Briefing Paper

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Informal City Dialogues is a year-long project supported by the Rockefeller Foundation in partnership with Forum for the Future and Next City. The dialogues will be held in the cities of Accra, Bangkok, Chennai, Lima, Metro Manila, and Nairobi in 2013 and implemented by the African Center for Economic Transformation, Chulalongkorn University Department of Urban and Rural Planning, Transparent Chennai, FORO Nacional Internacional, Ateneo de Manila University School of Government, and the Institute of Economic Affairs, respectively.

With support from

Forum for the Future is a sustainability non-profit that works globally with government, business and others to solve tricky challenges.

Project Director:
Helen Clarkson, Director, Forum for the Future US
Email: h.clarkson@forumforthefuture.org
Tel: (+001) 917.355.2901
www.forumforthefuture.org

Preface from the Rockefeller Foundation

The Rockefeller Foundation marks its 100th year in 2013. Our mission, unchanged since 1913, is to promote the well-being of mankind throughout the world.

As part of our centennial activities, we will soon launch *The Rockefeller Foundation's Informal City Dialogues* in the cities of Accra, Bangkok, Chennai, Lima, Metro Manila and Nairobi – cities we chose because of their rich and ongoing discussion about informality and urbanization. The *Dialogues* will explore the role of informality in fostering inclusion and building resilience, and co-create scenarios for the future of each of these cities in 2040.

The majority of people in the world now live in cities, creating new vulnerabilities to health and economic well-being, and placing greater stresses on individuals, communities and regions. Taking advantage of the entrepreneurship and human energy in cities, The Rockefeller Foundation promotes opportunities for those whose well-being is most threatened, by rethinking current institutions, and inventing new structures and interaction and bottom-up governance to achieve equitable growth and build resilience.

The informal city is alive in nearly all cities in the Global South, flourishing behind an unmarked fault line that excludes it from the formal city. While the informal city pervades – in informal livelihoods, informal transportation, informal settlements, and the informal economy – it is most visible in the spatial divide marking the large areas of inadequate infrastructure in the urban fabric. It is also delineated by exclusionary policy and the lack of services and investments. At best, the informal city is treated with benign neglect by the formal city and is completely ignored in planning or policy. Often, the relationship is marked by open hostility and violence.

Away from the visible divide, the actual fault line is porous, with the formal and informal interweaving in the life of the city. Many residents who live in informal settlements work in the formal economy, many who live in the formal districts find their livelihoods in the informal economy. Households may have members working in both the formal and the informal city. In addition to these economic and living conditions, there are multiple other dimensions to the informal city, expressed in a broad spectrum of activities and urban networks, from the barter of goods and services to contractual and supply arrangements; from odd jobs and freelancing on the internet to domestic and home care workers; from street trading to small manufacturing enterprises embedded in regional or international supply chains.

The reality is that formal city cannot exist without the informal city. In cities of the Global South, the informal economy is estimated to account for as much as 40% of GDP, informal settlements are home to as much as 25% of the urban population, and informal transport provides mobility for upwards of 60% of the populace. The OECD estimates that half the workers of the world – close to 1.8 billion people – hail from the informal sector. Paraphrasing the late C.K. Prahalad, *the informal city is the bottom of the pyramid that holds up the formal city*. The Foundation believes that the informal city will play an essential role in transforming our cities into engines of opportunity and social and economic mobility.

The Objectives of the Dialogues

The Rockefeller Foundation's Informal City Dialogues seeks to understand the relationship between the formal and informal in our cities and to envision pathways to more inclusive cities in the future.

The Foundation's partners for this work are [Forum for the Future](), [Next City]() and respected local institutions in each city.

Through the *Dialogues*, we hope to:

1. Begin a local and international conversation on the role of informality in building inclusive cities and resilient individuals, families and communities.

2. Foster understanding of the symbiotic relationship between the formal and informal city.

3. Understand the forces that are driving change in each city and in cities in general, focusing on how these forces will interact with formality and informality to shape the future of the city.

4. Imagine and create narratives of the future of each city in 2040.

5. Foster a wider conversation around the narratives so as to inspire positive change in communities and institutions; in policies and practice.

6. Surface and encourage innovations that will help cities build on the strengths of the informal city to achieve a more inclusive city and to build the resilience of individuals, families and communities against rapid changes, future shocks or stresses

In each city, the *Dialogues* will involve a diverse group of citizens representing public, private, civic, industry, non-profits, local philanthropies, workers, street vendors, urban poor groups, academe, women and youth who will consider scenarios for the future of their own city. They will explore the forces driving or resisting change in their city. Together they will tell the future stories of life in their city – of living and working in their home city in 2040. They will take these stories to a broader audience, engaging the whole city in a conversation about the shared future. They will also come together to identify, build or propose an innovation that, over time, could help their city become more inclusive; a city that expands opportunity and where individuals, families and communities are more resilient to the changes and the uncertainties identified in the scenarios. The proposed innovation will compete with proposals from the other cities for the *Informal City Dialogues Urban Innovations for Resilient Cities Grant Pool*.

The *Dialogues* will begin in January 2013 and conclude in September 2013 with a global dialogue on the findings at the Foundation's Bellagio Conference Center.

The Foundation and its partners will share the lessons, insights and innovations from the *Dialogues* with the global audience and the Foundation will use it to shape its agenda to Transform Cities: Embracing Urbanization to Catalyze Equity.

Purpose of this paper

The information contained in this paper is based on a literature review, horizon scan, and interviews with the Informal City Dialogues Reference Group Members and more than a dozen other experts from around the world, as well as from insights gained from the Reference Group Meeting on Thursday, 29 November 2012 in New York City. It is intended to be a sketch of the conceptual terrain around informality and a stimulus for discussion to explore informality further, rather than a detailed technical review. During the course of the project, this paper will be considered a "living draft" and its findings shall be further developed, locally contextualized, and refined with insights from local research and workshops in each city.

The briefing paper explores:

1. What the term "informal city" means and a framework for understanding the dynamic relationship between formal and informal systems;

2. Key dimensions of urban informality including the key actors, activities, and respective outcomes; and

3. The external drivers of change that will shape the future of cities and the role of urban informality in the Global South.

Note: Unless otherwise noted, quotes are selected from personal interviews with Informal City Dialogues Reference Group Members and other experts from around the world.

Contents

Section 1: Introduction

Urban informality, or the "informal city," encompasses a range of actors and activities within the urban environment that are outside the scope of labor market regulations and social protection systems, yet often account for a large percentage of gross domestic product, housing, and transport.

By 2030, two out of every three people in the world are expected to be living in a city; of those people, one out of every three will live and work in the informal city.[1] Nearly 1 billion people hail from the informal sector today and approximately 85% of all future employment opportunities around the world will be created in the informal economy.[2] Most informal workers –a disproportionate amount of whom are women – are working outside formal governmental and legislative systems of social protection and are therefore vulnerable to exploitation, non-payment of wages, retrenchment without notice or compensation, and toxic health and safety conditions.

Despite the anticipated growth and the potential economic losses from tax revenues and labor market outcomes,[3] the informal city is often excluded from urban policy planning and geographically segregated. Given that a sizable portion of the world's future population will live and work in the informal city, it has become of paramount importance to ensure that plans to make future cities sustainable are inclusive of the people living and working in the informal sector.

Understanding the relationship between formal and informal economies

"The informal city was seen [previously] as a big problem – a culture of poverty with norms pointing backwards not norms moving with modernization or fitting with rule of law. It's only in the last couple decades that it has been seen in a new way, as a source of resilience with an ability to overcome crises."

"Bulldozing the slums is not a solution. We don't need a physical solution, but a social and political one."

Attitudes towards the informal economy remain predominantly ambivalent, although governments and international agencies are shifting from viewing it as a peripheral activity[4] that should (and would) be eliminated through development and formalization to the recognition that the informal economy is a growing and persistent phenomenon—one that should be viewed as an integral element of the total economy.[5]

The traditional view of the informal economy anticipated that slums and informal livelihoods would disappear with modern industrial development.[6] Informal workers were perceived as very small-scale producers, most of whom were running illegal and unregistered enterprises in order to avoid regulation and taxation. It includes broad range of activities from sub-contracted workers working for formal enterprises to "invisible" workers who sell goods or services from their home. Enterprises may be efficient or inefficient; entrepreneurs may be well-educated or illiterate. These variables of informality are shaped by individual circumstances, regional governmental policies, and their implementation at the local level.[7] However, perspectives are shifting. Informality is increasingly

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[1] Spence, Michael; Annez, Patricia Clarke; Buckley, Robert M. 2009. Urbanization and Growth: Commission on Growth and Development. The World Bank. https://openknowledge.worldbank.org/handle/10986/2582

[2] ILO. 2002. Globalization and the Informal Economy: How Global Trade and Investment Impact on the Working Poor. Geneva, International Labour Office.

[3] Pina, Kotin, Hausman, and Macharia. 2012. *Skills for Employability:The Informal Economy.* Results for Development Institute.

[4] Becker, Kristina Flodman. 2004. The Informal Economy Fact Finding Study. Published by Sida. March. Available at: http://rru.worldbank.org/Documents/PapersLinks/Sida.pdf. Accessed November 2012.

[5] Chen, Martha A. 2007. *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment.* DESA Working Paper No. 46. July.

[6] Ibid.

[7] Development Alternatives, Inc. and Bannock Consulting Ltd. for USAID. 2005. *Removing barriers to formalization: The case for reform and emerging practice.* March. Available: http://www.businessenvironment.org/dyn/be/docs/73/Session2.1WelchDoc.pdf

recognized as inextricably linked to poverty reduction, future economic growth, and urban resiliency. Perceptions are broadening and beginning to acknowledge the vast heterogeneity of the sector. The vast heterogeneity of informality necessitates that efforts to understand it be grounded in a solid understanding of local realities.

A framework for exploring the dynamics of informality

A framework was presented at the Informal City Dialogues Reference Group Meeting which provides a means to explore the different dynamics among actors, activities, and the multidimensional outcomes on people living and working in the informal city as a result of those activities.

The framework is based on the premise that there are two key dimensions to informality: the ability to secure housing and sustainable livelihoods. Without secure housing, and especially without security of tenure, informal households usually receive inadequate basic infrastructure services such as energy, water, and emergency management and limited social services such as education and self-protection. Without access to sustainable livelihoods, informal households are challenged to improve their circumstances and break the cycle of intergenerational poverty. There are four actors whose functions or activities determine access to secure housing and sustainable livelihood: the government, the private sector, civic society, and those self-organizing within the informal sector.

We have slightly modified the framework for the briefing paper to reference two additional influences on informality: the social beliefs held by those within the system and the exogenous global drivers of change that will impact future cities (e.g., climate change, economic instability, resource scarcity).

A framework for exploring the dynamics of urban informality			
Actors There are four key actors with the agency to create change.	**Functions** The actors have a range of functions or activities, which shape the two key dimensions of informality.	**Two key dimensions** The status of Secure Housing and Sustainable Livelihoods determine living and working in urban informality.	**Outcomes** Multiple and interconnected outcomes shape the dimensions of urban informality.
▪ Government ▪ Private Sector ▪ Civil Society ▪ Self-organizing groups within the sector	▪ Representation ▪ Regulation ▪ Protection ▪ Promotion ▪ Participation (Not a comprehensive list.)	▪ Secure Housing ▪ Sustainable Livelihoods	▪ Infrastructure services (e.g., energy, water) ▪ Social services (e.g., education, self-protection)

Additional influences:

Social Norms/Attitudes about informality held by those within the system that inform decision-making (e.g., cultural or gender biases.)
Global Drivers external to the system will significantly impact those living within the informal system. (e.g., climate change, economic instability, resource scarcity)

Section 2: Dimensions of urban informality

Introduction

The informal city is a complex system. As such, any attempt to understand dimensions in isolation runs the risk of creating artificial conceptual divisions among organically integrated systems. It is critical to keep in mind the dynamic and multivalent interactions among these dimensions even when examining them separately.

The framework presented at the Reference Group Meeting is a means to explore the relationships among the actors, functions, and the related outcomes within the informal city. It is intended as a flexible structure that can be adapted to multiple contexts – not as a static definition of the dimensions of informality. We anticipate that might be adapted and modified through the process of working with Informal City Dialogues local partners.

Actors   Key actors rarely work in isolation of one another. Collaboration between the government, private sector, civil society, and the participation of self-organizing communities is essential to building inclusive and resilient cities. We've included women as an additional actor because of their importance urban informality.

Functions   The functions are the activities in which actors may engage to support inclusivity within the informal sector. For this paper, we've chosen to explore two: representation and regulatory barriers to formality; however, there are a myriad of ways that actors may encourage or deter inclusivity.

Two key dimensions   Access to sustainable livelihoods and secure housing determine the quality of living and working in the informal city.

Outcomes   This paper outlines a list of eight multidimensional and interconnected outcomes, but it is not intended to be comprehensive.

The following two examples demonstrate the applicability of this framework:

Ex. Waste pickers *(actors/self-organizing slum dwellers)* of Colombia recently achieved a significant victory in livelihood security*(key dimension).* For 11 months, the Colombian waste pickers and allies (*additional actors*) have been fighting (*function of representation*) a $2.5 billion public bid that would have taken the role of recycling from the informal workers and handed it over to private companies for a 10-year period. In December 2011, the Colombian court cancelled the public bidding process*(outcome).*[8]

Ex. Governmental *(actor)* regulations of the construction new buildings *(function)* in informal settlements shape how resilient informal settlements *(outcome)* are during typhoons and storm surges *(external driver.)*

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[8] WIEGO. Waste Pickers. Available at: http://wiego.org/informal-economy/occupational-groups/waste-pickers.

Section 2(a). Key actors

Government

"We came to a realization that self-help isn't enough. It was a superhuman effort to buy the land for 72 families, but now they are struggling with water, roads, electricity. Only government has the resources to deal with this."

