrisonFraker, Lawrence Livermore National Laboratory, April 1, 2008

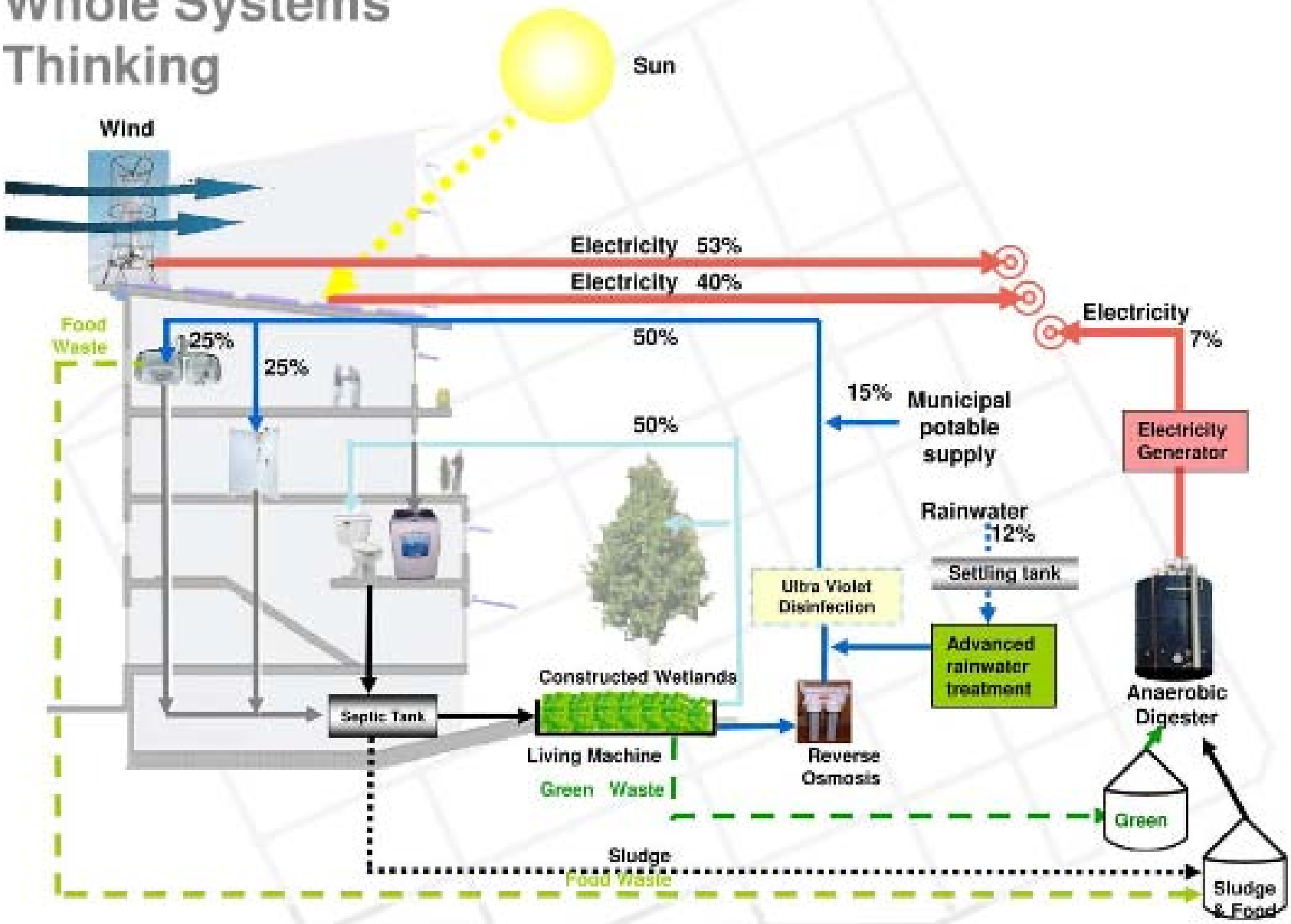
Project Visualization

600 units in Super Block, and 8 Super Blocks in an Eco-Block in Qingdao

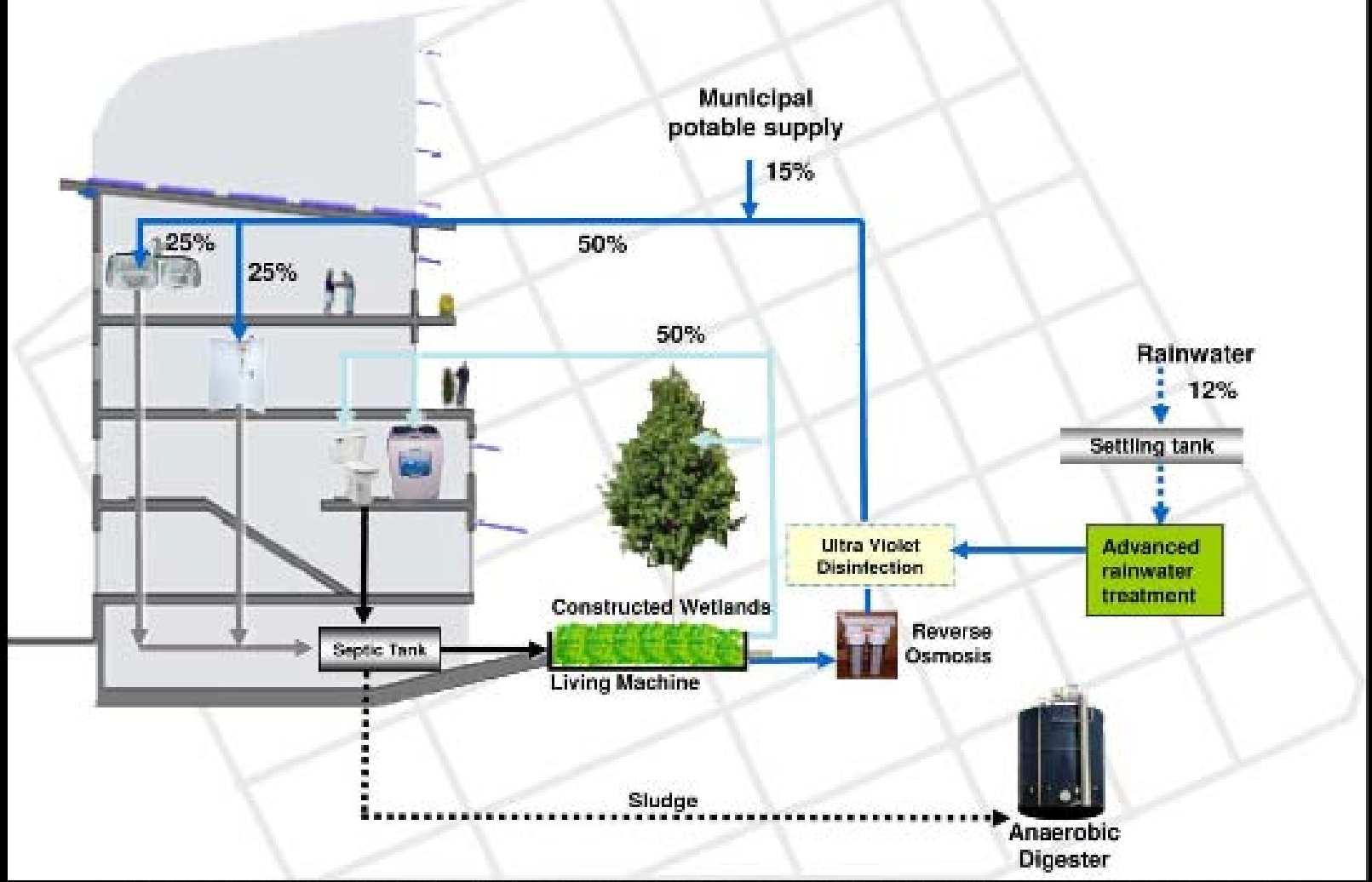


