

Rural–Urban Linkages: an urban perspective

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Rural–Urban Linkages: an urban perspective



I. INTRODUCTION

Secondary cities, their growth and relationship with the rural hinterland are of continued and renewed interest. Secondary cities (see Annex 1 for definitions) vary from a few hundred thousand to over five million in countries like China. This paper presents issues of rural-urban linkages from the perspective of secondary¹ provincial towns in developing and emerging economy countries. The paper highlights trends, influences and challenges affecting the relationship of these small and intermediary cities with their rural hinterlands. This will take into account the influence of the New Economic Geography.

Today, half of the world's population is living in cities. This has impacts for land conversion, use of natural resources, and the absorption of rural labor to cities. Economic development, livelihood, resource use, and environmental threads bind cities and rural areas together.² A growing inter-dependence of rural and urban dwellers on markets and resources they offer for each other, make rural-urban linkages the more important for economic development strategies, poverty reduction approaches and governance. As rural-urban linkages increase and intensify, new livelihood forms based on diversified income opportunities and mobility indicate changes and new opportunities for city dwellers and the populations of rural hinterlands. These new livelihood forms emerge through diversification and processing of agriculture products, new opportunities in manufacturing, and services (health, education, information and transport).

In an attempt to overcome the tradition of urban bias, traditional spatial development policies of the last two or three decades have tried to create better balances between cities and the countryside, usually giving high priority to agricultural development, assuming this could deal with rural poverty. Often the benefits of rural development programs have not reached the rural poor, and the need for rural-urban migration has remained. The literature shows that the old divide between a rural food producing population and an urban economy of manufacture and services, is not completely true anymore.³ There is a growing evidence of more urban agriculture, and non-agriculture enterprises and employment in rural and peri-urban areas. The growing linkages between cities and rural hinterland have been described as a growing urbanization of

¹This group of "secondary cities" includes also the smaller towns, below the 100,000 margin. As per existing definitions of "secondary cities" there exist no separate category of "tertiary" or very small cities.

²Tacoli, C. (ed.). 2006. *The Earthscan Reader in Rural-Urban Linkages*. Routledge Earthscan Readers Series. London.

³Tacoli, C. 1998. Beyond the Rural urban divide. *Environment and Urbanization*, Vol. 10, No. 1, Sage Publications. London April, pp. 3 – 4.

the country-side.⁴ There are more linkages than previously assumed, and the labels of "rural" and "urban" often do not work well anymore. Many urban producers rely on rural customers. The consequences of this close(r) interrelationship are that both the urban as well as the rural environments are affected by globalization and structural transformations of the world economy. Despite a large difference in development levels, the links between secondary cities/market towns and their rural hinterlands have become stronger and more accentuated. Key issues are migration and linkages of rural labor with urban areas. Many migrants, despite having succeeded in their transformation to urban labor, maintain close linkages to their village and ancestral family lands. Rural assets (land, cattle, and other property) can act as social safety net in times of urban instability.

What is described as "urban" varies from country to country. Households may live a "multi-spatial" life, with some members residing and working in rural areas, others in towns, engaging in non-farming activities in the countryside, or in urban agriculture. There are fewer sharp dividing lines. Flows of people, goods and wastes, and the related flow of information and money act as a linkage across space between cities and the countryside. One of the consequences of these strong interrelations is that both rural and urban areas are affected by the current economic transformations. The resulting social and economic impacts have been seen as opportunities, but also as a threat and danger of new impoverishment.⁵

This brief report was prepared based on existing literature that provides evidence-based, analytical answers to the following question: From the perspective of urban development this paper addresses six key intellectual and policy issues that relate to the relationship of urban centers with their rural hinterlands: (i) closer rural-urban linkages characterize the relationships of today; (ii) urban footprint on rural hinterland, (iii) labor markets; (iv) relevance of food markets for sustainability of cities, (v) climate change impacts on rural areas and cities, and (vi) urban planning responses to the impacts of urbanization. The focus of this report is "secondary cities", on small towns and medium-sized provincial cities, and not large cities (e.g., above 750,000 inhabitants) or urban agglomerations. Whilst size matters, the key criterion is urban centres that have a strong functional relationship with their rural hinterland.

II. OBJECTIVES AND METHODOLOGY

The overall objective of this study is the compilation of knowledge to affect public action that allows promoting development processes. The specific objective of this consultancy is to contribute information and analysis, from the perspective of urban development, on rural-urban linkages in developing and emerging economy countries. This paper highlights these issues, and provides examples (including references) and case materials (boxes) to illustrate the issues raised.

⁴Angel, S. et al. 2012. *Planet of Cities*. Cambridge, MA. Lincoln Institute of Land Policy.

⁵Tacoli, C. 1998. Rural-urban interactions: A guide to the literature. *Environment and Urbanization*. Vol. 10, No.1. pp. 147-166.

III. GROWTH OF CITIES

Inexorably, the world is becoming urban. By 2030, all developing regions, including Asia, Africa, and Latin America and the Caribbean, will have more people living in urban than rural areas. As per UN projections, virtually the whole of the world future population growth over the next 30 years, till 2050, will be concentrated in urban areas⁶, which can include very small towns to larger secondary cities. If current projections are of value, urban growth in developing countries has gradually slowed down, from the fast pace of 4.1% annually in the 1960s, to 2.5% by 2010; and is expected to fall to 1.8%, between 2015 - 2030.⁷ This urban growth is linked to the advances in economic growth. The tipping point of regions to become more than 50% urbanized is already around 2020 for the regions of Eastern and Southern Africa, Asia, and Central and Southern America. By 2050, the total urban population of developing countries will more than double from 2.5 billion to 5.3 billion. Between 1995-2005, the urban population of developing countries grew around 165,000 per day. The evolving picture has been labelled as "Planet of Cities".⁸⁹

The impact of an additional 2.6 billion people living in cities by 2050 will have massive repercussions for consumption of land, water and food, along with the need for infrastructure, housing and jobs. By 2050, major employment growth in Africa, Asia and LAC will happen in cities, except for a few countries (in Sub-Saharan Africa), and much of it will be informal.¹⁰ With rural population and employment opportunities in decline, and a stabilization of natural growth rates, the growth of urban areas will be primarily driven by rural-urban migration and internal growth.

