SMART SUSTAINABLE CITIES

CENTENNIAL GROUP

policy
and
strategic
advisors

Smart Sustainable City Programs in Developing Countries

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ANSI WORKSHOP: *Smart and Sustainable Cities*
November 21, 2013

ANSI
American National Standards Institute

Cities in the Developing World

❑ 2.8 billion people in cities of the developing world vs. 900 million in cities of the developed world.

❑ 95% of global urban growth taking place in developing country cities.

❑ Over 2 billion new residents to be added by 2050, maybe more – maybe a doubling.

Cities in the Developing World

❑ Cities are engines of national economic growth; McKinsey estimates that 420 cities in developing regions will generate 45% of all global economic growth between 2007 and 2025.

❑ Growth has led to a decline in rates of urban poverty.

❑ But development very uneven across countries and within cities.

(Photo Emma Joseph)

Cities in the Developing World

❑ Emerging economy cities face large infrastructure deficits. Roads, drainage, water supply, sewerage, power are inadequate.

❑ Over 700 million urban residents in the developing world still lack access to improved sanitation. Waste water treatment is a luxury.

More people in the developing world have access to
Cell phones *than have access to* ***toilets***

Favela do Moinho, São Paulo, Brazil

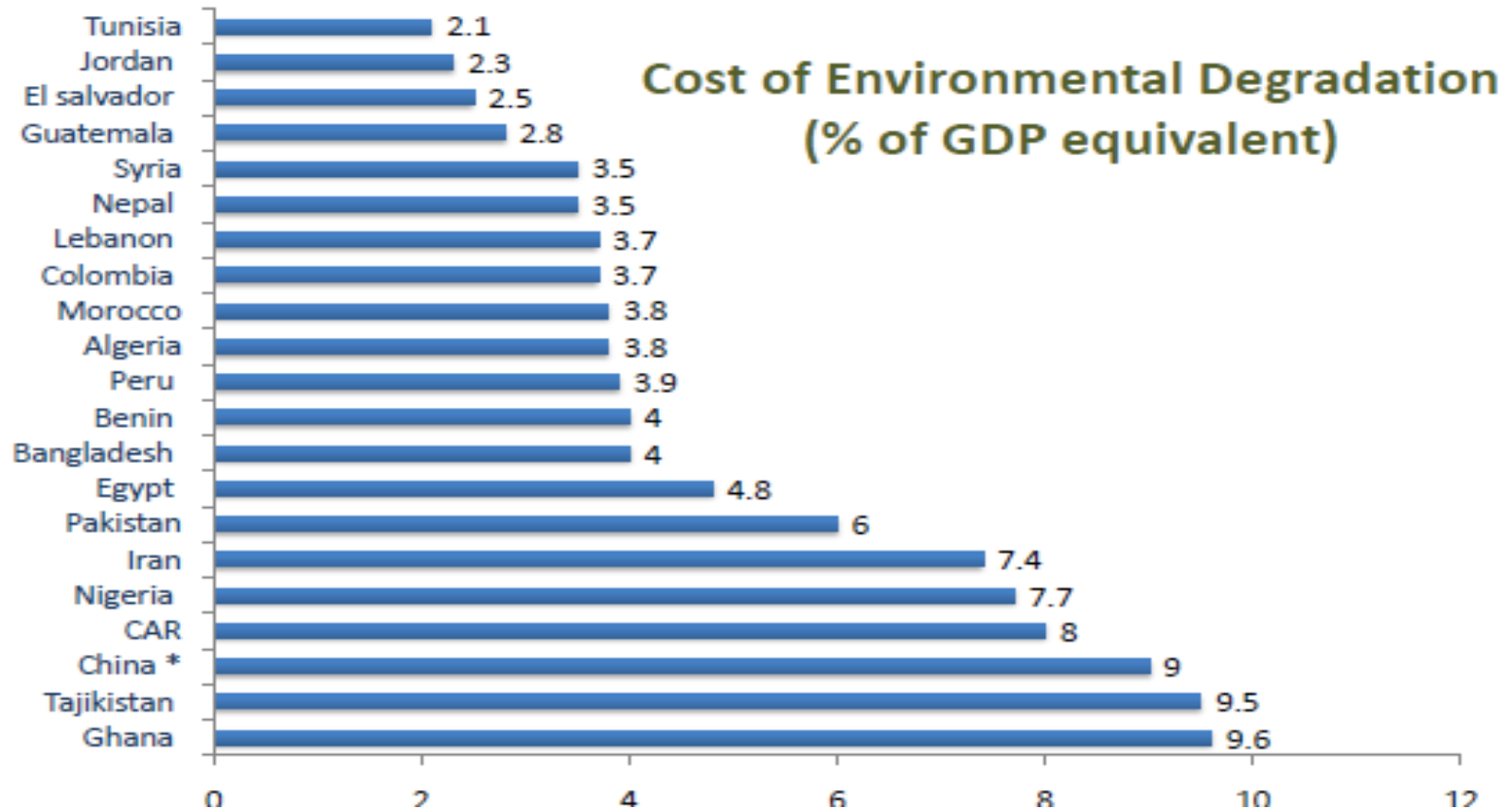Photo by Milton Jung

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If the Population of Cities in Developing Countries Doubles by 2050...

