Sustainable Cities: Urbanization, Infrastructure, and Strategic Choices

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Introduction

For the first time in history, more people across the globe now live in cities than in rural areas and the pace of migration from rural areas to urban centers is hastening. Since 1990, 694 new cities have arisen, 68% of which are in Asia, with China and India representing 57% of this total. It is estimated that in the developing world, 36.5% (2005) of all urban dwellers live in slum conditions, an ironic result given that the two principle drivers of urbanization are the search for increased economic opportunity and improved quality of life. Governments in developing countries are ill-equipped to deal with this societal transformation and lack the capability to deliver the most basic of necessities of life such as clean water and sanitation, not to mention energy, health care and education. The land situation and deeply imbedded cultural factors further compound the challenges. The scope of the curse will address:

- The challenges for both developing and developed countries to devise new strategies, new technologies, new business models, and new financing techniques that can begin to make a difference in addressing a full range of infrastructure needs. In terms of sustainability, this will include an understanding of both the demand side and supply side. Reducing demand where feasible is as important as supply-side solutions such as alternative energy sources, desalination of salt water, or increased agricultural productivity, each which introduces a new set of problems.

- New strategies, technologies and business models that can potentially address some of these challenges. While business and non-government organizations cannot directly affect demographic shifts, they can better understand what is happening, lead the search for new strategies and solutions, and adapt their knowledge, skills, tools and techniques to increase the role of the private sector beyond the supply of capital. The private sector can make a difference in ways that can serve societal needs and contribute to improved living conditions that are essential to sustainability imperatives. This belief serves as the basis for this course.

Recommend Readings

- Angel, Parent, Civco, and Blei. ***Making Room for a Planet of Cities.*** Lincoln Institute of Land Use Policy. 2011.
- C.K. Prahalad. ***The Fortune at the Bottom of the Pyramid****.* Prentice Hall. 2006.

- McKinsey & Company. ***How to make a city grea***t. 2013.
- McKinsey Global Institute. Urban world: Cities and the rise of the consuming class. 2012.
- Pollalis, Georgoulias, and Schodek (ed.). ***Infrastructure, Sustainability and Design***. Routledge. 2012.
- Suzuki, Datur, Moffat, Yabuki, Maruyama. ***Eco2 Cities: Ecological Cities as Economic Cities***. World Bank. 2010.
- United Nations Human Settlement Program (UN-Habitat). ***The State of The World's Cities 2010-2011: Bridging the Urban Divide***. Un-Habitat. 2010

Lecture Modules

Interesting Web Sites

www.myfootprint.org

www.waterfootprint.org

Course Modules

The course is taught over a two-day period, 6 hours per day, and broken into 8 modules. The material is approached from a global perspective.

1. Urbanization - Challenges and Opportunities: Urbanization in developing countries is the defining feature of the 21st century. Global urban expansion poses a fundamental challenge and opportunities for cities, nations, and the international community. Consequences of urbanization include traffic congestion, environmental degradation including air and water pollution, resource scarcity, increase in poverty and crime, and the creation of slums. However, it is only through cities that the challenges of poverty reduction, economic growth, environmental sustainability, and climate change may be addressed.

2. Sustainability Issues: Sustainability means moving beyond Corporate and Social Responsibility (CRS) and Green Buildings (LEEDs) to address the drivers of change in the global development agenda. Sustainability issues range from technical, administrative, and financial capacity constraints to institutional barriers, short-term accounting frameworks, political agendas, and governance models. Misconceptions and misinformation about the true and complete long-term costs and benefits of sustainability, as well as human inertia, compound the challenges.

3. Evolution of Urban Infrastructure: Background information and context for the role and evolution of infrastructure provides a contrast in approaches between developed and developing nations. Economic growth, prosperity, and competitive advantage are intuitive reasons for the evolution of infrastructure and creating sustainable cities can be added to the list. This evolution includes the respective involvement of the private and

public sectors and the recent effects of deregulation and the introduction of downstream competitors. Looking to the future, important roles will be played by business, finance and technology.

4. Sustainability and Technology as Key Drivers: Research is pointing to technology and sustainability as the key drivers for the future of infrastructure. Sustainability is a key driver when framed as both the problem and the source of new solutions. Entrepreneurial ventures are currently being developed in the areas of technology, science and social innovation. New technologies may lead to efficiencies with existing infrastructure, but also drive transformations that could make existing infrastructure obsolete.

5. Emerging Technologies: As global populations rise and a growing proportion of people can afford goods that were once reserved for the elite, the consequences of this economic activity may overwhelm our resource capacity and existing infrastructure, not to mention the environmental impacts. A matching challenge is the need for water, food, sanitation, education and health care. Technologies in emerging markets hold promise that companies can combine profits with sustainability and offer possible solutions that depart from technologies used in the "rich-world" that often originated in the Industrial Revolution.

6. EcoCity Initiatives: Eight Eco2 City developments provides early experiments from which we can learn. These early experiments include Dongtan, Tiajin Eco_city, Nanjing and Meixi Lake District in China; Masdar City in Abu Dhabi; New Songdo City in South Korea; Sitra Low2No in Finland; and PlanIT Valley in Portugal.

7. New Strategies, New Business Models: Many of the successful examples appear to be smaller scale operations that arise out of necessity in developing countries such as cell phone based financial services, or creative methods to register land ownership. New strategies are being created around exploration of new energy sources, utilization of waste, agricultural innovations, and water supply systems. Infrastructure development is being designed as a foundation for technological innovation and public-private partnerships are being adapted to better utilize the private sector in defining and implementing creative solutions

8. Capacity Building: Promoting technological innovation is one of the critical challenges facing the transformation to embrace and implement sustainability at the city level. Even developed countries have suffered in this respect and the solar panel industry and the electric car exemplify the challenges. Technological innovation is closely associated with the emergence and evolution of social enterprises. In this regard, policies that promote the creation of enterprises and attract venture capital play a central role in capacity building.