The proportion of urban population living in cities will increase most in mega cities (see Annex), with an increase from 9.9% to 13.6%, between 2010 - 2025. However, the biggest absolute growth in population will be in the secondary cities of 1-5 million. These will grow by 460 million between 2010 and 2025, compared to 270 million growth of mega cities. Most of the world's urban population will continue to live in secondary cities their proportion as a percentage of the total urban population will fall till 2030.

⁶The definitions of "towns" (usually smaller than "cities") and "cities" differs from country to country. There are no global definitions. See also Annex 1.

⁷UN-Habitat. 2010. *State of the World's Cities 2010/2011. Bridging the Urban Divide*. Earthscan, London-Sterling, VA.

⁸Angel, S. et al. 2012. *Planet of Cities*. Cambridge, MA. Lincoln Institute of Land Policy.

⁹ Various United Nations sources have projected that the world population will reach 9 billion by 2100. However, new statistical research is pegging it at 11 billion: "The United Nations (UN) recently released population projections based on data until 2012 and a Bayesian probabilistic methodology. Analysis of these data reveals that, contrary to previous literature, the world population is unlikely to stop growing this century. There is an 80% probability that world population, now 7.2 billion people, will increase to between 9.6 billion and 12.3 billion in 2100. This uncertainty is much smaller than the range from the traditional UN high and low variants. Much of the increase is expected to happen in Africa, in part due to higher fertility rates and a recent slowdown in the pace of fertility decline. Also, the ratio of working-age people to older people is likely to decline substantially in all countries, even those that currently have young populations." World population stabilization unlikely this century, 18 September 2014. <http://www.sciencemag.org/content/346/6206/234>, see also: United Nations. 2014. *World Population Prospects: The 2012 Revisions*. New York. <http://esa.un.org/wpp/Documentation/publications.htm>

¹⁰UN-Habitat. 2010. *State of African Cities 2010. Governance, Inequality and Urban Land Markets*. UN-Habitat. Nairobi.

The annual population growth rate of smaller cities is predicted to fall globally from 1% to 0.5% annually by 2050.¹¹

Till 2050, there will be a significant global shift in the structure and hierarchy of cities. Most growth will be concentrated in less-developed regions. Asia's urban population is expected to increase by 1.4 billion; Africa's by 0.9 billion, and Latin America and the Caribbean by 0.2 billion (see [Annex 2](#)). The smaller cities will still house most of the world's urban population, but they will continue to lose urban growth share as people move to larger cities in search of better opportunities for work.¹² In Asia, it is the very large cities which will see major absolute growth, while in Sub-Saharan Africa it will be the larger medium-sized cities which will experience growth pressure. Asia is likely to experience the lion share in growth of secondary cities; more than 60% of the increase. In Africa (mainly Sub-Saharan Africa) growth pressure will fall proportionally on the development of secondary cities in the 0.5 to 1.0 and 1.0 to 5.0 million city sizes. An additional 27 cities of 1.0 to 5.0 million inhabitants are expected to emerge in Sub-Saharan Africa by 2015.

IV. ECONOMIC STATUS OF CITIES MATTERS MORE THAN SIZE

Population size remains a determining factor of a secondary city, but in the current age of globalization, trade, competition, and exchanges between cities matters more. Secondary cities in a country may have a population or economy representing a fraction (10-65%) of a country's capital city, but taken as a whole, secondary cities which are growing rapidly are contributing ever larger shares to the GDP.

V. POOR DATA ON SECONDARY CITIES

Available data and information on secondary cities is scarce when it comes to the local economy, land, finance, infrastructure and governance. World-wide there are more than 2,400 cities with populations of between 150,000 and 5 million which could be labelled as secondary cities (Figure 1).¹³ However, the majority of these are less than 1 million in size. More than 60% of these secondary cities are in developing countries, and they are facing many problems associated with rapid urbanization, poverty and employment.¹⁴ Many are struggling to retain or expand jobs and they have high levels of un(der)employment. Others do have problems of management of urbanization. Urbanization is an unstoppable trend as we develop into a "Planet of Cities". While a lot of work is being done about urbanization in general, much less is being published on secondary cities, despite the fact that some of these are among the fastest growing cities. More efforts are devoted to primary cities which are more competitive.