- ❑ Growing middle class is increasing demand for cars and housing space; this is leading to lower densities.

- ❑ The World Bank estimates that a doubling of population will lead to a tripling of incremental land area taken.

- ❑ More land per capita means higher costs, greater needs for infrastructure, higher energy usage, more CO_2, etc.

- ❑ Cisco has estimated that 89% of incremental CO_2 emissions from energy use will come from cities in the developing world.

The Cost of Unsustainable Urban Growth is High

Cost of Environmental Degradation (% of GDP equivalent)

Country	Value
Tunisia	2.1
Jordan	2.3
El salvador	2.5
Guatemala	2.8
Syria	3.5
Nepal	3.5
Lebanon	3.7
Colombia	3.7
Morocco	3.8
Algeria	3.8
Peru	3.9
Benin	4
Bangladesh	4
Egypt	4.8
Pakistan	6
Iran	7.4
Nigeria	7.7
CAR	8
China *	9
Tajikistan	9.5
Ghana	9.6

Source: Country Environmental Analyses, World Bank

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How Do Smart–Sustainable City Concepts Fit Into This Environment?

❑There is a lot of energy around the Smart/Sustainable city concept, especially in East Asia, especially in better off countries.

❑Better cities know they need to be smarter/faster/more efficient to compete in global commerce.

Examples of Smart-Sustainable Projects in Developing Country Cities

❑ **Greenfield developments**

(Photo: Wave city near New Delhi)

❑ **District clusters** – neighborhood-sized zones within a city.

(Photo: Digital Media City Seoul)

Types of Projects (cont.)

☐ **Revitalization projects** - making an existing city smarter

This is greatest need and greatest challenge

Rio de Janerio operations center (IBM)

Greenfield Smart City Projects - Examples

Location	Country	Status
Guangming, Shenzhen	China	Planning
Meixi Lake, Changsha	China	Planning
MenTouGou, Beijing	China	Planning
Nanhe Jingu, Tianjin	China	Planning
Nanjing Eco High-Tech Island	China	Planning
Yinggehai, Guangzhou	China	Planning
Chongming Eco-Island, Shanghai	China	Delayed
Wanzhuang, Hebei	China	Delayed
Tangshan Caofeidian International Eco-City, Hebei	China	Ongoing
Changodar, Delhi-Mumbai Corridor	India	Planning
Dahej, Delhi-Mumbai Corridor	India	Planning
Manesar Bawal, Delhi-Mumbai Corridor	India	Planning
Shendra, Delhi-Mumbai Corridor	India	Planning
Gujarat International Finance Tec-City	India	Delayed
Mahindra World City, Jaipur	India	Ongoing
Hinjawadi/IT Village of Pune	India	Implemented
Technocity, Kerala	India	Implemented
Genome Valley BioCluster, Hyderabad	India	Implemented
HITEC City, Hyderabad	India	Implemented
Wave City, Delhi	India	Implemented
Smart City Kochi, Kerala	India	Implemented

Greenfield Smart City Projects - Examples

Location	Country	Status
Gwang Gyo, Seoul	South Korea	Ongoing
Songdo International Business District, Incheon	South Korea	Ongoing
Hsinchu Science and Technology Industrial Park	Taiwan	Implemented
Central Taiwan Science Park, Taichung	Taiwan	Implemented
Southern Taiwan Science Park, Kaohsiung	Taiwan	Implemented
Cyberjaya/Multimedia Super Corridor, Selangor	Malaysia	Implemented
Masdar City, Abu Dhabi	UAE	Ongoing
Pardis Technology Park, Tehran	Iran	Implemented
Smart Village Pyramids, Cairo	Egypt	Implemented
Zewail City of Science and Technology, Cairo	Egypt	Implemented
Sidi Abdellah CyberParc, Algiers	Algeria	Implemented
Hacienda Ecocity, Mombasa	Kenya	Ongoing
Konza Technology City, Nairobi	Kenya	Planning
Eko Atlantic City, Lagos	Nigeria	Ongoing
Hope City, Accra	Ghana	Planning
Menlyn Maine, Pretoria	South Africa	Ongoing
Sseesamirembe Eco-City, Lake Victoria	Uganda	Ongoing
Bahia de Caraquez	Ecuador	Implemented
City of Knowledge/Ciudad del Saber, Panama City	Panama	Implemented
Panama Pacifico, Panama City	Panama	Implemented