Government plays a central role in creating the conditions that foster employment, growth, equity, and sustainability within the informal city. Governments can extend benefits to those within the informal sector, while removing barriers to the formal sector to allow more participation. Government activities include, but are not limited to, establishing supportive regulatory frameworks, providing access to appropriate training and basic municipal services, protecting human rights, and increasing the ability to obtain property titles and access to credit.

Private sector

"The private sector is waking up and seeing that consumers are in the informal and poor parts of the cities. They are seeing that they also have a responsibility to these people. They are not just seeing them as a money source."

As the major contributor to economic growth and employment creation, the private sector has an essential role in cultivating inclusive cities. The private sector is not limited to formal businesses within the informal sector, but includes individuals and households that operate as entrepreneurs when they consume goods and services, sell their labor, farm, or produce goods and services.[9]

Civil society

"Church is more progressive. Leaders are helping to bring consciousness and dignity associated to socio-political rights…empowering people to demand transparency and responsibility. There are global, national, and local movements. People are asking for more accountability."

Civil society consists of individuals and organizations acting voluntarily and on a non-profit basis to address specific issues of concern and to create significant change overcoming challenges in the daily lives of people.[10] Civil society plays an important role in achieving sustainable and inclusive urbanization. It has the responsibility to act as an intermediary between local communities and formal organizations, scale up the interventions of international organizations, improve awareness of and educate the public on sustainable urbanization issues, provide scientific, legal, and policy expertise in their relevant focus areas, implement projects in their respective focus areas, adapt global work programs to national and local realities, and act as a watchdog through advocacy and fostering accountability.[11]

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[9]OECD. 2006. *Promoting Pro-Poor Growth Private Sector Development*.
[10]UN-HABITAT. The Role of Civil Society in Achieving Sustainable Urbanization. Available at: http://www.unhabitat.org/downloads/docs/6788_93045_events1_background_documents_documentFile_bv.pdf. Accessed January 2013
[11] Ibid.

Self-organizing communities

*"The possibility of informal settlement residents to organize
effectively would be a game-changer."*

*"… self-organizing helps to demonstrate to government that there is an issue – that poor
people can be strong. It can catalyze wider action."*

*"The informal needs to organize itself in a stronger way – it needs to raise its voice
at the grassroots and the national level."*

*"The federations of slum and shackdwellers – the networks of federations, of informal
economy workers – must strengthen their capacity to get things done and to renegotiate their
position. That is absolutely fundamental."*

*"Self-informal institutions are not new – they have played an important role since before
political parties, trade unions, and NGOs existed…1945-1990 was period of big institution
building within Africa, lots of trade unions popped up, labor policy was written. The role of
informal institutions faded during this period of time, but was revived again in the 1990s as the
influence of trade unions declined in many regions."*

If current governance and development practices do not adequately represent those living within informal settlements, informal workers may self-organize to be advocate for representation.

Self-organizing gives those working in the informal economy a means through which to be seen and heard by the decision makers who have the power to affect their lives. The history of self-organizing in the informal sector to ensure their rights parallels the history of union organizing, however women, who represent a disproportionate majority of informal workers, were often left out of this process and their work contribution and voices remained invisible within the informal economy.[12]

Even after a group of workers have self-organized to collectively advocate for their rights, receiving formal recognition can remain a substantial challenge. Government organizations often will not, or cannot, work with certain types of organizations – especially those which are not officially registered. Often a system for registering informal workers' organizations *doesn't even exist*[13]. When informal organizations are unable to register it limits the ability to collect data about the informal sector. Municipalities are left with minimal information about the characteristics of a large part of the people and activities within their boundaries.

Innovation: Scaling tools for self–organizing in the informal city
In India, the Self Employed Women's Association (SEWA) has found that video is a useful tool for training and organizing, particularly where literacy levels are low. SEWA has developed its own Video SEWA unit, for which it has trained women from its membership in the skills of filming and TV production. For home-based and domestic workers who are isolated, organizers have found radio a particularly useful tool for initial awareness-raising, provided they can get access to the radio broadcasting system.[14]

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[12] WIEGO. History & Dates. Available at: http://wiego.org/informal-economy/history-debates.
[13] Mather, C. 2012. *Solidarity Center 'Global Labor Program' WIEGO Research Project: Informal Workers' Organizing Research Report*
[14] Ibid

Women

"Current attitudes towards women are one of the factors that hinder [my] ambition for a resilient and sustainable city."

"I would like to see communities better organized – with women at the center."

"After decades of struggle, most constitutions in the world now enshrine women's equal rights. Although the fundamental human rights of women are recognized, many women still suffer from the continued consequences of traditional prejudices and practices. Nowhere is this more evident than in the area of ownership and inheritance of land and other property."[15]

Women represent the majority of the informal workforce. In Sub-Saharan Africa, 84% of female non-agricultural workers are employed in the informal sector, compared to 64% of male non-agricultural workers. In Latin America, 58% of the women are employed in the informal sector, compared to 48% of the men. In Asia, the proportion of women and men in non-agricultural workers in informal employment is roughly equivalent.[16]

Several factors shape women's participation in the informal sector: gender-based discrimination in the labor market which limits their access to employment opportunities, restriction of their mobility and access to education opportunities based on cultural beliefs, and their responsibility towards their children and family without alternative childcare services, which limits options to home-based work.[17]

Women play an essential role in reducing urban poverty. Poverty incidences tend to be lower in countries with more gender equality[18] and when mothers are granted greater control over resources as women tend to they allocate more financial resources towards food, children's health (including nutrition), and education.

The right to own land is considered critical to creating gender equality. In many countries the relationship women have to men (e.g., daughters vs. wives) determines their access to land. This leaves women particularly disadvantaged in cases of widowhood or if their relationship changes. It is estimated that only 2% of women in developing countries own land. The World Urban Campaign coordinated by UN-HABITAT have placed women's land and property rights at the center of policy and debate and advocacy because of the central role it plays in poverty reduction.[19]

Innovation: Women as micro-entrepreneurs

Women also play an essential role in reducing poverty. Women's entrepreneurship can make a strong contribution to the economic wellbeing of families and communities and can aid in reducing poverty. Where women have more control over the economic resources of the household consumption patterns tend to be more child-focused and oriented to meeting basic needs. A World Bank study on microcredit in Bangladesh showed that women put over 60% more of the money into the household than men.[20]

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[15] UN-HABITAT. 2002. Rights and Reality: Are women's equal rights to land, housing and property implemented in East Africa.
[16] ILO. 2002. Women and Men in the Informal Economy: A Statistical Picture. Available at:
http://www.ilo.org/dyn/infoecon/docs/441/F596332090/womenpercent20andpercent20menpercent20statpercent20picture.pdf.
[17] UNESCAP. 2006. Committee on Poverty Reduction. Bangkok. Available at: http://www.unescap.org/pdd/cpr/cpr2006/. Accessed November 2012.
[18] UN-HABITAT. *2010. Gender Equality for Smarter Cities*. Available at:
http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2887.
[19] Ibid.
[20] Leipziger, D. 2007. World Bank address to the Conference on Women's Economic Empowerment as Smart Economics. Berlin.

Section 2(b). Functions

Representation

"Government needs to create a space to consider the informal city, which can collect and deal with information about the informal city. This would give it legitimacy and representation."

"The reason in most African cities there is no planning is not weak states, it's that you have counter forces to those states whose interest it is not to have any formal regulation. They're not paying tax, exacting rents. There is a whole set of dynamics there and because we haven't named who those elites are the politics of that gets missed as focus on 'the poor.'"

"This is a mindset issue. There is an assumption that if you live in an informal settlement you are worthless. Government needs to create a space to consider the informal city which can collect and deal with information about the informal city. This would give slum dwellers legitimacy and representation."

Ensuring adequate political representation is a function of government. Nongovernmental organizations (NGOs) and international institutions also play a [sometimes contested] role in representing the needs of the informal sector. Some slum dwellers have successfully self-organized, but their ability to and success in intervening politically has been mixed.[21]

Like most of those living in poverty, participants in the informal city have often lacked a political voice within the structures that govern them. They frequently lack a formal address, identification, or voter registration. Slums rarely appear on maps and in the halls of power they and their residents may, at best, be politically nonexistent. This makes it particularly difficult for slum dwellers, street vendors, and other residents of the informal city to engage politically and gain access to the services they need.

Slum leaders often emerge to act as intermediaries between slum dwellers and formal authorities in a relationship typically characterized by a high degree of clientelism (the exchange of goods and services for political support). Ethnically homogenous slums may transplant leadership structures directly from a traditional village system whereas more diverse slums may select leaders according to other procedures, even formal elections, and more frequently based on their political connections, education, and networks.

Innovation: Sub-regional networks of home-based workers advocating for changes in national policy

HomeNet South Asia is the sub-regional network of an international network of home-based workers and support organizations located in Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The objectives of HomeNet South Asia are to increase the visibility of home-based workers and their issues, advocate national policies benefiting home-based workers in each country, strengthen the grass roots and particularly the membership-based organizations of home-based workers in each country, and create and strengthen the South Asia network of home-based workers and their organizations.[22]

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[21] Jha, Saumitra; Rao, Vijayendra; and Woolcock, Michael. 2006. *Governance in the Gullies: Democratic Responsiveness and Leadership in Delhi's Slums*. Available: http://ideas.repec.org/a/eee/wdevel/v35y2007i2p230-246.html.
[22] WIEGO. HomeNet South Asia. Available at: http://wiego.org/wiego/homenet-south-asia.

Barriers to formalization

*"The local authorities actually heavily tax and legislate
the informal sector, plus, on top of that, the informal sector
also has to pay the informal bribes!"*

*"Generally, the informal city is ignored in national legislation.
Then it's left to the local authorities."*

*"Bureaucratic regulations, onerous fees and taxes, and corruption all constitute barriers to entry into the
formal economy in the developing world."*

The regulatory frameworks that create the conditions that facilitate entry into formal systems are primarily a function of government. The most significant barriers to transitioning from informality into formality are regulatory, administrative, financial, and corruption.[23] Regulatory, administrative, and financial barriers are requirements stemming from governments that do not consider the impact of additional reporting, inspection, compliance procedures, and fees on smaller firms. Regulatory costs in much of the developing world are considerably higher than in the developed world. For example, business entry costs as a percentage of GDP per capita are as low as 3% in some Western countries and as high as 94% in Africa.[24] High business entry costs are correlated with both corruption and larger informal economies. A study of 69 countries found a direct link between decreases in corruption and increases in the size of the formal economy.[25] Regarding informal enterprises as undesirable, many governments have subjected informal enterprises to punitive and complex regulatory barriers, which have had the perverse effect of actually increasing the size of the informal economy.

Policymakers hoping to facilitate informal workers or businesses to transition to formal systems should evaluate regulatory burdens from informal workers' or enterprises' points of view to remove friction in the process.[26]

Innovation: Biometric identification cards for slum dwellers

Proof of identity can be an important tool for informal workers and slum dwellers to access government services. Efforts are emerging across the developing world to provide those in the informal city with unique identification cards or numbers to facilitate the process. In India, more than 200 million people have signed up for Aadhaar, a 12-digit identification number with an associated photography and biometric data.[27] The goals of the program include facilitating entry into the formal banking system for poor and marginalized residents and providing access to public and private services.[28] Critics of the program have expressed concerns about the potential for civil liberty and privacy violations.[29]

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[23] OECD. 2006. Promoting Pro-Poor Growth Private Sector Development (Chapter 1: Removing Barriers to Formalisation)
[24] Bannock, G., Gamser, M., and Juhlin, M. 2003. "The Importance of the Enabling Environment for Business and Economic Growth: A 10-Country Comparison of Central Europe and Africa." Available at:
https://openknowledge.worldbank.org/bitstream/handle/10986/9222/WDR2005_0028.pdf?sequence=1. Accessed November 2012.

[25] OECD. 2006. Promoting Pro-Poor Growth Private Sector Development. Chapter 1: Removing Barriers to Formalisation)
[25] Braverman, Eric and Kuntz, Mary. 2012. For every citizen, an identity. McKinsey & Company. October. Available at:
http://www.mckinsey.com/features/government_designed_for_new_times/for_every_citizen_an_identity

[26] OECD. 2006. Promoting Pro-Poor Growth Private Sector Development (Chapter 1: Removing Barriers to Formalisation)
[27] Braverman, Eric and Kuntz, Mary. 2012. For every citizen, an identity. McKinsey & Company. October. Available at:
http://www.mckinsey.com/features/government_designed_for_new_times/for_every_citizen_an_identity
[28] Government of India Press Information Bureau. 2012. Aadhaar Enrollments Beyond 20 Crore [Press Release]. 27 January.
Available at http://pib.nic.in/newsite/erelease.aspx?relid=79925.
[29] Ramanathan, Usha. 2010. "Implications of registering, tracking, profiling." *The Hindu.* 4 April. Available at:
http://www.thehindu.com/opinion/lead/article388037.ece

Section 2(c). Key dimensions

Livelihoods

"There is an increasing link between the formal sector enterprises and informal labor. By the time you get down from the retailer or manufacturer to the stage of production, you find individual laborers who are employed informally, are part-time, or working from home rather than on the factory floor. One example is the telecom industry where mobile companies found the most efficient way to sell phone cards was through street vendors."

"What's exciting is the possibility to turn the worker definition upside down: men and women, self-employment rather than just wage employment, part-time, temporary. All those elements should be recognized as facets of what it means to be a worker."

Sustainable livelihoods are the means by which those within the informal sector can improve their circumstances and break cycles of intergenerational poverty.

Most informal workers who are exposed to significant risks and are not protected by labor regulations within their working environment and are not covered by social security. Few are protected against loss of work and income or against the common contingencies of illness, property loss, accident, disability or even death. Given their low earnings, high risks, and limited protection, few urban informal workers are able to work their way out of poverty.