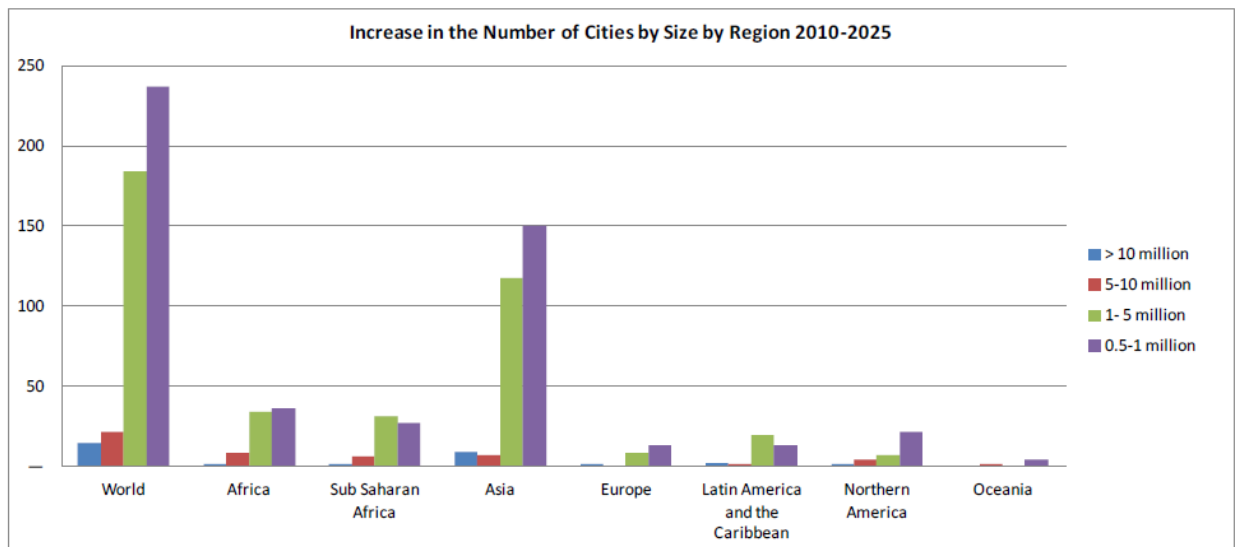
¹¹Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.

¹²Roberts B. 2014. *The Systems of Secondary Cities. Definition, Trends and Policy Responses in International Development*. Cities Alliance: Brussels.

¹³World Bank. 2009. World Development Report 2009. *Reshaping Economic Geography*. World Development Report. World Bank. P. 51.

¹⁴Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels (prepublication draft), April.

Figure 1. Increase in the number of cities by size by region 2010-2025



Source: UN Urban Prospectus 2012 (United Nations 2012)
Geographic Primacy and Dispersion of Cities

Cited in: Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.

VI. THE WORLD'S NEW GROWTH FRONTIER: MIDSIZED CITIES IN EMERGING MARKETS

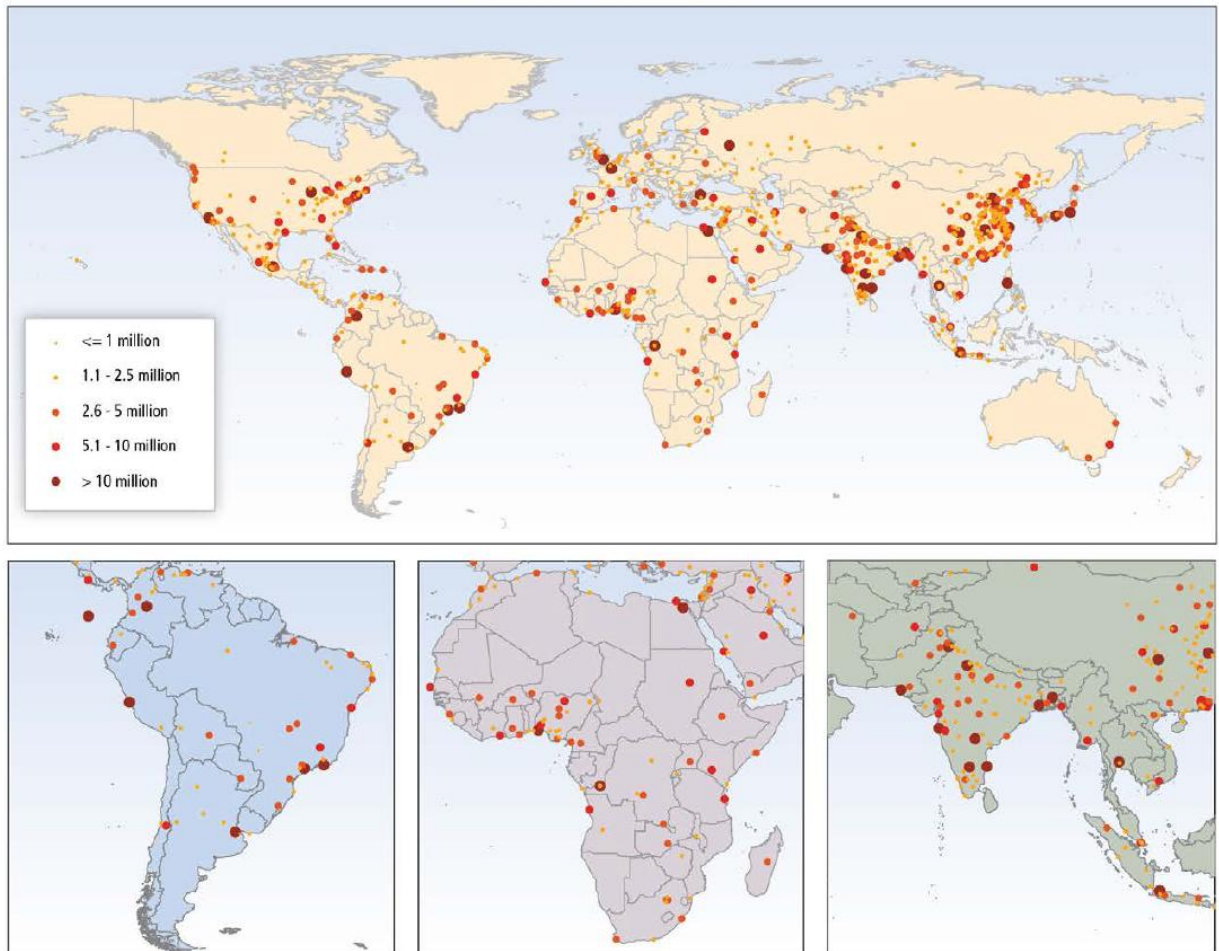
With about 70% of the world's population expected to live in cities by 2050 (with 40% in secondary cities), the fight for sustainable (urban) development may be won or lost in these cities. Hence, their development path and nature of growth is determined to become of key interest. It has been recently highlighted that midsized cities in emerging markets will be the world's new growth frontier.¹⁵¹⁶ Secondary towns will be part of this shift of the world's economic gravity (Figures 2 and 3), and secondary towns are key elements to unlock the potentials of new markets. As towns and cities are becoming increasingly interdependent and inter-linked none of these towns and cities are islands. Rather these towns and cities offer scope for cooperation and competition. This makes the study of secondary towns and their hinterland highly meaningful and relevant. The global urban population is growing by 65 million a year, and nearly 50% of the global GDP growth between 2010 and 2015 will come from 440 cities in emerging countries. These are cities like Tianjin (China), Porto Alegre (Brazil) and Kumasi (Ghana). In northern Taiwan, Hsinchu is already the fourth-largest advances electronics and high-