Source: harrison-fraker-ecoblocks.htm

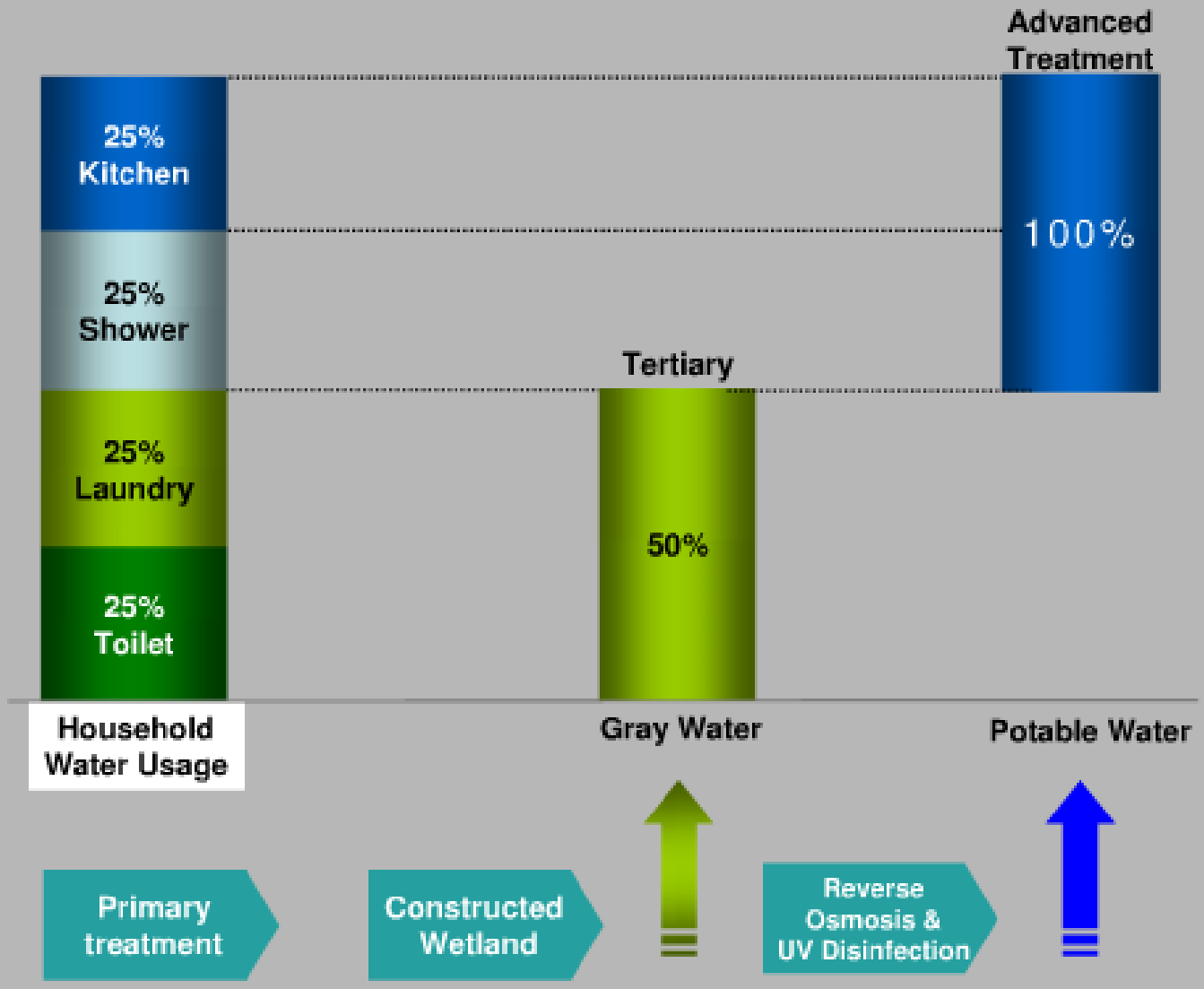
Whole Systems Thinking



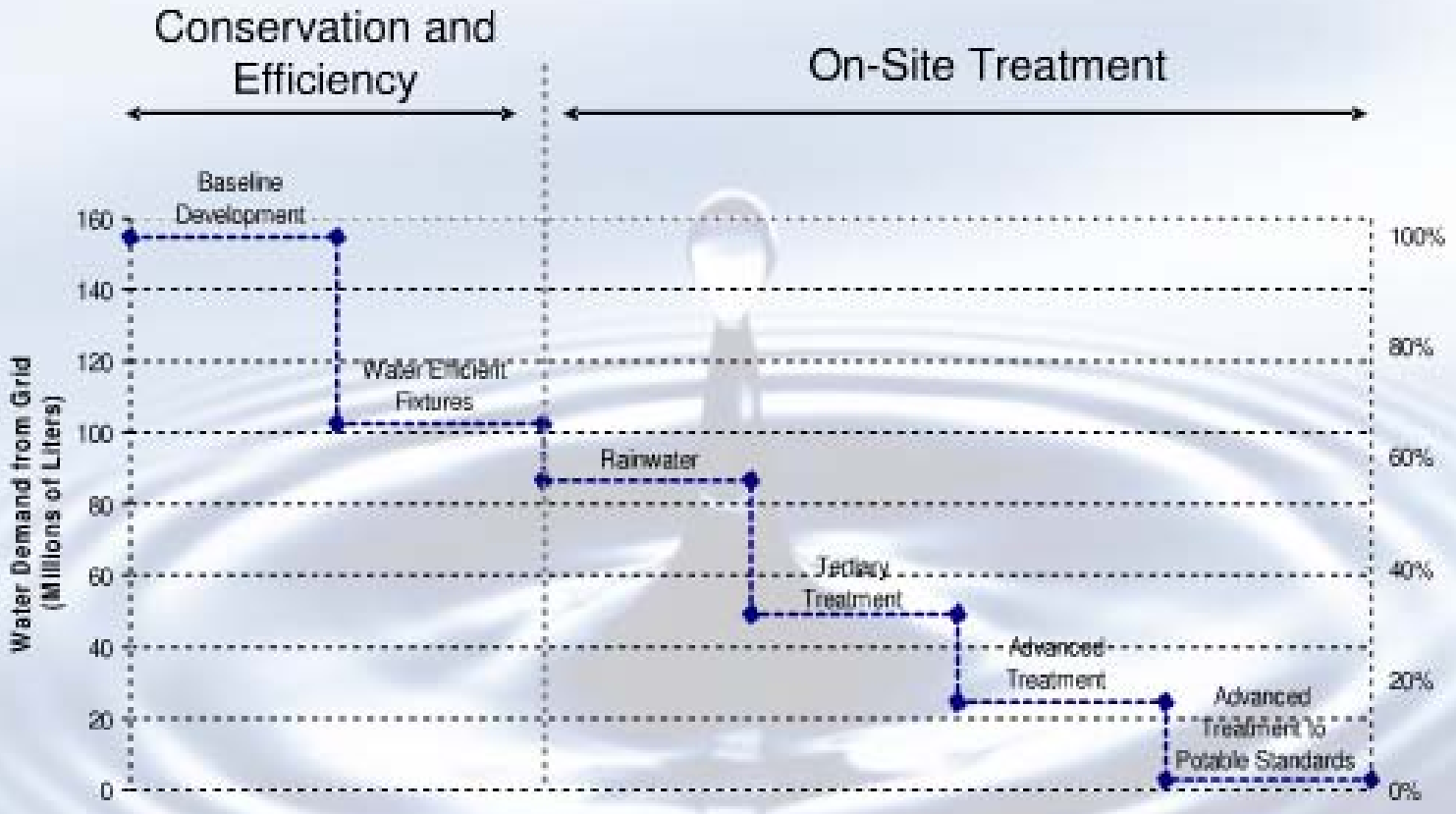
Wastewater Recycling Systems



Treatment for Household Demand



Reducing Reliance on the Grid



85% savings on potable water demand overall

98M liters/year by sustainable supply

Total Demand + Supply Savings = 151M

If 25% of Superblocks built in the next year were replaced with EcoBlocks, China could save:

13 Drinking-water plants

11 wastewater treatment plants

09 coal fired power stations

08 Ledu County landfill

$ 09 Billion

 Made-in-China "Eco-Blocks" Harrison Fraker, FAIA Dean, College of Environmental Design, UC Berkeley

Qingdao can be the model for sustainable development throughout the world