Livelihoods within informal urban areas include a broad range of activities from sub-contracted workers working for formal enterprises to "invisible" workers who sell goods or services from their home. Major occupational groups within the informal city include domestic workers, home-based workers, waste pickers, and street vendors.[30] Street vendors can include, but is not limited to barbers, beauticians, shoe shiners, cobblers, head loaders, and jitney drivers. In countries where social norms restrict women's mobility, most of those who work on the streets are men, while women work from their homes.[31] Home-based workers include garment workers, embroiderers, incense-stick rollers, or kite-makers.

Innovation: Inclusivity in the waste management industry

Brazil is one of the world's most progressive countries when it comes to integrating waste pickers into solid waste management systems. Since 2001, Brazil has included catador de material reciclável (collector of recyclables) as a profession in the Brazilian Occupation Classification (CBO). Years earlier, Belo Horizonte introduced legislation that made recycling, social inclusion, job creation, and income generation integral to solid waste management. [32]

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[30] Chen, Martha; Bonner, Chris; Chetty, Mahendra; Fernandez, Lucia; Pape, Karin; Parra, Federico; Singh, Arbind; Skinner, Caroline. 2012. *Urban Informal Workers: Representative Voice and Economic Rights*. The World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/12148

[31] WIEGO. 2009. *Supporting Urban Livelihoods, Reducing Urban Poverty.* Available at: http://wiego.org/sites/wiego.org/files/resources/files/Chen_Supporting_Urban_Livelihoods.pdf

[32] WIEGO. 2011. *Recycling in Belo Horizonte, Brazil – An Overview of Inclusive Programming.* WIEGO Policy Brief No. 3. Available at: http://wiego.org/sites/wiego.org/files/publications/files/Dias_WIEGO_PB3.pdf. Accessed January 2013

Housing and land tenure

"Simple security of tenure – this is the key."

"There are cities where slums have existed 30-40 years – these are third generation people living in slums. Increasingly, slums are a manifestation of successful labor markets and failed land and housing markets."

"In rural villages, people have their own homes. In cities, people not employed by formal sector have to find housing."

Housing and land tenure are determining factors for a number of dimensions of informality. Poor housing without access to basic infrastructure such as roads, water, and electricity not only increases the cost of living, but also causes poor health. Security of land tenure is an overarching concern in informal settlements.

Although a precise definition for slums has been elusive given their complexity and variability, in 2003 UN-HABITAT catalogued the following typical characteristics: lack of basic services, substandard housing or illegal and inadequate building structures, overcrowding and high density, unhealthy living conditions and hazardous locations, insecure tenure/irregular or informal settlements, poverty and social exclusion, and a certain minimum settlement size. They are often located on land that has not been legally acquired and slum dwellers generally do not have ownership rights.[33]

Currently, 924 million people lack secure tenure in cities of the developing world and that figure is projected to increase to 2 billion people by 2030.[34] Without security of tenure, the urban poor are often deprived of basic services like sanitation, clean water, education, and health facilities and are unable to obtain credit.[35] They are also subject to increased risk of forced eviction. Lack of tenure is frequently a gender issue, as land, housing, and property must often be registered in a man's name.[36]

As households increase tenure security (through titling or other means) new owners tend to increase investment in their homes. In Peru, following a massive regularization program that granted titles to 1.2 million households and 6,000 businesses, 17% of households invested in home improvements the year following titling, housing quality improved overall (with more titled homes made of durable materials), and access to services (notably water) rose. Crowding was reduced, as households enlarged their homes and increased the number of rooms, which also stimulated the rental market.[37,38]

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[33] UN-HABITAT. 2006. *The Improvement of Slums and Informal Settlements in Freetown*. Available at: http://www.unhabitat.org/downloads/docs/6125_11215_TheImprovementSlumsInformalSettlementsFreetown.pdf.

[34] UN-HABITAT. 2012. The Land and Tenure Program. Brochure. Available at: http://ww2.unhabitat.org/programmes/landtenure/documents/landbrochure.pdf. Accessed November 2012.

35 UN-HABITAT. 2007. Twenty-first Session of the Governing Council. Nairobi, Kenya. 16-20 April. Available at: http://www.unhabitat.org/downloads/docs/4625_51419_GCpercent2021percent20Whatpercent20arepercent20slums.pdf. Accessed November 2012

[36] Dzodzi Tsikata and Pamela Golah. 2010. *"Land Tenure, Gender, and Globalization."* International Development Research Centre (IDRC). Available at: http://idl-bnc.idrc.ca/dspace/bitstream/10625/43683/1/130252.pdf.

[37] The World Bank. 2005. *The Urban Poor in Latin America*. Available at: https://openknowledge.worldbank.org/handle/10986/7263.

[38] Mosqueira, Edgardo. 2003. "Land Titling: The Case of Peru." Paper presented at conference Mejores Practicas de Politica Social, Mexico City, May 7–9.

Innovation:
Pioneering collaborative networks to address tenure rights
Organizational networks are addressing land rights by developing tools for knowledge sharing, leveraging organized power. UN-HABITAT's Global Land Tool Network is an alliance of global, regional, and national partners working for land reform, improved land management, and security of tenure by developing tools that include pro-poor, good governance, equity, subsidiarity, sustainability, affordability, systematic and large scale, and gender sensitivity.[39]

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[39] UN-HABITAT. 2012. *Global Land Tool Network.* Available at: http://www.gltn.net/index.php/about-us. Accessed November 2012.

Section 2(d). Outcomes

Energy

"Resilience will increase when we have distributed, low-cost power."

"Cities don't have the autonomy they need…no city in the world has the ability to demand that all its buildings meet a minimum standard of energy efficiency."

Access to energy is usually an outcome of governmental infrastructure services and a household's ability to afford electricity services. In some instances, the private sector or social entrepreneurs will provide energy solutions that are clean and affordable alternatives. Informal residents may also self-organize and lobby to government agencies for improved services.

Access to electricity services and clean cooking fuel in slums is usually inadequate and inconsistent. Those who do have access to energy may obtain it through illegal and hazardous means or by spending a disproportionate share of their household income to procure it. Traditional cooking fuels used as an alternative to electricity, such as wood, charcoal, and dung, are hazardous to human health when used indoors and harmful to the environment. Almost every year almost 2 million people die prematurely from indoor pollution caused by cooking on open fires—more than die annually from malaria.[40]

Although access to energy is not directly a UN Millennium Development Goal (MDG), it is seen as crucial to achieving many of them.[41] The UN declared 2012 the International Year of Sustainable Energy for All and launched a new initiative to achieve major energy goals around access, intensity, and renewables for 2030.[42] As cities continue to grow and the demand for energy increases, the poor are at risk of getting left behind without access to safe, reliable, and affordable sources of electricity and cooking fuel.

Innovation: Converting waste heat into electricity
The BioLite HomeStove is a biomass cook stove that uses a thermoelectric device to convert waste heat into electricity that both powers a fan which increases the efficiency of the stove and also provides charging power for mobile devices such as cell phones or an LED light unit.[43]
The stove reduces smoke emissions by 95% for improved health and safety. The HomeStove provides a feasible and scalable solution to reduce indoor air pollution in urban slums.

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[40] WHO. 2012. *Air Quality and Health*. Available at: http://www.who.int/mediacentre/factsheets/fs313/en/index.html
[41] The World Bank and UNDP. 2005. *Energy Services for the Millennium Development Goals.* Available at: http://www.unmillenniumproject.org/documents/MP_Energy_Low_Res.pdf.
[42] UN. 2012. *Sustainable Energy for All*. Available at: http://www.sustainableenergyforall.org/. Accessed January 2013.
[43] BioLite Stove. 2012. Available at: http://biolitestove.com/

Self-protection

"There will be withdrawal of foreign investment as places start to look more dangerous. The distance between industrialized and developing countries will grow [and we'll see] increasing polarization within countries, i.e., the 'Brazil phenomenon' where the elite live in a security state cut off from the rest of society."

"Urban crime is primarily a Latin American issue, but increasingly so in Africa; inequality leads to crime which leads to gated communities, malls, etc. further perpetuating the cycle of inequality."

"Lack of safety is more prevalent in the informal city...governments finally woke up to the problems of drug dealers/others control over informal neighborhoods and that they had replaced rule of law in these areas. The people in these places are the victims of drug dealers."

People in the informal city are particularly vulnerable to violence and crime given the physical nature of slums, the illegal status of informal markets, and a frequent lack of protection by municipal police services within land settlements.

The relationship between cities and crime is complex and contentious. However, it is generally agreed that crime rates tend to be highest in the poorer areas of cities and that the manifold causes of urban crime include social exclusion and inadequate urban services, both of which typify life in slums.[44] Slum dwellers have scant protection offered by their physical dwellings, limited resilience caused by poverty, and a lack of institutional due process.[45] The built environment of slums, including a lack of safe community spaces, absence of proper street lighting, lack of services, and vulnerability while fetching water or visiting a public toilet all create additional risk.[46]

Women face the added danger of rape and sexual harassment within informal settlements.[47] Finally, street vendors are often subject to harassment and robbery that may also have a dampening effect on microenterprise growth.[48]

Innovation: Mobile phone rapid response networks

In Accra, Internews has partnered with The Enslavement Prevention Alliance-West Africa (EPAWA) to distribute mobile phones to monitors who are trained to text or call a hotline when they suspect gender violence is occurring.[49] When an incident is reported, EPAWA sends out staff from local partners or government agencies to follow up, so that the monitor does not have to get involved with the police – something many Ghanians are reluctant to do. The project will be extending to cover the whole region of Greater Accra, Volta Northern, and Brong Ahafo regions this year. Plans to extend the project were based on the success of the pilot project.

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[44] UN-HABITAT. *Some Facts About Urban Crime*. Available: http://ww2.unhabitat.org/programmes/safercities/facts.asp
[45] UN-HABITAT. 2009. *Urban Safety and Slum Upgrading.* Available:
http://www.unhabitat.org/downloads/docs/6813_70325_K0951951percent20HSP-EC-ACP-1-
4percent20Urbanizationpercent20challenges.pdf
[46] World Bank. 2009. *Violence in the City: Understanding and Supporting Community Responses to Urban Violence*,
http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/244362-1164107274725/Violence_in_the_City.pdf,
[47] UN-HABITAT, *State of the World's Cities 2010/2011 – Cities for All: Bridging the Urban Divide.* Available:
http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2917, 2008
[48] BenYishay, Ariel and Pearlman, Sarah, Crime, Informality and Microenterprise Growth: Evidence from Mexico,
http://web.williams.edu/Economics/nafziger/Pearlman.pdf, 2010
[49] Internews. Texting to Save Lives in Ghana. Retrieved from: http://www.internews.org/our-stories/program-news/texting-save-lives-ghana

Food security and quality

"The policy challenge is to promote appropriate legislation and education which would enable food vendors and catering businesses to upgrade the nutritional quality and safety of the food they serve.[50]"

Sustainable livelihoods, access, and affordability of food are critical determinants of food security and quality in informal settlements.

The majority of those living within informal urban settlements purchase most of their food from grocery stores or vendors and may spend up to 70-80% of their daily income on food purchases.[51] They tend to be cash poor and are therefore more vulnerable to increases in food prices or income reductions than their rural counterparts who can grow their own food.[52]

Positive aspects of urban food security and quality include greater access to education and health care services and greater availability of diverse foods. However, these advantages may not reach all urban residents. There are also negative or potentially negative features, including diets of more processed foods with greater amounts of fat and sugars or sweeteners, and increasingly sedentary lifestyles.[53] Poor quality results in poor nutrition and increased risk for chronic diseases such as diabetes and the risk of common infectious diseases, especially among children.[54,55]

Small urban farms are often tolerated, but not officially recognized. Urban farming fulfills the same function as many other parts of the informal economy in that it provides an affordable product and service[56] and informal jobs, but it can also share many of the shortcomings of the informal sector – especially in terms of quality assurance and consistent resource.

Innovation: Building a network of farmers to increase urban food security

A new public-private partnership between the governments of Tamil Nadu and Pondicherry (India), and the food company Britannia could have a significant long-term impact on the health of impoverished children. The company will provide iron-fortified biscuits as snacks to mid-day meal schemes across the states.[57] The effort is part of the Government of India's attempt to provide nourishment to children aged 6 to14; under this plan, all children who attend government schools are served lunch free of cost. The scheme has been implemented with varying levels of success in different states in India. In Tamil Nadu and Pondicherry, the scheme is highly successful, leading the governments to scale their effort and increase the nutritional value of the meals.

[50] Nwaka, G. 2005. *The Urban Informal Sector in Nigeria: Towards Economic Development, Environmental Health and Social Harmony.* Global Urban Development 1(1), May. Available: http://www.globalurban.org/Issue1PIMag05/NWAKA%20article.htm

[51] Ibid.

[52] Nellemann, C., MacDevette, M., Manders, T., Eickhout, B., Svihus, B., Prins, A. G., Kaltenborn, B. P. (Eds). 2009. *The environmental food crisis – The environment's role in averting future food crises. A UNEP rapid response assessment.* February. United Nations Environment Programme, GRID-Arendal,

[53] FAO. 2004. *Globalization of food systems in developing countries: impact on food security and nutrition.* Rome. Available: http://www.fao.org/docrep/007/y5736e/y5736e00.htm.

[54] Scrimshaw NS, Taylor CE, Gordon JE. 1968. Interactions of nutrition and infection. Geneva, World Health Organization

[55] Tompkins A, Watson F.1989. Malnutrition and infection: a review. Geneva, Administrative Committee on Coordination/Subcommittee on Nutrition, (ACC/SCN State-of-the-art Series Nutrition Policy Discussion Paper, No. 5).

[56] UN-HABITAT. 2009. *There is No Sustainable Development Without Sustainable Urbanization.* Session of the Commission on Sustainable Development (CSD-17). Available: www.unhabitat.org/.../docs/6713_90999_foodsecurity-CA.pdf.