¹⁵ Dobbs, R., Remes, J. and Smidt, S. 2011. The World's new Growth Frontier: midsize cities in emerging markets. *McKinsey Quarterly*. March; and McKinsey Global Institute. 2011. *Urban World: mapping the economic power of cities*.

¹⁶ Notes: Examples from Dobbs et al 2011 include Huambo 325,000 pop and Chengdu 7.5m pop

tech hub of the China region. Santa Catarina in the south of Brazil also has become a hub for electronics and vehicle manufacturing, hosting large technology companies.¹⁷

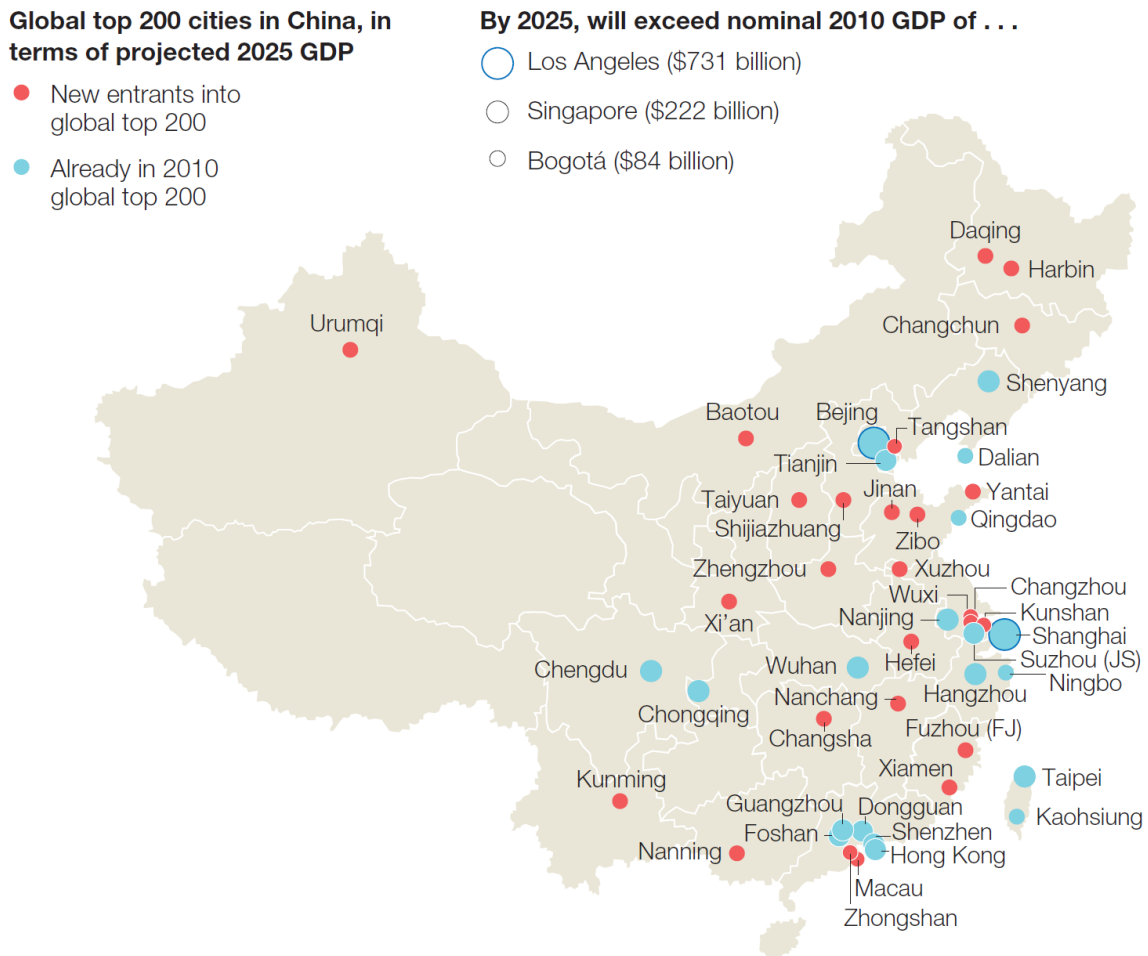
Figure 2. Location of Urban Agglomerations with 750.000 plus inhabitants projected for 2025



Source: Derived from United Nations statistics (2012). Quoted from: Intergovernmental Panel on Climate Change (IPCC). 2013. Urban Areas. Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability. <http://www.ipcc.ch/report/ar5/wq2/>

¹⁷Dobbs, R., Ramaswamy, S., Stephenson, E., Vignerie, S.P. 2014. Management intuition for the next 50 years. *McKinsey Quarterly*, September. http://www.mckinsey.com/Insights/Strategy/Management_intuition_for_the_next_50_years?cid=mkq50-eml-alt-mkq-mck-oth-1409

Figure 3. Previously unknown cities are becoming significant economic players in many emerging markets, particularly China



Source: McKinsey Global Institute analysis

Dobbs, R., Ramaswamy, S., Stephenson, E., Viguier, S.P. 2014. Management intuition for the next 50 years. *McKinsey Quarterly*.
http://www.mckinsey.com/insights/strategy/management_intuition_for_the_next_50_years