Smart District/Neighborhood Projects - Examples

Location	Country	Status
Changxing Ecological City/Dongtan, Beijing	China	Planning
Chinese Eco-Quartiers; Chengdu, Chongqing, Shenyang	China	Ongoing
Hongqiao Low-Carbon Business Community, Shanghai	China	Ongoing
Tianjin Eco-City	China	Partial Completion
Dushu Lake Science and Education Innovation District, Suzhou	China	Implemented
Zhongguancun, Beijing	China	Implemented
Shanghai Pudong Software Park, Zhangjiang Hi-Tech Park	China	Implemented
Hong Kong Science Park	Hong Kong	Implemented
Cyberport	Hong Kong	Implemented
Singapore Science Park	Singapore	Implemented
One North/Biopolis	Singapore	Implemented
Magok, Seoul	South Korea	Ongoing
Daedeok Innopolis, Daejeon	South Korea	Implemented
Seoul Digital Media City	South Korea	Partial completion
Rezhovot/Tamar Science Park	Israel	Implemented
Amman	Jordan	Planning
Qatar Science & Technology Park/Education City	Qatar	Implemented
Twofour54, Abu Dhabi	UAE	Implemented
TECOM Investments, Dubai	UAE	Implemented
Zonkizizwe Town Centre, Johannesburg	South Africa	Planning

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Retrofitting Smart Systems in Existing Cities - Examples

Location	Country	Status
Guiyang, Guizhou	China	Ongoing
Huaibei, Anhui	China	Ongoing
Langfang Eco-Smart City, Hebei	China	Ongoing
Tangshan, Hebei	China	Ongoing
Xiamen, Fujian	China	Ongoing
Yangzhou, Jiangsu	China	Implemented
Rizhao, Shandong	China	Implemented
Puerto Princesa	Philippines	Implemented
Davao City	Philippines	Ongoing
Cebu City	Philippines	Ongoing
Aseana City	Philippines	Planning
Thanjavur, Tamil Nadu; Puri, Odisha	India	Cancelled
Ujjain, Madhya Pradesh; Kottayam, Kerala	India	Delayed
Vrindavan, Uttar Pradesh; Tirupati, Andhra Pradesh	India	Implemented

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Retrofitting Smart Systems in Existing Cities - Examples

Location	Country	Status
Jakarta	Indonesia	Ongoing
Surabaya	Indonesia	Ongoing
Makassar	Indonesia	Ongoing
Palembang	Indonesia	Ongoing
Balikpapan	Indonesia	Ongoing
Kaohsiung	Taiwan	Implemented
Danang	Vietnam	Ongoing
Curitiba	Brazil	Implemented
Rio de Janeiro	Brazil	Ongoing
Santiago	Chile	Ongoing
Loja	Ecuador	Implemented
Kampala	Uganda	Implemented

Opportunities in Developing Country Cities

❑ In Asia alone, investments in "smart cities" are expected to grow from around $55 billion in 2013 to around $260 billion in 2020. (Zpryme)

❑ Around 150 cities in China had published plans to become "smart cities," with a total planned investment of $160.5 billion (China State Information Center).

Drivers of Demand

❑ Where sensors, open data, crowd-sourced data and predictive analytics lead to demand management and lower costs, (esp. investment in peak capacity) or provide visible improvements in service, there will be demand.

❑ There are at least 1.2 million road deaths and 500 million road traffic injuries globally each year. 90% occur in low- and middle-income countries. Where smart systems reduce accidents, provide faster response by emergency personnel, or early warning in the case of natural disasters, there will be demand.

Points Specific to Developing Cities

- ❑ Existing projects in greenfield cities and new district clusters are creating new, innovative models of public-private partnerships for real estate development, city management, and city finance.

- ❑ Urban planning has been a lost art in most developing cities. Smart city planning may lead to a more integrated approach and revitalization of urban planning in developed countries

- ❑ Developing cities are undermanaged. Professionalization of city management is urgent. Increased demand for leaders who can work with private sector to spearhead change.

How Do We Know How Smart a City is? What Areas of Standardization are Most Important to Address?

❑ Lets start with where we want to go. We want cities to be smarter. To date, no comprehensive system for measuring how smart a city is exists. The metrics for a smart city ranking are a good place to look for areas of standardization and common definitions.

❑ The Smart City Council's new *Readiness Guide* offers an excellent framework for analysis.

Thank you