[57] The Strategic Foresight Group. 2010. *Bangladesh: Non-formal education in urban slums.* Available at: http://newsletters.clearsignals.org/SFG_July2010.pdf#page=4

Sanitation and clean water

"I'd like to see us get to the point where everybody has good health and sanitation. That means potable water is readily available and in adequate supply and that sanitation is provided through some combination of government intervention and self-help."

"People can't rely on governments to ensure basic public health; the increased informality leads to difficulty getting safe drinking water."

There are three challenges to consider regarding water and sanitation services for those living within informal settlements: access to clean water and sanitation services, the affordability of those services, and increasingly, the water-related disasters such as floods and droughts which threaten clean water supply.

It is estimated that 50% of the urban population in Africa remains unconnected to official utility networks and relies on alternative sources for water supply.[58] Alternative sources usually include purchasing watering through vendors, although vendor prices can be as much as 10 times municipal water rates. Another alternative source is illegally tapping into the main municipal water pipelines for water. In some instances, as much as 40% of the water that enters municipal distribution systems can be unaccounted for through theft, illegal hook-ups, or leakage.[59] Finally, community-based organizations also lobby government agencies to provide public stand-pipes or water tanks in the settlements.

The absence of adequate sanitation infrastructure can cause sewage to accumulate in open areas often not far from drinking water sources, thus increasing the risk of water-borne diseases and health issues such as diarrhea, malaria, and cholera outbreaks. These conditions are particularly dangerous in areas that are prone to typhoons, monsoons, and flooding. In the Philippines, Typhoon Washi (January 2012) caused an outbreak of a deadly bacteria in the water supply that killed several hundred people.[60]

Innovation: Scaling decentralized sanitation services in Nairobi

Social entrepreneurs and nonprofits are working to provide decentralized sanitation services in slums. Sanergy sells prefabricated concrete toilets to local entrepreneur operators in the slums of Nairobi. The operators pay cash for the toilet or borrow from a Sanergy-recommended microlender.[61] Operators, who are responsible for keeping the facilities stocked with toilet paper, soap and water, profit by charging about $0.05 per use. The waste is collected and converted into electricity and commercial grade organic fertilizer, then sold for a profit. The technology isn't new, but a franchise model that finances waste removal is. Because the waste from each person generates 22 kilowatt hours (kWh) of electricity and 40 kilograms (kg) of fertilizer annually, the 10 million people in Kenya's slums have the potential to create a $72 million market per year.[62]

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[58] Kjellén, Mariane and McGranahan Angordon. 2006. *Informal Water Vendors and the Urban Poor*. International Institute for Environment and Development.

[59] Relhan. G. , Kremena Ionkova, K., Rumana Huque. 2010. *Good Urban Governance through ICT: Issues, Analysis, and Strategies*. The World Bank. Available at: http://siteresources.worldbank.org/INTAFRICA/Resources/ICT_Urban_Governance_Final_pub.pdf

[60] International Committee of the Red Cross. 2012. "A deadly disease outbreak in Mindanao underlines vulnerability of typhoon-affected." Available at: http://www.ifrc.org/en/news-and-media/news-stories/asia-pacific/philippines/a-deadly-disease-outbreak-in-mindanao-underlines-vulnerability-of-typhoon-affected/

[61] Clark, Patrick. 2011. "Cleaning Up: David Auerbach's Sanergy." *BusinessWeek*. Available at: http://www.businessweek.com/magazine/cleaning-up-david-auerbachs-sanergy-10132011.html

[62] USAID. 2012. *Turning Poop into Power: Pioneering low-cost, sustainable sanitation services in slums*. Available at: http://idea.usaid.gov/div/Sanergy-Kenya

Health

"One of the best ways to measure urban harm is to look at the gaps in health outcomes between affluent and deprived groups, living in the same city, sometimes just a few blocks away."[63]

Health is determined by a number of interplaying conditions including: access to food and nutrition, access to clean water, decent sanitation, access to health care services, and healthy and safe working conditions.

Those living within the informal sector are at high risk of infectious diseases due to population density and lack of water and sanitation systems, including human immunodeficiency virus (HIV), tuberculosis, pneumonia, tuberculosis, hepatitis, dengue, pneumonia, cholera, and diarrheal diseases, which spread easily in highly concentrated populations.[64] The highest HIV prevalence is usually found within urban informal settlements.[65]

Health policies in most rapidly urbanizing countries remain dominated by disease-focused solutions that ignore the social and physical environment of urban settlements. As a result, health problems persist, health inequities have continued to increase, and efforts to address the challenges have produced less than optimal results.[66]

Innovation: Risk pooling to insure informal workers in India

Informal sector workers account for 93% of India's total workforce.[67] The government has implemented social security measures for some occupational groups, but coverage is minimal. Most workers still lack social security and health coverage. A major insecurity for workers in the informal sector and their families is high incidence of illness and need for medical care and hospitalization.

Rashtriya Swasthya Bima Yojna (RSBY) is a state-managed national health insurance program designed to improve access to quality medical care for informal workers living below the poverty line. Every family holding a ration card pays less than $0.70 registration fee to get a biometric smart card containing fingerprints and photographs. This enables them to receive medical care up to approximately $670 per family. Pre-existing illnesses are covered from the start of the policy and covers up to three dependents. Seventy-five percent of the cost is borne by central government and the rest by state governments. Enrollment of families, smart card generation, pre-authorization of admissions as well as claim submission all occur electronically. RSBY is being implemented in 22 states in India. Seventeen states are already issuing smart cards and five others have started implementation.[68]

[63] Chan, Dr. Magaret. 2010. *World Health Day 2010: Urban health matters.* Director of the World Health Organization's remarks at press briefing. Geneva. 7 April 2010.

[64] The WHO Centre for Health Development, Kobe, and UN-HABITAT. 2010. *Hidden cities: unmasking and overcoming health inequities in urban settings.* Available: http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3049

[65] Vearey, J. 2011. *Challenging urban health: towards an improved local government response to migration, informal settlements, and HIV in Johannesburg, South Africa.* Global Health Action 4: 10.3402/gha.v4i0.5898. 9 June 2011.

[66] The WHO Centre for Health Development, Kobe, and UN-HABITAT. 2010. *Hidden cities: unmasking and overcoming health inequities in urban settings.* Available: http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3049

[67] http://hmsindia.org.in/content/ituc

[68] http://www.rsby.gov.in/

Education and skills training

"One of the things we are seeing is that education is accessible in Nairobi slums. People generally get through primary school, and often they get through high school, too. Families in Kenya know that education is valuable to pulling themselves up by their bootstraps. They don't necessarily feel the same about water, sanitation, and other aspects of informality."

Education and skills training are critical for personal development and as a means to disrupt cycles of intergenerational poverty. Access to education and skills training is provided via number of different routes, including the following:

Secondary schools. Slum children are 5 times less likely to attend secondary school than their city counterparts.[69] If students make it through secondary school, the programs tend to underemphasize the non-cognitive professional skills now considered vital to securing employment and to provide only limited opportunities for the application and practice of the theoretical principles taught.[70]

Apprenticeships. A very high percentage of people working in the informal sector are trained by the informal sector itself. In North Africa, it's estimated that 80% of the skills imparted in the informal economy were those acquired on the job through job apprenticeships. In Benin in 2005, approximately 200,000 young apprentices were trained, equal to ten times the number of students in Benin's formal training programs. Skills development through an apprenticeship is often restricted, however, by the master teachers' own limited training, and by poor working conditions.[71]

Self-organizing. Those within the informal settlements may begin to organize their own informal schools. In Kibera (an informal settlement in Nairobi), half the residents are under 15 and opportunities for education are severely limited. Kibera is the city's most densely populated area, and yet schools and students are largely ignored by the Kenyan government. Faced with this gap of formal education, a few women in the community created St. Martin's, an informal primary school that now educates 250 of the neighborhood's children.[72]

Private sector. In some cases, private sector agencies are striving to meet the gap left by inadequate educational services. Pearson (the UK education company and owner of the *Financial Times*) has launched a £10M fund to invest in private schools in Africa and Asia. The first investment from the new funds will be in the Omega schools, a privately held chain of affordable for-profit schools in Ghana.

Civil society. There are a number of NGOs that are committed to providing educational services at scale. In Manila, the mission of Popular Education and People Empowerment (PEPE) is "to provide a catalyst for building a distinct popular education movement as an integral part of the overall movement towards people's empowerment, sustainable development, and genuine democracy."[73]

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[69]http://www.thesupply.org/slum-problem/. Accessed January 2012.
[70]Pina, Kotin, Hausman, and Macharia. 2012. *Skills for Employability: The Informal Economy.* Results for Development Institute. Available at:
http://www.resultsfordevelopment.org/sites/resultsfordevelopment.org/files/resources/Skillspercent20forpercent20Employabilitypercent20inpercent20thepercent20Informalpercent20Economy.pdf. Accessed November 2012
[71] Ibid.
[72] http://nextcity.org/informalcity/entry/st-martins-unpaid-teachers-educate-kiberas-youngest. Accessed January 2013.
[73] http://mb.com.ph/node/349601/ngo

University students in the informal economy. For many higher education graduates for whom it can often take three years to enter the world of work, the informal sector constitutes the only way of finding a job. A qualitative survey carried out by Agence Française de Développement (AFD) on a group of 110 youth association leaders from Central Africa showed that 60% of these young people, having done a Bachelor's or Master's level higher education degree course, enter the labor market by acquiring on-the-job experience or doing an apprenticeship in the informal sector.[74]

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[74] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/gmr2012-ED-EFA-MRT-PI-08.pdf

Emergency management

"Environmental issues such as extreme weather events and long-term climate change will affect precarious informal settlements – for example, flood-prone areas will be impacted by malaria."

"One of the things that we've seen is that we used to think that density was a problem and that dense places were more vulnerable, but we have come to see that dense places where people are together have stronger networks or stronger networking capabilities than those cities are more resilient."

Residents of urban informal settlements are disproportionately at risk of both natural and man-made disasters.

The characteristics typical of informal settlements such as unplanned and unregulated growth, poor infrastructure and services, and poor construction can transform everyday hazards in the informal city into disasters. Slum proliferation combined with hazards exacerbated by climate change such as cyclones, floods, heat waves, drought, and landslides make this an increasingly urgent issue.

Japan, for example, has more people exposed to tropical cyclones than the Philippines. However, if both countries were affected by a cyclone of the same magnitude, past data suggests that mortality in the Philippines would be 17 times higher than in Japan.[75]

The poor implementation of building codes and zoning by-laws increases the risk of disaster-related damage. This is particularly true for earthquakes because, unlike with other types of natural disasters, casualties, and fatalities from earthquakes are associated almost entirely with collapse or failure of manmade structures. Currently, 13% of urban populations live in low-elevation coastal zones that are prone to flooding and 24% live in densely populated coastal zones that experience tropical storms and cyclones.[76] Residents of these cities are especially vulnerable to extreme weather events such as Hurricane Katrina, which wrought catastrophic damage in low-lying New Orleans in 2005, resulting in 1,100 deaths and economic costs estimated at over $100 billion.[77]

Innovation: Building urban resilience with information and communication technologies

SMS texting and GPS-enabled mobile technologies are providing effective ways to collect real-time data in disaster situations or to monitoring services such as water delivery or solid waste collection in urban resource-constrained areas. During the Haiti earthquake (January 2010), Ushahidi developed a platform developed to help aid workers quickly locate individuals in need of water, food, and medical assistance. These mapping initiatives typically leverage the use of open-sourced platforms developed by OpenStreetMap, Ushahidi, and GoogleMaps.[78]

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[75] UNISDR. 2009. *Global assessment report on disaster risk reduction.* Available: http://www.preventionweb.net/english/hyogo/gar/report/index.php?id=1130&pid:34&pih:2.

[76] The World Bank. 2012. World Development Report 2012: Gender Equality and Development. Available: http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/EXTWDR2012/0,,contentMDK:22999750~menuPK:8154981~pagePK:64167689~piPK:64167673~theSitePK:7778063,00.html.

[77] UN-HABITAT. 2009. *Cities and Climate Change: An Introduction.* November. Available: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CDUQFjAA&url=http%3A%2F%2Fwww.unhabitat.org%2Fpmss%2FgetElectronicVersion.asp%3Fnr%3D2958%26alt%3D1&ei=MHQUUYf8Bee20AHc-YCYDg&usg=AFQjCNGTzVP1rpWXt47aGArvF0fNTaiL5g&sig2=4QyUSEA6WCVrNuCDWTXAFg&bvm=bv.42080656,d.dmQ.

[78] Inclusive Cities. 2012. ICT for Empowering the Urban Poor. Available: http://inclusivecities.ning.com/page/ict-for-empowering-the-urban-poor.

Finance

"Informal workers have potential and want to grow, but can't access finance…attraction of foreign capital has actually led to more marginalized roles for the poor."

"I am a capitalist, but the market does not work in cities. We need regulation and government."

"Informal workers have potential and want to grow, but can't access finance. India, for example, has weak contract enforcement and rampant corruption."

Access to standard financial products such as savings, credit, and insurance is important for individual wealth, as well as economic growth and development. However, participants in the informal sector have been underserved by formal financial institutions for a variety of reasons.

Microfinance institutions (MFIs) have arisen in many places to bridge the gap (albeit incompletely) between the informal economy and formal financial structures. They are often modeled on informal financial practices (e.g., lending methodologies that make use of social capital and peer pressure.) MFIs do have a number of limitations, however, such as a focus on credit rather than savings or insurance and a relatively small market penetration (varying widely among geographic regions).[79]

A host of informal financial mechanisms have arisen to service those in the informal economy who are underserved by formal financial structures. In Africa, popular mechanisms include rotating savings and credit associations, tontines, savings collectors (*susus*), mutuelles santé, and informal money transfer systems (*hawala*).