Urbanization is now recognized as a defining feature of the 21st century, turning the attention towards the quality and nature of new cities and communities around the world. According to World Bank estimates, the number of urban areas in developing countries will triple between 2011 and 2030.¹⁸ By 2025, 16 out of the world's 27

¹⁸ World Bank. 2009. *Systems of Cities – Harnessing urbanization for growth and poverty alleviation*. Washington 2009; UN-HABITAT. 2010. *State of Asian Cities 2010/2011*. UNESCAP and UN-HABITAT. Bangkok; also: S. Angel. 2011. *Making Room for a Planet of Cities*. Policy Focus Report. Lincoln Institute of Land Policy, Cambridge; and McKinsey Global Institute. 2011. *Urban World: Mapping the Economic Power of Cities*.
www.mckinsey.com/mgi/publications/urban_world/index.asp

megacities (cities with more than 10 million inhabitants) will be in Asia.¹⁹ With the urban population expected to grow from three to four billion over the next 15 to 20 years, cities are faced with the unprecedented challenge and opportunity to plan, develop, and manage an ecological, economically sustainable, and inclusive future.²⁰ Urban growth projections imply that cities will need to increase densities and grow at their periphery. However, countries like China and India will have to build hundreds of new cities to accommodate the bulk of new growth.²¹ By 2030, it is predicted that China will have an urban population of 1 billion people and 221 cities of more than 1 million. The way these cities are managed will affect efforts towards climate change mitigation and adaptation. In general, more urban centres, particularly in Asia, will achieve 'city' status²² and existing cities, especially secondary cities, will grow.

A distinctive feature of urbanization in Latin America is the rapid growth of secondary cities which are already home to nearly 40 percent of the region's urban population.²³ In Colombia, for instance, the growth of 20 intermediary cities is projected drive the growth of the country's economy, and their consumption growth is expected to grow as fast as in the bigger metropolitan areas, as evident in expected construction and quality of life.²⁴

In Africa there persists a vast diversity between North Africa and the Sub-Saharan regions. The latest data of the United Nations Population Division projects a doubling of the total African population, from 1 billion in 2010 to about 2 billion in 2040, and may surpass 3 billion in 2070. African population forecasts do not yet envisage a decline in growth. Projections indicate that in 2030 populations may exceed those of Europe, North and South America combined. But the continent is still vast and sparsely populated. Average densities will increase from 34 to 79 persons/sqkm during 2010-2050. The labor force is projected to reach 1.1 billion in 2040 by which time the continent is predicted to be 50% urbanized.²⁵

The majority of Africa's urban population, 75%, lives in intermediary and smaller cities, while only 25% have been absorbed by "million +" cities, as indicated by an earlier UN-

¹⁹ADB. 2011. *Asia 2050: Realizing the Asian Century*. Manila; UN HABITAT. 2010. *The State of Asian Cities 2010/2011*. UNESCAP, Bangkok.

²⁰ADB. 2008. *Managing Asian Cities*. Manila; Steinberg, F and Lindfield, M. 2011. *Inclusive Cities*. Urban Development Series. Asian Development Bank. Manila.

²¹McKinsey Global Institute. 2009. *Preparing for China's Urban Billion*. www.mckinsey.com/mgi; McKinsey Global Institute. 2010. *India's Urban Awakening: building Inclusive Cities, sustaining economic growth*.

²²'City Status' related to population size and is normally defined by local government laws of developing member economies. At the lowest threshold it is 20,000 people, for example New Zealand. In Vietnam it is 50,000. Economies also have different levels of cities, defined by a range of legislative instruments.

²³UN-Habitat. *State of Latin American and Caribbean Cities Report 2012: towards a new urban transition*. UN-Habitat. Rio de Janeiro. 2012.

²⁴20 ciudades intermedias que impulsarán el crecimiento del país. *El Tiempo*. Bogotá. 28 September 2014. <http://www.eltiempo.com/archivo/documento/CMS-14603216>

²⁵United Nations. 2014. *The State of African Cities 2014 – Re-imagining sustainable urban transitions*. UN-Habitat. Nairobi.

Habitat report.²⁶ Consequently, the need for improved urban management, institution building, and systems development is greatest in these intermediary and smaller cities. More than a quarter of the 100 fastest-growing cities in the world are in Africa. Their growth rates is only second to Asia's. By 20150, Africa's urban dwellers are projected to have increased from 400 million to 1.2 billion, with the urbanization level to reach 58% in 2050. The ability of African cities to cope with these numbers is questionable since they lack the infrastructure and institutional capacity to absorb additional urban dwellers. Thus, much of Africa's urban future seems to be informal settlements.²⁷