Innovation: Banks strive to bridge the informal and formal financial services
While informal financial structures have sprung up where formal financial institutions are absent or inadequate, some formal banks are demonstrating a new interest in bridging the gap between themselves and informal enterprises. For example, ABA Bank in Cairo works with informal enterprises by providing incentives for them to use formal banking services. If repeat borrowers demonstrate that they are taking steps towards gaining a business license and paying taxes they are more eligible for loans.[80]

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[79] ILO. 2009. *The informal economy in Africa – Promoting transition to formality: Challenges and strategies.* Available at: http://www.ilo.org/public/libdoc/ilo/2009/109B09_196_engl.pdf. Accessed November 2012.
[80] Ibid.

Transportation

"As Vietnam is poised to double its motorcycle numbers from 20 million at present to 40 million by 2020, it faces the formidable challenge of its carbon footprint growing exponentially and the environment suffering significantly as a result."[81]

Urban transit throughout the developing world includes private small-scale transport services variably referred to as "informal transport." This sector operates informally and illicitly, somewhat in the background and outside the officially sanctioned public-transport sector.[82]

Historically, informal transport has been viewed as a problematic reality, deserving of government intervention and elimination. However, there has recently been a wide-reaching shift towards the appreciation of informal transport operations meeting urban needs.

In some cases, pedicabs, motor−tricycles, and jitneys satisfy the needs of consumers more than modern "formal" carriers. They complement mainline services by providing feeder connections and serving areas that public carriers do not, whether out of necessity or choice.[83] Informal transport is also effective in generating livelihood opportunities for the urban poor, thereby promoting development. However, there are a plethora of problems associated with informal operations, including low safety standards, increased traffic congestion, and environmental costs.[84]

Innovation: Ecocabs "Dial-a-Rickshaw" links coordinates informal rickshaw drivers

"Ecocabs" is the name given to the traditional Indian cycle rickshaw operations a phone service for arranging a rickshaw. The dial-a-rickshaw service can be contacted via a mobile phone, similar to dial-a-cab/taxi service. Introduced in Fazilka (a town located in the state of Punjab, India), the scheme is a first of its kind in the country. Aimed at improving the disorganized cycle rickshaw transport system in the town and providing affordable means of mobility to the city residents, the scheme has been a success in the city and earned accolades both nationally and internationally.[85]

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[81] Strategic Foresight Group. 2011.Asian Horizons. 2(8): June. Available at: http://newsletters.clearsignals.org/SFG_June%202011.pdf#page=16
[82] Duminy, J. 2011. Literature Survey: Informality and Planning for African Centre for Cities, University of Cape Town. South Africa
[83] Ibid.
[84] Ibid.
[85]http://ecocabs.org/media/resources/1319040291_8654_SUTP-_Newsletter_July_2011.pdf

Section 3: Global drivers of change for future cities

Introduction

Cities around the world will change radically in the coming decades, and change is likely to be fastest and furthest reaching in the cities of the Global South, including the project's focus cities.

Global drivers of change, such as population growth and aging, changes in the health burden, and climate change will combine in complex and difficult-to-predict ways to present people in cities with new challenges and opportunities. This will change the role of informal systems and structures in the city and how they interplay with formality.

For example, as resources become increasingly scarce and waste therefore more valuable, will informal approaches to reusing and recycling materials be brought into the formal sector? What will this mean for the thousands of waste pickers who derive their livelihoods from the informal waste system? Will the relentless rise in digital connectivity provide the means for people of the informal city to organize more effectively and press for more rights and representation?

The global drivers of change explored in this section have been suggested by our literature review, horizon scan, and expert interviews. They are a starting point for future-focused work in Lima, Accra, Nairobi, Chennai, Bangkok, and Manila, but each city in the Informal City Dialogues will interpret them differently and undoubtedly have additional factors and local considerations.

Urbanization

"National governments failed to keep up with the speed of development, not providing infrastructure, housing, [other] services and so on, and so informal settlements grew up. The emergence of the informal city was a failure of planning. Most importantly, the mechanisms of governance weren't developed."

As of 2008, for the first time in human history, more than half of the world's population – 3.3 billion people – are living in urban areas.[86,87] Projections indicate that by 2030, 80% of the world's population – nearly four billion people – will live in cities and that one out of every three people will live in a slum.[88] Rapid urbanization is creating "megacities" which are agglomerations of urban areas with a population of 10 million or more. There are expected to be 27 megacities by 2020,[89] 19 of which will be located in the Global South.[90]

Several factors contribute to urbanization. A majority of urban migrants move from rural locations, smaller towns, or neighboring cities in search of better work and educational opportunities.[91] Additional drivers include population growth, the reclassification of rural areas into urban areas through urban expansion,[92] and the migratory growth from population displacement following armed conflicts, internal strife, and violence.[93]

However, urbanization in the developing world is not uniform. Only half of the urban areas are expected to grow in the next 20 years; 16% will experience slow growth rates, and 11% will actually see their populations decrease.[94] The fastest growing cities tend to be mid-tier cities with two to five million inhabitants such as Abu Dhabi, Bandung, Dalian, and Hanoi. Just nine of the 23 megacities are ranked in the top 30 for economic strength.[95] Ranking of the Informal City Dialogues cities has been included in Appendix A.

Population growth in cities has both positive and negative implications. Urbanization has been associated with improved human development, rising incomes, and better living standards. The benefits of agglomeration and accompanying productivity gains enable cities to emerge as engines of economic growth, with cities accounting for nearly 70% of global GDP today.[96] Firms in many industrial and service enterprises value agglomeration as it provides the means to be close to other firms in the same or related product lines, and greater access to domestic and international markets. For instance, 50% of China's GDP is generated in coastal urban agglomerations comprising only 20% of the territory.

[86] UNFPA. 2007. *Urbanization: A majority in cities*. Available at: http://www.unfpa.org/pds/urbanization.htm. Accessed November 2012.
[87] The International Federation of Surveyors (FIG). 2010. *Rapid Urbanization and Mega Cities: The Need for Spatial Information Management.*
[88] UN-HABITAT. 2007. *State of the world's cities 2006/7*. Available at:
http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2101. Accessed November 2012.
[89] The International Federation of Surveyors (FIG). 2010. Rapid Urbanization and Mega Cities: The Need for Spatial Information Management.
[90] UNDESA Population Division. 2005. *Population Challenges and Development Goals.* Available:
http://www.un.org/esa/population/publications/pop_challenges/Population_Challenges.pdf.
[91] UN-HABITAT. 2005. World Urban Forum III. An International Event on Urban Sustainability. Vancouver, Canada
[92] Ibid.
[93] UNDESA Population Division. 2005. *Population Challenges and Development Goals.* Available:
http://www.un.org/esa/population/publications/pop_challenges/Population_Challenges.pdf.
[94] UN-HABITAT. 2010. *State of the World's Cities 2010/2011 – Cities for All: Bridging the Urban Divide.* London. Available:
http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2917.
[95] http://www.bloomberg.com/article/2012-03-12/amQwEf9_N_p0.html
[96] http://siteresources.worldbank.org/INTAFRICA/Resources/ICT_Urban_Governance_Final_pub.pdf

Innovation: Training the next generation of problem solvers

India's urban population will increase from 300 million to 800 million in the next few decades. India plans to start a university devoted to urbanization and settlement issues in order to train a cohort of specially educated professionals to manage this urbanization. India might consider partnering with other nations that are also experiencing massive urban growth to increase south-south cooperation. In the future, we may look to India as the leading urban planning and innovating society.[97]

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[97] Intellecap. 2010. Searchlight South Asia Monthly Newsletter on Trends in Pro-Poor Urban Development in India, Bangladesh, and Pakistan. February. Available at: http://newsletters.clearsignals.org/Intellecap_Feb2010.pdf#pg=11.

Heading for 9 billion

"In the past one hundred years, the world population has quadrupled. How about the world economic output? It has increased by twenty fold, five times more than world population growth. This economic output expansion is driven by the growth in population and wealth. Can the Earth withstand such rapid economic output expansion?"[98]

The United Nation's median demographic projection estimates a population of 9.3 billion by 2050 and 10 billion by 2100.[99] These projections assume both access to family planning by couples and successful efforts to arrest the current spread of the HIV/AIDS epidemic.[100]

The population of the more developed regions – currently estimated at slightly more than 1.2 billion people – is anticipated to change little during the coming decades. By contrast, the population of developing regions is projected to rise from about 5.3 billion to 7.8 billion people by mid-century.[101] However, should projected declines in fertility fail to materialize, the population of these regions could be substantially larger than projected.

In many countries, natural population increase (the difference of births minus deaths) accounts for 60% or more of urban population growth. Consequently, policies that facilitate the reduction of fertility by ensuring that couples have access to modern contraception and can decide freely the number of children they desire can moderate increases in the number of urban dwellers, making it easier for developing countries to adjust to the transformations associated with growing urbanization.

Population growth is often outpacing municipal capacity to provide the essential services that make healthy communities and workplaces.[102] Designing solutions for the combined future forces of climate change, population growth, and urbanization will require policymakers to abandon status quo solutions to meet complex future challenges. The combined forces of urbanization and global population growth are placing increased pressure on natural resources which can in turn contribute to food and water shortages.

Innovation: Fertility awareness in the hands of women

Days Method (SDM) is a fertility awareness-based method of family planning based on a woman's menstrual cycle. Appropriate for women who usually have menstrual cycles between 26 and 32 days long, the method identifies days 8 through 19 of a woman's cycle as the fertile days. To prevent pregnancy, the couple avoids unprotected sex on the woman's fertile days. CycleBead, a color-coded string of beads, helps a woman track the days of her menstrual cycle and identify which days she is most likely to get pregnant. Clinical trials have proven SDM to be 95% effective in preventing pregnancy with correct use and 88% effective with typical use, which is comparable to other user-directed methods.[103]

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[98] Ms. Insill Yi, Commissioner, Statistics Korea Opening Remarks. International Seminar on Green Economy and Official Statistics 6 – 8 July, 2011, Seoul, Republic of Korea

99 UNDESA Population Division. 2011. World Population Prospects: The 2010 Revision, Volume I: Comprehensive Tables. ST/ESA/SER.A/313.Available: http://esa.un.org/wpp/

[100] UNDESA Population Division. 2005. *Population Challenges and Development Goals*. Available: http://www.un.org/esa/population/publications/pop_challenges/Population_Challenges.pdf.

[101] Ibid.

[102] UN-HABITAT. 2010. *State of the World's Cities 2010/2011 – Cities for All: Bridging the Urban Divide*. London. Available: http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2917.

[103] FrontlineSMS and Georgetown University's Institute or Reproductive Health FrontlineSMS Available at: http://www.frontlinesms.com/wp-content/uploads/2011/10/FrontlineSMS_IRH_CycleTel_2011.pdf. Accessed January 2013.

Feeding 9 billion

"A three-fold challenge now faces the world: Match the rapidly changing demand for food from a larger and more affluent population to its supply; do so in ways that are environmentally and socially sustainable; and ensure the world's poorest people are no longer hungry."[104]

The simultaneous forces of unprecedented population growth and climate change are making food security an increasingly important issue for global society.

World food demand is projected to increase by 50% (projected demand for meat is even higher at 85%) by 2030,[105] while world food *supply* is at risk of falling 5 to 25% short of demand by 2050.[106] Global food demand is driven by increased population and the nutritional transition associated with the growth of the global middle class. On the supply side, the world has limited viable agricultural land. Land degradation, urban expansion, and conversion of crops and cropland for non-food production such as biofuels may reduce the required cropland by 8 to 20% by 2050, if not compensated for in other ways.[107]

The food crisis is further exacerbated by fluctuating fuel prices, speculation in food stocks, and extreme weather events which reduce supply. An increase in oil prices can raise the cost of fertilizer and lower yields further. Food prices have increased several fold since 2004. In 2006, food index prices rose by 9%; in 2007 by 23%; and in 2008, prices surged by 54%.[108]

In 2012, the International Monetary Fund issued a warning that oil prices could plausibly double (from $113/barrel) by 2022, and stay there for sustained periods of time (rather than resulting in a spike in 2008 which was partially due to the economic crisis).[109] The major impacts would be felt by already impoverished and vulnerable people. Rising oil and food prices directly threaten the health and the lives of households spending the majority of their income on the food and shelter that sustains them.

In 2013, for the sixth time in 11 years, the world may consume more food than it produces, largely because of the impacts of extreme weather in major food-exporting countries.[110] In 2012, food prices were already at close to record levels, having risen 1.4% in September following an increase of 6% in July. The food shortages were primarily attributed to heat and drought in the US and other major food-exporting countries that had hard-hit harvests and sent prices escalating.

In the future, food prices could increase and less quality food – particularly protein – may be available. Developing countries may convert more land to food production for export as a more valuable commodity, and reduce the number of self-sustaining small farmers thus creating the expansion of the cities.

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[104] Godfray, H. Charles J.; Beddington, John R.; Crute, Ian R.; Haddad, Lawrence; Lawrence, David; Muir, James F.; Pretty, Jules; Robinson, Sherman; Thomas, Sandy M.; Toulmin, Camilla. 2010. Food Security: The Challenge of Feeding 9 Billion People. *Science* 327 (5967): 812-818. Available at: http://www.sciencemag.org/content/327/5967/812.full. Accessed January 2013.

[105] http://www.bis.gov.uk/assets/goscience/docs/p/perfect-storm-paper.pdf

[106] Nellemann, C., MacDevette, M., Manders, T., Eickhout, B., Svihus, B., Prins, A. G., Kaltenborn, B. P. (Eds). February 2009. The environmental food crisis – The environment's role in averting future food crises. A UNEP rapid response assessment. United Nations Environment Programme, GRID-Arendal, www.grida.no

[107] Ibid.

[108] Ibid.

[109] http://www.guardian.co.uk/business/2012/may/13/oil-price-doubling-decade-imf

[110] Vidal, John. 2012. "UN warns of looming worldwide food crisis in 2013." *The Guardian.* 13 October 2012. Available at: http://www.guardian.co.uk/global-development/2012/oct/14/un-global-food-crisis-warning.