VII. SIX KEY MESSAGES ON URBAN PERSPECTIVES OF RURAL-URBAN LINKAGES:

1. Closer Rural-Urban linkages characterize the relationships of today

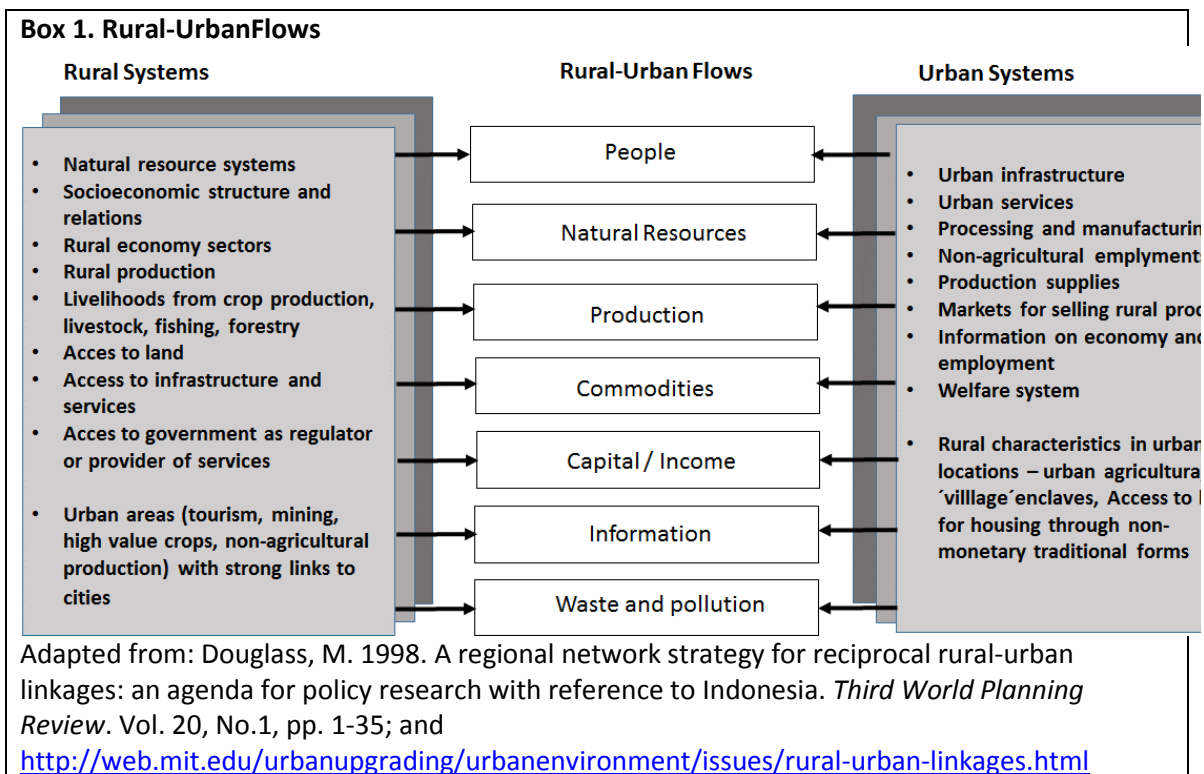
Key message and underlying issues: As indicated earlier, urbanization is irreversible and so is the urbanization of rural hinterlands. Today, rural hinterlands and urban areas are becoming more linked than ever. The nature of linkages has changed from a separation and dichotomy towards close linkages between the two spheres towards more integrated systems, a rural system and an urban system which are closely linked through the flow of people, production, commodities, capital and income, information, natural resources, waste and pollution.²⁸

This existence of reciprocal rural/urban linkages proves to be highly relevant to interpret development of both rural and urban contexts as two sides of the same coin, so to speak. In the following sections we will address some of these flows, under the headings of environmental footprints, labor markets, and production and markets of food. Cities should be seen as engines of rural development, providing markets and infrastructure, as well as a range of essential services, for the productivity of rural activities (Box 1).

²⁶UN-Habitat. 2010. *State of African Cities 2010. Governance, Inequality and Urban Land Markets*. UN-Habitat. Nairobi.

²⁷United Nations. 2014. *The State of African Cities 2014 – Re-imagining sustainable urban transitions*. UN-Habitat. Nairobi.

²⁸ Bah, M. CisÉ, S. Diyamett, B., Diallo, G., Lerise, F., Okali, D., Okpara, E., Olawoye, J., Tacoli, C. 2003. Changing Rural-urban linkages in Mali, Nigeria and Tanzania. *Environment and Urbanization*, Vol. 15.No.1. pp. 13-24. <http://eau.sagepub.com/content/15/1/13>; Lacabana, M. and Cariola, C. 2003. Globalization and metropolitan expansion: residential strategies and livelihoods in Caracas and its periphery. *Environment and Urbanization*, Vol. 15.No. 1. pp. 65-74. <http://eau.sagepub.com/content/15/1/65>; Kemetete, A.Y. 1998. Interlocking livelihoods: farm and small town in Zimbabwe. *Environment and Urbanization*, Vol. 10. No.1. pp. 23-34; Van den Berg, L.M. Van Wijk, M.S. and Pham van Hoi. 2003. The transformation of agriculture and rural life downstream of Hanoi. *Environment and Urbanization*, Vol. 15.No. 1. pp. 35-52. <http://eau.sagepub.com/content/15/1/35>



Recommendations to policy makers/development practitioners:

- Conceive rural (and peri-urban) areas as functionally important components of integrated development, supporting urban growth and sustainability. An example is the recent re-definition of “rural” in Colombia, based on a spatial approach that recognizes these interdependencies²⁹. In sub-urban areas of Lima, Peru much work has been done define water-shed areas and make these part of urban-regional planning, ensuring water and energy supply.³⁰ The Integrated Citarum Water Resource Management Investment Program in West Java, Indonesia assumed a similarly integrated perspective to water basin management and flood control in small towns of the larger geo-system covering the greater Jakarta region.³¹
- Plan for environmental, social, and economic integration of rural hinterlands with functionally important urban areas.
- Plan for more services and facilities in peri-urban and rural areas, with the perspective of balancing quality of life for rural residents.

2. Urban Foot Prints are increasing, and the complexities to mitigate their negative impacts have grown.

Key message and underlying issues: Although cities occupy only 2% of the planet’s surface, urban populations use about 75% of the natural resources, and generate about

²⁹Departamento Nacional de Planeación, Misión Rural. 2014. Propuesta para la definición de la ruralidad. DNP. Bogotá, Colombia.

³⁰ <http://www.mundotnc.org/donde-trabajamos/americas/peru/rimac-1.xml>

³¹ <http://www.adb.org/sites/default/files/projdocs/2013/37049-023-ino-tacr-01.pdf>

70% of greenhouse gases (GHGs), and are highly vulnerable to the impacts of climate change.³² Cities play an important role for the solution of global problems. For instance through better use of energy in transport or construction, and through more ecological and resource-conserving systems of water supply and solid waste management, far-reaching impacts can be achieved.