Shifting age demographics: aging populations and youth

"…governments and civil organizations will need to turn to relatively untraditional, unfamiliar models, such as homes and skills training initiatives for the elderly, to make progress and alleviate the burden of poverty on this demographic now and in the future."[111]

"Analysts agree that a key factor fueling Middle East instability is the lack of opportunities for youth in labor markets."[112]

There are two aspects to the current shift in age dynamics: a globally aging population and, conversely, a bulge in the youth population.

Aging population. The population of people aged over 65 is growing by an average rate of 2.6% each year globally, considerably faster than the population as a whole.[113] At this rate, it is projected that about 20% of the population will be considered "aging" by mid-century.[114]

The UN has warned that the most serious impact of aging populations will be in developing countries that do not have safety nets or adequate legal protection for older people.[115] In particular, India and Bangladesh spend very little on social pensions – current services benefit less than 20% of their aging population.[116] Population aging will also have an impact on economic growth, investment, consumption, labor markets, pensions, taxation, and intergenerational asset transfers.

Youth population. Alongside the global aging trend, many developing countries are also experiencing an increase in youth population. It is estimated that 60% of all city dwellers will be under the age of 18 by 2030.[117] The population explosion in the Middle East and North Africa resulted in a regional population where 65% of the population is under the age of 30.[118] Africa is home to the largest segment of young people; youth and children aged 25 years and below are estimated to constitute around 70% of the population.[119]

A youth bulge can have a "demographic dividend" from increased productivity or alternatively, result in spontaneous and low intensity social unrest. In some cases, a youth bulge may increase the risk of more organized forms of political violence like internal armed conflict.[120] It is imperative that policy and services recognize and support youth as leaders within their own communities.[121]

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[111] http://newsletters.clearsignals.org/Intellecap_Nov2011.pdf pg 1-6

[112] FORO March 2011 pages 2-3: http://newsletters.clearsignals.org/FORO_Mar2011.pdf#page=2

[113] http://www3.weforum.org/docs/WEF_GlobalRisks_Report_2012.pdf

[114] Ibid.

[115] http://www.unfpa.org/webdav/site/global/shared/documents/publications/2012/Ageing-Report_full.pdf

[116] http://www3.weforum.org/docs/WEF_GAC_GlobalPopulationAgeing_Report_2012.pdf

[117] http://www.who.int/gho/urban_health/outcomes/under_five_mortality_text/en/index.html. Accessed January 2013.

[118] Navtej Dhillon. 2009. The Role of the U.S. in the Middle East. Congressional Briefing.

[119] https://yenmarketplace.org/sites/default/files/Youth_Unemployement_in_Africa.pdf

[120] Ibid.

[121] http://www.unhabitat.org/content.asp?cid=4419&catid=531&typeid=24&subMenuId=0

Migration

"The informal city has become more cosmopolitan. It is not homogenous; in terms of culture, you see more diversity, pluralism, and people from different countries. It is becoming both regional and global."

"We are going to see incredible migration which is going to lead to clusters of skill and advantage in cities…with skilled people migrating to our [Southern] countries, but this effectively means cities in the south, in a very perverse way, are subsidizing the most advanced cities as they develop and train people and then they move out"

"Understanding the impact of that kind of mobility of skill and talent is going to be more important than trade and economic flows – this could be huge issue in international affairs. We could end up with a world that is far more unequal and where there are greater differences between the cities of the world."

One out of seven people in the world is in a migratory state in some form.[122] Migration has accelerated to become a global mega-trend of the 21st century.[123] If current rates of international migration continue, the number of international migrants worldwide could reach 405 million by 2050. Nine out of every ten refugees in the world originate from countries in the Global South; in 2010, South-South migrants slightly outnumbered South-North migrants for the first time.

Different types of migrants include:

Women migrants. More women are migrating either on their own or as heads of households. Currently, women comprise almost one-half of all migrants.[124]

Economic migrants. People looking for greater economic opportunity are the fastest growing group of migrants. At the micro level, people are leaving in pursuit of economic gain; at the macro level, they are impacted by globalization of trade and transport. Most of them are informal workers at risk of exploitation and human rights violations in their locations.

Circular migrants. Migration is no longer unidirectional and permanent; it is increasingly multidirectional, impermanent, and occurring on a temporary or cyclical basis.[125] With circular migration, migrants move from rural to urban areas in search of income during the dry season and then return home during the rainy season to participate in agricultural activities.

Highly skilled migrants. Conversely, professional and skilled migrants are migrating to more developed countries. The International Labour Organization (ILO) has estimated that developing countries lose between 10 to 30% of skilled workers to labor "brain-drain." Various policies have been introduced by developing and developed countries alike to stem this flow, ranging from imposing strict restrictions on visas to offering attractive salaries to those prepared to return. So far, however, they appear to have made relatively little impact, especially in the context of an intense global competition for skilled labor.[126]

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[122] http://www.uncsd2012.org/content/documents/443Migration%20Issues%20Brief_final_June%208.pdf
[123] Ibid.
[124] Ibid.
[125] Ibid.
[126] Ibid.

*"Dhaka is a city exploding with climate migrant. About 500,000 people
move to the capital city, every year from the banks of the Buriganga River
mainly from coastal and rural areas…about 70% of slum dwellers in Dhaka experienced some
kind of environmental shocks."[127]*

*"Even though we have seen that the levels of food insecurity vary across the sites, migration
decisions were more closely linked to rainfall in places where the dependence on rain-fed
agriculture was high and local livelihood diversification options were low. When we look into
the future, our modeling results for Tanzania show that migration from vulnerable households
could double over the next 25 years under the most extreme drying scenario."[128]*

Internal migrants. Rural-urban and urban-urban migration are primarily driven by economic and social aspirations, with environmental change increasingly influencing migration.

Environmental migrants. Some estimates indicate that extreme weather events and environmental degradation, such as desertification and soil erosion, will move or permanently displace up to 200 million people by 2050. Environmentally induced migration out of urban areas is also likely to increase; 10% of the world's population and 13% of the world's urban population are at risk from sea level rise and other seaward hazards affected by climate change.[129]

Only one-third of the world's 10.5 million refugees live in formal refugee camps. More than half of the refugees UNHCR serves now live in urban areas.[130] In the future, more refugees will be trying to survive in cities and towns displaced from their homelands.[131]

Migration as resilience
Though migration is often associated with hardships, some researchers are beginning to explore how it also offers opportunities to acquire new knowledge, income, and other things, as well as create new social networks across regions. This social capital contributes to the adaptive capacity and resilience of communities and helps to develop joint responses against climate change.[132]

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[127] Friedman, L. 2009. A city exploding with climate migrants: Bangladesh and climate migration.
ClimateWire, Environment & Energy (E&E). Available at: http://www.eenews.net/public/climatewire/2009/03/16/1
[128] Findings of the UNU, CARE International Project Where the Rain Falls
Doha, 28 November 2012. Available at: http://unu.edu/news/releases/study-on-climate-change-food-insecurity-and-migration.html#info. Assessed January 2013.
[129] http://www.uncsd2012.org/conte:nt/documents/443Migrationpercent20Issuespercent20Brief_final_Junepercent208.pdf
[130] http://www.unhcr.org/pages/4b0e4cba6.html Assessed January 2013.
[131] http://www.unhcr.org/pages/4b0e4cba6.html Assessed January 2013.
[132] Jürgen Scheffran, J. Marmer, E., Sow, P. 2011. Migration as a contribution to resilience and innovation in climate adaptation: Social networks and co-development in Northwest Africa.

Health burden

"The problem is compounded by a deterioration in traditional patterns of family support [...] due to growing urbanization and, in some countries, the effects of HIV/AIIDS."[133]

The burden of chronic diseases is increasing worldwide and is not limited to the developed regions of the world. Contrary to widely held beliefs, developing countries are increasingly suffering from high levels of public health problems related to chronic diseases.[134]

While life expectancy is increasing across most of the world, there is also a growing health burden from chronic illnesses such as obesity, diabetes, and cardiac disease and from deleterious changes in diet and exercise. This is a double burden for countries that are also addressing issues such as malnutrition among the urban poor. The double burden of disease is most effectively addressed by a range of integrated policies and programs. Such an integrated approach is the key to action in countries where modest public health budgets will inevitably remain mostly devoted to prevention of nutritional deficiency and infection. The prevalence of cardiovascular diseases is now greater in India and China than in all the economically developed countries combined.[135]

During the 20 years since HIV/AIDS was identified as a disease, the pandemic has emerged as one of the leading causes of adult mortality in many countries, particularly in the less developed regions of the world.

Decreases in communicable diseases and the rapid aging of the population have created a mismatch between health problems and health care. Patients, health care workers, and, most importantly, decision makers must recognize that effective care for chronic conditions requires a different kind of health care system. The most prevalent health problems such as diabetes, asthma, heart disease, and depression require extended and regular health care contact.[136]

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[133] Nabalamba, A. and Chikoko, Mulle. 2011. *Aging Population Challenges in Africa.* AfDB Chief Economist Complex 1(1). November. Available: http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Aging%20Population%20Challenges%20in%20Africa-distribution.pdf.

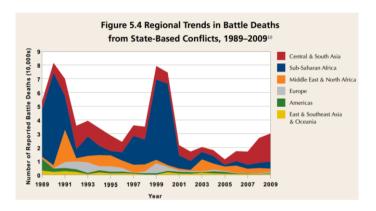[134] http://www.who.int/nutrition/topics/2_background/en/index.html

[135] WHO. 2009. *Innovative Care for Chronic Conditions*. Available at: http://www.who.int/chp/knowledge/publications/icccreport/en/.

[136] Ibid.

Nature of conflict

"I fear that if the exploitation of urban slum dwellers goes unchecked, it could end in a revolution. As people become more educated and have greater access to information like in Egypt, they will see that people elsewhere have different lives, different opportunities. They will get fed up."

The number of on-going global conflicts peaked at the end of Cold War and declined steadily until 2002. Nearly all of these were intrastate conflicts such as civil war, insurgency, and militia battles.[137] Now there is increasing participation of non-state actors such as terrorist groups, corporate mercenaries, militias, cartels, and an increase in networked warfare from both a technological perspective (e.g., cyber war, remote drones, development of robot soldiers) and an organizational one (e.g., self-directing and loosely connected distributed cells of fighters/hackers).

The geographic locale of conflict has also shifted. From 1950 to1970, most of the world's battle deaths were in East and Southeast Asia and Oceania. In the 1980s, the Middle East and North Africa was the most violent region; in the 1990s, it was Sub-Saharan Africa. By the turn of the millennium, Central and South Asia and the Middle East and North Africa had become the world's deadliest regions. Most recently, the deadliest conflicts in the world are concentrated in these two regions, notably the wars in Afghanistan, Pakistan, and Iraq (see figure below).[138]

Figure 5.4 Regional Trends in Battle Deaths from State-Based Conflicts, 1989–2009[10]

Urban areas both concentrate and amplify the impacts of change and can increase vulnerability during elections or legislative change, economic shocks, or natural disasters. Most are at risk from armed conflicts and political violence within their communities and countries of origin (e.g., civilians in conflict, refugees, asylum-seekers, refugees in protracted displacement, and internally displaced people).[139]

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[137] http://www.regjeringen.no/nb/dep/ud/kampanjer/refleks/innspill/engasjement/prio.html?id=492941

[138] http://hsrgroup.org/docs/Publications/HSR2012/HSRP2012_Chapterpercent205.pdf

New exchange systems

"There will be a revival of the communities we have lost…the bonds, the ties, the localness, the working together…we'll see a return to old structures, and the re-emergence of non-monetary means of exchange to get things done…[we will see] a healthier ecosystem."
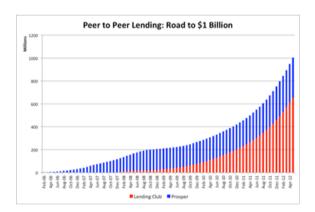
"There's a groundswell of anger about capitalism, big business, and banking."

"As governments start to become hampered and lack necessary resources or as they become affected by austerity measures, you start seeing non-governmental, non-state institutions picking up where government leaves off. In urban Nigeria, it's the entire economy of a community, transit, provision of water, building houses – an alternate institution arises wrapped around basic material needs and it is occurring outside the state.
That is a critical shift."

New technologies are making it much easier to innovate methods of exchange and payment. As of 2012, 1.7 billion people owned a mobile phone, but did not have a formal bank account.[140] With more than 300 million unbanked individuals were expected to use some form of mobile money from 2009-2012, how money is exchanged is rapidly changing.[141]

At the same time, the ongoing financial crisis is leading to a greater willingness to take a critical look at the current finance system and to experiment with other systems. Time banks facilitate the exchange of services without the need for money and have been used to provide social care (e.g., the Fureai Kippu system in Japan for care of the elderly). Peer-to-peer lending is currently on an exponential growth trend, as shown by the figure below.[142] Platforms such as Zopa and Prosper, are becoming increasingly popular with more than 100% growth per year.[143]

Innovation: Brazil offers new exchange system to address waste
Curitiba in Brazil tackled its garbage problem through the use of a complementary currency. Bus tickets were offered in exchange for correct rubbish disposal and food tokens for recycling paper.[144]

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[140] http://www3.weforum.org/docs/WEF_IT_ScalingICT_Report_2010.pdf
[141] Ibid.
[142] http http://www3.weforum.org/docs/WEF_IT_ScalingICT_Report_2010.pdf://techcrunch.com/2012/05/29/peer-to-peer-lending-crosses-1-billion-in-loans-issued/
[143] http://techcrunch.com/2012/05/29/peer-to-peer-lending-crosses-1-billion-in-loans-issued/
[144] http://www.lietaer.com/2010/09/the-story-of-curitiba-in-brazil/

Climate change

*"The future battle against climate change is likely to be
largely won or lost in Asian cities, which are expected to contribute over half the
greenhouse gases over the next 20 years."[145]*

*"Extreme heat is also a concern. In some cities, the temperature can already reach the upper
forties Celsius. For many people this simply means two, three, or four hours out of the day
when they can't work. People start work earlier and finish later, but this doesn't compensate
fully for the lost time."*

Climate change threatens to increase vulnerabilities and hinder social and economic development in developing countries. Those that live and work in informal settlements will bear the brunt of climate change effects because they are more exposed to hazards.

The Intergovernmental Panel on Climate Change (IPCC)'s mid-range estimate for the next twenty years is an average global warming of 0.2ºC per decade, equating to a potential total increase of over 1.3ºC by 2040.[146] Climate change is already causing 300,000 deaths and $125 billion of economic losses per year; nearly 98% of the people seriously affected are in the Global South.[147]

There are several interconnected factors of climate change to consider:

Non-linear impacts. As global warming approaches and exceeds 2°C, there is a risk of triggering nonlinear tipping points. For example, the West Antarctic ice sheet could lead to more rapid sea-level rise, or large-scale Amazon dieback, which in turn could result in a cascade of impacts across ecosystems, agriculture yields, energy production, and ultimately individual livelihoods. Moreover, many of these factors are interconnected with systemic feedback loops that will trigger additional tipping points. Rather than establishing a 'new normal' the climate change era is one of increasing uncertainty and instability.

Extreme weather events. Extreme weather events associated with climate change pose particular challenges to cities. Populations in both developed and developing countries are increasingly located in coastal areas, slopes, ravines and other risk-prone regions.[148] These disruptions can lead to the disruption of settlements by flood and high winds, disruption of public water supply, significant loss of human life, injuries; loss of, and damage to property and migration.[149]

Drought and water scarcity. Water quality and quantity may be reduced by expected increases in droughts, especially from sources (for example, snowpack) outside of city borders, with a plethora of consequences from threatened drinking water supply to reduced agricultural production that in turn affect urban food security.

Ocean acidification. A World Bank report warns that by the time the warming levels reach 1.4°C in 2030s, coral reefs may stop growing. Acidification occurs when CO_2 is absorbed by the oceans, and then dissolve to form carbonic acid. In turn, ocean waters become more acidic. This increasingly acidic environment can threaten marine ecosystems; global fish supply may be affected.

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[145] UN HABITAT. 2012. Sustainable Urban Energy: A Sourcebook for Asia. Kenya.
[146] IPCC. 2007. Fourth Assessment Report. Available at: http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html.
[147] Global Humanitarian Forum. 2009. *Human Impact Report – Climate Change: Anatomy of a Silent Crisis.*
[148] IPCC. 2012. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK, and New York, NY, USA.
[149] Ibid.

"Our houses are built in low areas. We have no shelter when the flood starts.
The house owners do not help us drain water from our homes.
Once water has gone, the real disaster has just begun. That is diseases."[150]

Sea level rise. Cities in low-elevation coastal zones face the combined threat of sea-level rise and storm surges. The IPCC's projected rise in sea level of between 18 and 59 centimeters by the end of this century will stress some of the largest and fastest-growing cities, located on coastlines of developing countries. In coastal North African cities, a 1 to 2ºC increase in temperature could lead to sea level rise exposing 6 to 25 million residents to flooding. By 2070, almost all cities in the highest flooding risk category will be located in developing countries (particularly in China, India, and Thailand).[151] Today, around 40 million people live in a 100-year floodplain. By 2070, the population living at this risk level could rise to 150 million people.[152]

Increased energy demand. Energy transmission and distribution may be overstressed because of increased incidence or duration of summer heat waves and energy demand for cooling, resulting in intermittent supply and rolling brown outs.

Environmental migration. As many as 200 million people are expected to be displaced by climate change by 2050. People are not simply migrating *from* areas with increased environmental risk due to climate change, they are also migrating *to* places with increased environmental risk. . By 2060, there may be between 114 and 192 million additional people living in floodplains in urban areas in Africa and Asia compared to 2000. When environmental changes threaten livelihoods, people tend to migrate, even if it's to higher risk locations. Environmental change will also alter populations' exposure to natural hazards.

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[150] UN-HABITAT. 2004. Local Leadership for Climate Change Action. Available:
http://www.unhabitat.org/downloads/docs/11463_1_594564.pdf.
[151] http://www.unhabitat.org/downloads/docs/E_Risky_Cities.pdf
[152] Ibid.

Resource scarcity

"Recent years have seen an increase in concern over whether rising demand for natural resources such as food, water, land and oil will increasingly begin to hit limits to supply growth and thus trigger an intensifying zero-sum competition or increased violent conflict over scarce resources."

Even without the compounding effects of climate change, scarcity of land, food, water, and oil will be an increasing driver of change between now and 2040.

Humanity currently uses resources at a rate 50% faster than they can be regenerated by nature.[153] By 2030, we will need more than two planets to meet resource demand, compared to half a planet's worth in the 1960s.[154] Today, 80% of countries use more bio-capacity (i.e., cropland, fisheries, forests, etc.) than is available within their borders.[155]

Dependence on complex global supply chains for resources is likely to increase the risk of systemic failures. Demand for rare earth elements increased six-fold from 2009 to 2010, with China supplying 95% of global demand.[156] Key resources such as phosphorous for fertilizers, various metals, rare earth minerals for electronics and other technologies, and topsoil, timber, and fish are subject to increasing demand despite finite limits on supply. This will affect a wide range of sectors from agriculture to electronics, the implications of which could mean technological solutions may no longer be viable options.[157]

There is a range of evidence for the argument that scarcity can increase the risk of violent conflict, including quantitative studies that suggest population size and density are significant conflict risk factors. Countries that are highly dependent on natural resources – as well as those experiencing high rates of deforestation and soil degradation or low per capita availability of arable land and freshwater – have higher than average risks of conflict.[158]

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[153] WWF Living Planet Report 2012. Available at:
http://awsassets.panda.org/downloads/lpr_2012_summary_booklet_final_120505__2_.pdf
[154] Ibid.
[155] Global Footprint Network quoted from http://www.independent.co.uk/environment/mankind-using-earths-resources-faster-than-replenished-1827047.html
[156]World Economic Forum. 2012. The Future of Manufacturing Opportunities to Drive Economic Growth. Available at:
http://www.deloitte.com/assets/Dcom-BruneiDarussalam/Local%20Assets/Documents/The-Future-Manufacturing.pdf.
[157] Evans, Alex. 2010. *World Development Report 2011 Background Paper: Resources Scarcity, Climate Change and the Risk of Violent Conflict.* New York. Available: http://siteresources.worldbank.org/EXTWDR2011/Resources/6406082-1283882418764/WDR_Background_Paper_Evans.pdf.
[158] Ibid.

Water scarcity

"The vicious circle of urbanization and resource depletion is prompting the design of virtual circles: closed-loop systems. Such systems treat wastewater, and beneficially reuse the reclaimed water."[159]

Demand for water is projected to outstrip supply by 40% by 2030.[160]

Current rates of water extraction from rivers, groundwater, and other sources are already unsustainable in many parts of the world. Approximately 1.2 billion people live in water basins with limited water resources; by 2025, the figure is projected to rise 50% to 1.8 billion, with up to two-thirds of the world's population living in water-stressed conditions (mainly in non-OECD countries)[161]. In cities where rainfall is low, drought will most likely be further accentuated by climate change.

Water is a limiting factor to food production in the developing world, where one liter of water equates to approximately one calorie of food energy.[162] The effects of drought are widespread but especially impacts cities through drinking water shortages and increased food prices. Crop yields in Central and South Asia could drop by 50% between now and 2050 due to water scarcity.[163]

While water scarcity will generally be a regional than a global issue, the concept of "embedded" or "virtual" water in crops that are then traded internationally means that water is, essentially, also traded (1 kg of wheat effectively "contains" the 900 liters of water required to produce it, for example).[164]

Innovation: Renting rooftops to reclaim rainwater

Aakash Ganga (AG) or "River from Sky" is a rainwater harvesting system currently installed in six drought-prone villages in Rajasthan, the driest state in India. The AG system rents rooftops from homeowners and channels the rooftop rainwater through gutters and pipes ta network of underground storage reservoirs.[165]

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[159] Brown, P. 2009. *The changing face of urban water management*. Water 21 (Issue 11.1). February. Available at: http://www.iwaponline.com/w21/01101/w21011010028.htm.

[160] https://www.cdproject.net/CDPResults/CDP-Water-Disclosure-Global-Report-2011.pdf

[161] IWMI. 2007. *Comprehensive Assessment of Water Management in Agriculture. Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture*. London: Earthscan, and Colombo: International Water Management Institute.

[162] http://www.un.org/esa/sustdev/csd/csd16/LC/presentations/dillaha.pdf

[163] http://www.un.org/waterforlifedecade/food_security.shtml

[164] Evans, Alex. 2010. *World Development Report 2011 Background Paper: Resources Scarcity, Climate Change and the Risk of Violent Conflict*. New York. Available: http://siteresources.worldbank.org/EXTWDR2011/Resources/6406082-1283882418764/WDR_Background_Paper_Evans.pdf.

[165] http://newsletters.clearsignals.org/Intellecap_May2010.pdf#pg=9

Economic shifts

"The Philippines and Peru are among emerging economies that would become much more prominent in the next few decades, helped by demographics and rising education standards…the Philippines is set to leapfrog 27 places to become the 16th largest economy by 2050."[166]

"Street vendors are becoming middle class; they are not just the poor anymore."

"The emergence of a broader urban economic and professional middle class is more able to hold the state accountable for delivering basic public goods (security, urban infrastructure urban property rights)."[167]

During the early 1950s, the world economy was divided between industrialized countries in the North and developing countries in the South. Developed countries (excluding Japan) at that time accounted for 90% of world manufacturing output and 90% of world exports of manufactured goods.[168] A broad shift in economic activity has taken place during the last two decades from developed to developing countries due, in part, to technological changes that have reduced the costs of communication and transportation and a reduction of trade barriers.[169]

North to south. Economic growth is moving to emerging economies, with Brazil, Russia, India, and China already accounting for 20% of global GDP[170] and expected to grow rapidly in the coming decades. The OECD has predicted that China's GDP will rise above the U.S.'s as early as 2016.[171] According to PricewaterhouseCoopers, India's GDP will outsize the U.S. by 2050.[172] In 2009, China surpassed the U.S. as Africa's largest trading partner. Developing countries now account for around 37% of global trade, with South-South flows making up about half of that total.

Growing middle class. In 2009, the middle class included 1.8 billion people, with Europe (664 million), Asia (525 million), and North America (338 million) accounting for the highest number of people belonging to this group. Even in Africa, where the middle class's growth has not been very robust, it has nonetheless been noticeable and contributed to increased domestic consumption in many countries. Sales of refrigerators, television sets, mobile phones, motors, and automobiles have surged in virtually every African country in recent years. Possession of cars and motorcycles in Ghana, for example, has increased by 81% since 2006.[173]

If this expansion continues, the size of the "global middle class" will increase to 4.9 billion by 2030. The bulk of this growth will come from Asia: by 2030 Asia will represent 66% of the global middle-class population and 59% of middle-class consumption, compared to 28% and 23%, respectively, in 2009.[174]

The middle class not only drives increased consumption and domestic demand – its social role remains equally important. Middle classes are believed to support democracy and progressive, but moderate, political platforms. Strong middle classes can be more active participation in the political process, expressing support for political programs and electoral platforms that promote inclusive growth, in particular.

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[166] http://business.inquirer.net/39327/philippines-seen-among-top-20-economies-in-next-4-decades
[167] OECD. 2007. *Governance and Accountability – How do the formal and informal interplay and change?* Available at: http://www.oecd.org/development/governanceanddevelopment/37790183.pdf.
[168] Ahearn, R. 2011. *Rising Economic Powers and the Global Economy: Trends and Issues for Congress*
[169] Ibid.
[170] http://articles.economictimes.indiatimes.com/2012-07-04/news/32537351_1_bric-stock-markets-bric-nations-msci-bric-index
[171] http://www.oecd.org/newsroom/balanceofeconomicpowerwillshiftdramaticallyoverthenext50yearssaysoecd.htm
[172] http://www.pwc.com/gx/en/world-2050/pdf/world2050emergingeconomies.pdf
[173] http://www.oecdobserver.org/news/fullstory.php/aid/3681/An_emerging_middle_class.html
[174] Ibid.

New energy technologies

*"One point is certain. The center of gravity of global energy demand growth
now lies in the developing world, especially in China and India, but uncertainties abound.[175]"*

Cities in developing countries require a rapid increase in energy production and consumption to achieve economic development and alleviate poverty.

By 2035, the U.S. Energy Information Administration expects world energy consumption to more than double, to roughly 770 quadrillion Btu (from a 1990 baseline), and outpace the increase in population over the same time period.[176]

Although natural gas is mitigating the risks of energy insecurity, there is uncertainty over its future price. Oil price is anticipated to increase as much as $240/barrel from 2020 onwards – increasing costs of energy, heating, and transport. The energy landscape could be radically changed by inexpensive solar energy. Bloomberg analysts show that prices of solar panels fell by 50% in 2011 and are now just one-quarter of what they were in 2008, making them a cost-effective option for many people in developing countries.[177]

One of the more obvious opportunities for cities in developing countries is that of "leapfrogging" – or to skip inferior, greater polluting technologies and industries and move directly to more advanced ones. Developing countries have the opportunity to not repeat the mistakes of highly industrialized countries of relying on fossil fuels, but can "jump" directly to renewable energy sources and more efficient technologies.