Urban residents and enterprises depend for their basic services, ecological functions and food on an area significantly larger than the urban built-up area. This relationship is described by the Urban Foot Print concept³³ which describes the large land area required for food supplies, other renewable resources (like water and energy), and the absorption of carbon to compensate for the carbon dioxide emitted from fossil uses. One of the greatest flows of resources from peri-urban areas to urban areas are construction materials which are bulky, heavy and low value. Most cities draw heavily on water resources, while waste water treatment facilities tend to be located away from urban areas, i.e. into peri-urban hinterland. Likewise, most urban waste ends up in the urban periphery. Many liquid wastes find their way through run-off into rivers, lakes and other water bodies close by. For some larger cities, resources such as water and energy may be drawn from far-away sources, but for the majority of developing nations contexts, the resource bases are from nearby. The size of a city's ecological footprint is typically several times its own size, though ecological footprints can vary a lot, depending on the ecology of a city and the environmental metabolism of its hinterland (Box 2).³⁴ The concept of the footprint is linked to the idea of the ecology's carrying capacity, or the need to balance resource consumption and waste discharged with the preservation of natural resources. Many new enterprises may seek peri-urban locations to avoid congestion and poor environmental quality, making use of the availability of labor locally or its mobility. This large and growing influence of cities on land use, landownership, economic activities and labour markets has significant impacts on agricultural production and on the livelihood of local populations.³⁵

Today, as cities prepare to design their futures, urban complexities have grown, challenging cities not only to achieve inclusiveness, but also resilience to climate change. Households may live a "multi-spatial" life, with some members residing and working in rural areas, others in towns, engaging in non-farming activities in the countryside, or in urban agriculture. Cities need to transform themselves for a greener future, consuming

³² www.huelladeciudades.com

³³Rees, W. 1992. Ecological footprints and appropriate carrying capacity: what urban economics leaves out. *Environment and Urbanization*. Vol. 4 No. 2, Sage Publications. pp. 121-130; and Wackernagel, M. and Rees, W. 1995. *Our Ecological Footprint: Reducing Human Impact on the Earth*. New Society Publishers. Gabriola.

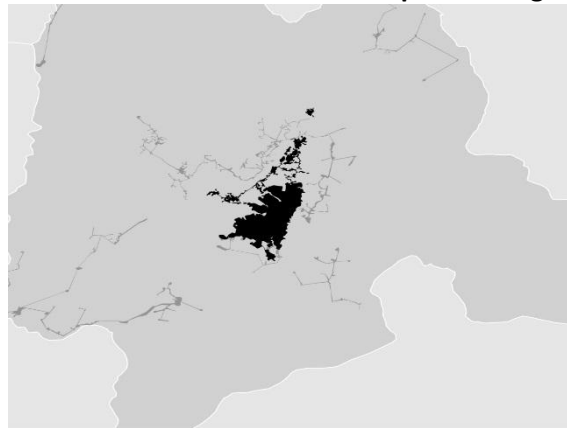
³⁴For the relationship between population growth and environmental footprint see: Mora, C. 2014. Revisiting the Environmental and Socioeconomic Effects of Population Growth: a Fundamental but Fading Issue in Modern Scientific, Public, and Political Circle. University of Hawaii. *Ecology and Society* 19(1): 38. <http://dx.doi.org/10.5751/ES-06320-190138>

³⁵ Rees, W., and Wackernagel, M. 1996. Urban Ecological Footprints: Why cities cannot be sustainable – and why they are a key to sustainability. *Environmental Impact Assessment Review*. Vol. 16, No. 4-6. July-November, pp. 223-248.

less carbon and reducing ecological footprints on surrounding hinterlands.³⁶ There is now a demand for low or zero carbon cities. It is said that cities need to be transformed for a greener future, as “low carbon” or “no carbon” cities. Glimpses of that vision emerged in 1992 at the Rio Earth Summit as Local Agenda 21, which cited the need to develop local agendas for sustainable living in the 21st century, alongside commitments towards the Millennium Development Goals (MDGs)³⁷ and this vision has been renewed during the Rio+20 United Nations Conference on Sustainable Development in June 2012.³⁸

Environmental issues, such as land scarcity, and its degradation and contamination, dangers to water and forest resources, should be seen as a negative outcome of the urban environmental footprint, and poorly planned or implemented urban development. Recently the concept has been expanded to include hydric resources and the carbon footprints.³⁹

Box 2. Urban Environmental Footprint of Bogotá, Colombia



Source: <http://lsecities.net/media/objects/articles/measuring-the-human-urban-footprint/en-gb/>

The population of the Extended Metropolitan Regions were based on national statistical sources and the UN World Urbanisation Prospects, 2009 Revision. All other information was calculated from Google Earth Pro satellite imagery (various years).

Recommendations to policy makers/development practitioners

- Include peri-urban and rural areas in environmental planning. Apply the concept of environmentally functional areas for all relevant natural resource realms (air, soil, water, agriculture and forestry, land).

³⁶Lindfield, M. and Steinberg, F. (eds.).2012.*Green Cities*.Urban Development Series. Asian Development Bank. Manila.

³⁷United Nations. 1992. *Agenda 21. The Rio Declaration on Environment and Development*. <http://habitat.igc.org/agenda21/>

³⁸United Nations. 2012. *The Future we want*.Rio+20, United Nations Conference on Sustainable Development.Rio de Janeiro, 20-22 June. www.uncsd2012.org/rio20/thefuturewewant.html

³⁹ www.huelladeciudades.com

- Develop mitigation measures to deal with negative aspects of urban environmental footprints, particularly issues of water supply, waste water treatment, solid waste management, and introduce pollution control measures (air, soil, water, use of pesticides).
- Strengthen infrastructure connectivity (roads, water and sanitation, energy, telecommunication) with the rural hinterland to bring developmental benefits to areas that have been neglected, but are economically relevant.