Urban cities will have enormous energy pressures to meet the demands of increased urbanization and natural population growth while at the same time needing to reduce their carbon emissions. Meeting the demand will most likely be a hybrid solution of municipal energy supply and localized distributed energy solutions. Appropriate financing schemes that allow the poor to overcome the high up-front costs of cleaner distributed energy devices and appliances will become increasingly important.[178]

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[175] UN-HABITAT. 2012. *Sustainable Urban Energy: A Sourcebook for Asia*. Kenya.
[176] World Economic Forum. 2012. The Future of Manufacturing Opportunities to Drive Economic Growth. Available at:
http://www.deloitte.com/assets/Dcom-BruneiDarussalam/Local%20Assets/Documents/The-Future-Manufacturing.pdf.
[177] http://www.newscientist.com/article/mg21328505.000-indias-panel-price-crash-could-spark-solar-revolution.html?DCMP=OTC-rss&nsref=environment
[178] http://www.unhabitat.org/content.asp?cid=2884&catid=356&typeid=24&subMenuId=0

Connectivity

"Instead of relying on physical space to sell things, informal people will be able to get into digital space which is currently more occupied by the elite. Barriers to entry are lowering and the marginal costs of providing goods are lower in digital space."
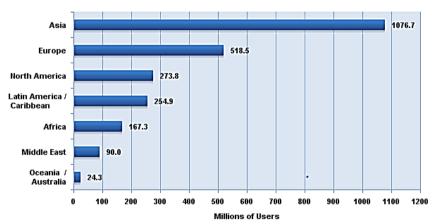
"There is hype about the impact of mobile and internet connectivity. The internet doesn't give you a vote, you can't eat it. Its transformative potential is exaggerated. People may theoretically have access to more information, but the power structures that mean some people can access useful information more effectively than others remains a challenge"

The connectivity gap, or access to information and communication technologies via mobile phone technologies is closing at a rate of approximately two million new subscriptions per day.[179]

Three-quarters of the world's population now has access to a mobile phone and there are more than 6 billion mobile phone subscriptions, 5 billion of which are from subscribers in developing countries.[180] Asia represents the greatest number of internet users with 1,076.7 million users (see figure below). Access to mobile phone technologies can contribute to urban economic development and job growth. It is estimated that every 10% increase in the market penetration of mobile phones boosts GDP growth by 6%. Another estimate suggests that for every 10% increase in broadband internet service penetration in a particular area, employment would increase 2 to 3 percentage points per year.[181]

Access to the internet and mobile services, however, remains a challenge for some urban poor. Reliable access to the electrical grid and, in some cases, the reliability of the grid itself remains a challenge. For mobile network operators serving off-grid geographies, the operational complexities and costs can be significant. Keeping base station diesel generators secured and regularly fueled is not easy. Off-grid base stations can have an unpredictable cost structure driven mostly by fluctuating fuel prices.

World internet users by region

Source: Internet World Stats - www.internetworldstats.com/stats.htm
2,405,518,376 Internet users estimated for June 30, 2012
Copyright © 2012, Miniwatts Marketing Group

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[179] World Economic Forum. 2012. *Scaling Opportunity: Information and Communications Technology for Social Inclusion*. Geneva.
[180] The World Bank. 2012. *Information and Communications for Development 2012: Maximizing Mobile*. Available at:
http://www.worldbank.org/en/news/2012/07/17/mobile-phone-access-reaches-three-quarters-planets-population.
[181] Relhan. G. , Kremena Ionkova, K., Rumana Huque. 2010. *Good Urban Governance through ICT: Issues, Analysis, and Strategies*. The World Bank. Available at: http://siteresources.worldbank.org/INTAFRICA/Resources/ICT_Urban_Governance_Final_pub.pdf

The following are a variety of examples in which information communication technology (ICT) can be leveraged to extend the reach and quality of public services:

Financial services. Mobile phone platforms are being used to provide basic financial services that can target subsidies or cash payments from local governments to citizens more efficiently, provide transparency, and financial education services.

Health services. Healthcare professionals are currently using ICT to manage their resources and to improve and scale low-cost health services to patients (e.g. appointment or immunization reminders).

Governance. ICT can play a significant role in improving city governance by creating a platform for public participation, simplifying information flows and increasing transparency.[182] Because mobile phones enable anonymity of users, ICT can also eliminate barriers to entry for more citizens.

Mapping. ICT, and in particular GPS, is also a means for local governments to map land use to identify and evaluate resources for urban agriculture, evaluate low-income housing zones for the urban poor, or determine urban climate hazard risks.

Citizen monitoring and self-organizing. Individuals and communities can harness ICT to monitor environmental and human rights issues.[183] Connected citizens can provide feedback or register their grievances more quickly, leading to improved accountability mechanisms and enhanced service quality.

Education. ICT provides greater access educational and training opportunities.

Innovation: Crowd sourcing the monitoring of municipal services
The Municipal Corporation of Delhi now uses SMS and Facebook to enable public monitoring of garbage collection sites and public toilets.[184] As access to the internet increases in the Global South, there is greater opportunity for networked solutions to emerge for local problems from local residents.

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[182] Relhan. G. , Kremena Ionkova, K., Rumana Huque. 2010. *Good Urban Governance through ICT: Issues, Analysis, and Strategies*. The World Bank. Available at: http://siteresources.worldbank.org/INTAFRICA/Resources/ICT_Urban_Governance_Final_pub.pdf
[183] Ibid.
[184] http://newsletters.clearsignals.org/Intellecap_May2011.pdf#page=16

Distributed manufacturing

"Decentralization might be positive for the informal city."

"Impact of technological changes – has allowed companies to reorganize production and produce components and package in different places to help competitive advantage [possibly because of]…the way laws are implemented. For example, in the garment sector, the cost of labor has been low in Bangladesh and shipping easy, but over time, as the standard of living has increased, labor costs have gone up and now it's cheaper in Laos, Cambodia, etc. This will likely continue changing as levels of production cost change."

Decentralized manufacturing reorganizes work by forming more flexible and specialized production units, some of which remain unregistered and informal. The manufacturing sector, in particular, provides links between the informal and formal enterprises.[185] These relationships are not likely to be regulated, although this can differ case-by-case.

In 2012, three-dimensional (3D) printing moved out of the lab and into the home. In the future, we could be printing everything from shower heads to homes, cars, computers – even skin. The aptly named 3D printers can manufacture complex physical objects by printing them in layers using material instead of ink. Even though currently this is predominantly a technology for the most affluent parts of the world, workshops in the Global South are already starting to use this technology for local fabrication. This is a potentially transformative technology that could re-localize manufacturing and have a significant impact on the consumer economy and informal workers.

In the medium term, distributed manufacturing could also reduce the trade of simple manufactured goods. Some people anticipate cheap manufacturing to shift from China to Africa and India where there will be a surplus of cheap labor. However, if distributed manufacturing happens, this option for development may not occur.

Innovation: Local residents and MIT engineers working together on local solutions
The "Fab Lab" program started in the early 2000s at the Massachusetts Institute of Technology (MIT)'s Center for Bits and Atoms as a global outreach project to democratize high-tech fabrication. There are now about 50 digital fabrication workshops ("Fab Labs'") around the world including Kenya, India, Afghanistan, Peru, Manchester, and Norway, and the network is growing. Each Fab Lab is run on open access principles, containing $50,000 of sophisticated computer-controlled equipment. They are used by local residents to create wide-ranging projects from solar and wind-powered turbines, thin-client computers, wireless data networks and analytical instrumentation for agriculture, healthcare, and custom housing.[186,187]

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[185] Chen, Martha A. 2007. *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment*. DESA Working Paper No. 46. July.
[186] https://sites.google.com/site/fablablinks/the-network
[187] http://fab.cba.mit.edu/about/faq/

Education

"In Nairobi, they have pretty high quality education, they have a lot of access to information, and to a significant degree they have middle class attitudes – higher aspirations for their children, for productive work, for investing in the future, and for an aspiration to be part of mainstream society. The social gap is narrowing."

"People have many more tools already to make their lives better in the future."

The growth of the internet and the falling cost of information and communication technology equipment like laptops and tablets are democratizing access to educational services.

Learning opportunities are no longer limited to the classroom or even to national boundaries. Online courses are available to individuals most anywhere in the world. When a course in artificial intelligence at Stanford University was offered online for the first time, more than 60,000 students representing every country in the world (excluding North Korea) registered; 2,300 graduated, and all of the 400 the students that graduated with top marks completed the course entirely online.[188]

Together with the World Bank, the government of South Korea is exploring how to support the effective and relevant use of educational technology platforms in developing countries at the national scale.[189] In 2011, South Korea made a bold plan to eliminate all paper bound textbooks from its school system and move toward all digital textbooks in all subjects by 2015.

However, for many, access to ICT-enabled learning is a challenge. The digital divide isn't as much about access to technology as it is access to consistent and inexpensive electricity. In Pakistan, a team of educational technologists is developing infrastructure technology to deliver language and vocabulary quizzes via SMS.[190] While still relatively limited, technology is advancing quickly – just as the cellphone may have leapfrogged landline technology in the telecommunications industry, it is likely mobile devices with internet access could surpass computers as the preferred technology tool for teaching.[191]

Innovations in educational technology may lower the barriers of entry for those within urban settlements to access educational opportunities. Access to education can help them gain more secure employment and disrupt cycles of intergenerational poverty. In turn, an educated and skilled workforce can contribute to economic growth and prosperity. As the globalized economy becomes increasingly dependent on knowledge-based industries, low cost methods of delivering education that can be easily scaled quickly will become essential to economic development.

Innovation: Self-taught school age students hack an Android

One Laptop Per Child has recently evaluated a self-teaching experiment it is running in Ethiopia, where illiterate school-age children have been given access to tablets pre-loaded with learning apps. Within four minutes of the laptops arrival, one child opened the box, found the on-off switch, and powered it up. Within five days, they were using 47 apps per child, per day. Within two weeks, they were singing A-B-C songs. Within five months, the children had hacked an Android phone.[192]

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[188] http://www.guardian.co.uk/education/2012/nov/11/online-free-learning-end-of-university
[189] Trucano, Michael. 2012. *Separating the Hope from the Hype: More perspectives on the use of information and communication technologies (ICTs) to benefit education in developing countries.* Excerpts from the World Bank's EduTech blog. Washington, DC: The World Bank. Available at: http://www.worldbank.org/education/ict
[190] http://blogs.worldbank.org/edutech/sms-education-pakistan
[191] http://blogs.worldbank.org/edutech/10-global-trends-in-ict-and-education
[192] http://www.technologyreview.com/news/506466/given-tablets-but-no-teachers-ethiopian-children-teach-themselves/

Appendix A: Global city competitiveness

Benchmarking Global City Competitiveness - Top 120 Cities

Source: The Economist Intelligence Unit, 2012
View the full report at: http://www.citigroup.com/citi/citiforcities/pdfs/hotspots.pdf

categories*	overall score	economic strength	physical capital	financial maturity	institutional effectiveness	social and cultural character	human capital	environmental and natural hazards	global appeal
Accra**	--	--	--	--	--	--	--	--	--
Bangkok	61/49.1	61/49	73/66.0	33/50	69./54.	56/67.5	42/66.7	59/66.7	38/16.6
Chennai	105/38.1	70/34.2	109/49.1	93/16.7	78/50.1	98/30.8	89/58	72/62.5	88/3.5
Lima	77/68.1	82/42.5	78/66.1	93/16.7	90/45.2	66/58.3	65/64.2	112/37.5	--
Manila	85/43.2	72/34	90/61.6	33/50	89/45.6	60/65.8	97/56.6	94/54.2	76/5.4
Nairobi	115/34.6	120/23.3	115/44.6	68/33.3	115/31.2	103/28.3	50/65	72/62.5	64/8.3

*Categories are ranked numerically as follows:
Ranking out of 120 (1 being the highest) / Score from 1-100 (100 being the highest)
**Did not rank in the top 120.

Appendix B: List of people interviewed

Reference group

1. Isher Judge Ahluwalia – Indian Council for Research on International Economic Relations (ICRIER)
2. Martha Chen – Women in Informal Employment: Globalizing and Organizing (WIEGO)
3. Elizabeth Deakin – University of California at Berkeley, Department of City and Regional Planner
4. Sonia Fadrigo – Slum Dwellers International (SDI)
5. Nicky Gavron – former Deputy Mayor of London; C40 Cities Climate Leadership Group
6. Abha Joshi-Ghani – The World Bank
7. Kodjo Mensah-Abrampa *[on behalf of Geraldine J Fraser-Moleketi]* – United Nations Development Programme (UNDP)
8. Rose Molokoane – SDI
9. James Mwangi – Dalberg Development Advisors
10. Robert Neuwirth – Author, *Shadow Cities*
11. Susan Parnell – African Centre for Cities
12. Apiwat Ratanawaraha – Chulalongkorn University
13. Sally Roever – WIEGO
14. Sudhir Venkatesh – Author, *Off the Books: The Underground Economy of the Urban Poor*

Other experts

15. Claudio Acioly – UN-HABITAT
16. Clarissa Augustinus – UN-HABITAT
17. Ken Banks – Frontline SMS
18. Andrew Blau – Global Business Network
19. Jason Colburn – University of California Berkeley, Department of City & Regional Planning
20. Celine d'Cruz – Slum Dwellers International (SDI)
21. Gordon Feller – Cisco
22. Richard Florida – The Creative Class
23. Keith Hart – Goldsmith's
24. Erik Hersman – Ushahidi
25. Leila Janah – Samasource
26. Enrique Peñalosa – former Mayor of Bogota, Colombia
27. David Satterthwaite – International Institute for Environment and Development (IIED)
28. Arbind Singh – Nidan & National Association of Street Vendors of India (NASVI)
29. Caroline Skinner – WIEGO
30. Amolo Ng'weno – Digital Divide Data Kenya

Appendix C: Contributing authors

James Goodman, Deputy Director of Systems Innovation & Head of Futures

Helen Clarkson, Director, Forum for the Future US

Jacob Park, Principal Sustainability Advisor

Ariel Muller, Principal Sustainability Advisor

Jessica Rosen, Sustainability Advisor

Joy Green, Strategic Advisor

Sarah Tulej, Sustainability Advisor

Alexa Schubert, Sustainability Advisor

Clare Martynski, Strategic Advisor

Aja Marsh, Project Assistant