3. Labor markets modernize and their influence grows beyond cities.

Key message and underlying issues: For some time there has been a discussion about the assumed trend of urbanization without formal jobs. However, the continuing relation of rural-urban migration defies this debate. Most migrants find work in urban areas, even if this is informal employment. Labor markets are not determined by size of cities, though competitiveness of cities (and their size) seem to play a role. Rather, labor markets are determined by the economic context of a city, its economic profile, natural resources, and competitiveness.

Many studies on rural-urban linkages have presented cases where rural labor has straddled the rural-urban divide by finding temporary jobs in towns, while urban residents have benefitted from the influx of affordable food and firewood supplies which have been important for their household consumption baskets. At the same time urban areas have been providers of consumer goods, clothing, and many types of services.

Technology is increasingly reducing the human work force, and the pace of information-technology (IT) innovations is transforming the nature, type and location of work. Millions of workers are likely to be replaced by transformations in agro-industries and conventional manufacture. At the same time aging populations and shortages of newly and highly skilled labor emerge. Both in the urban and rural economies, automatization and the introduction of machine intelligence will change and reinvent work. This will have far reaching implications for the development of the next generations' skills, and the drive for new technologies and new business models. Emerging markets will experience many constraints and challenges in these transformations of the labor markets. This will have repercussions for the rural-urban linkages, on the possibility to absorb rural labor in modernizing economies, and the need to retrain or up"skilling" of work force.

With the improving nature of transport and connectivity between rural and urban areas, and with the emergence of new IT technologies (telecommunications, internet) certain industries and services do not require to be located in cities any more, and can be operated from peri-urban or rural locations, as visible in many suburban or peri-urban industrial parks in Asia (China, India, Indonesia, Philippines, Viet Nam), or LAC (Mexico, Colombia) can demonstrate. This implies a reduction of spatial divisions, and offers new opportunities for the labor market. Rural labor may find new employment opportunities and for that reason may not need to migrate to urban areas. On the other hand, urban

residents, particularly, the urban poor, retain their rural connections and assets as a fall back strategy in times of crisis and income uncertainty.⁴⁰

Employment in developing countries grew more than double than in advanced economies over the past two decades, though the employment rate for women was not that fast. Youth employment was even negative for emerging and advanced economies, but relatively strong in developing countries with high population growth rates. A positive trend has been the increased female participation. Across most developing economies and least developed countries, the phenomenon of informal work continues to exist. Developing countries have substantially reduced the share of the working poor, i.e. workers earning less than US\$ 1.25/day over the past two decades. This number of working poor goes hand in hand with accelerated overall growth of the national economies. The major sectoral change taking place is the decline of agricultural employment in developing countries (Box 3). Around 38% of all jobs were in agriculture in 2013, compared with 54% in 1991. In least developed countries, however, two thirds of total employment is still located in agriculture, in lower-middle income countries 42%, and about 25% in emerging economies.⁴¹

Box 3. Share of Employment by Sector

	Employment in agriculture, total (%)				Employment in industry, total (%)				Employment in services, total (%)					
	1991	2000	2007	2013 ^a	1991	2000	2007	2013 ^a	1991	2000	2007	2013 ^a		
AEs	6.6	4.7	3.5	3.2	AEs	30.9	27.1	24.7	23.2	AEs	62.5	68.2	71.8	71.8
DCs	53.7	48.5	42.1	37.6	DCs	19.4	19.0	21.6	23.0	DCs	26.9	32.5	36.3	36.3
LDCs	73.7	70.9	65.5	64.9	LDCs	8.1	7.7	9.2	9.5	LDCs	18.1	21.5	25.3	25.3
LMIs	55.9	52.4	47.3	41.8	LMIs	17.1	17.2	20.0	22.1	LMIs	26.9	30.4	32.8	32.8
EEs	48.1	40.4	32.2	26.4	EEs	23.2	22.9	26.0	27.5	EEs	28.7	36.7	41.7	41.7

Note: p = projection

Source: ILO, *Trends Econometric Models*, October 2013.

AE – advanced economies; DCs – developing countries; LDCs – least developed countries; LMIs – lower-middle income countries; EE – emerging economies

Cited from: International Labor Organization (ILO). 2014. *World of Work Report 2014 – Developing with Jobs*. Geneva. p. 45.

Recommendations to policy makers/development practitioners

- It is crucial to design policies which are oriented towards productive transformation and higher value agricultural income and industrial development. In many countries the opportunities to expand and transform their economies are associated with the extraction of non-renewable natural resources (oil, gas, mining products). Revenues from these extractive industries can be crucial for engendering growth and development in other sectors (agriculture, manufacturing, and services such as transport and information technologies, whole-sale markets, logistics and transport terminals).

⁴⁰Krüger, F. 1998. Taking advantage of rural assets as a coping strategy for the urban poor: The case of rural-urban interactions in Botswana, *Environment and Urbanization*. Vol. 10. No.1, pp.119-134.

⁴¹International Labor Organization (ILO). 2014. *World of Work Report 2014 – Developing with Jobs*. Geneva.

- Productive transformation requires the use of modern production techniques and higher labor productivity than traditionally. Re-investment of revenues from natural resources needs to happen productively, sustainably and equitably.
- Role of cities to drive and support these developments is important. Cities can provide knowledge (through research) and support (through regulation and access to markets).

4. Food Markets and food supply systems become ever more influential for the sustainability of cities.

Key message and underlying issues:**Intensification of food production.** In the context of urbanization, urban dwellers' food supply and good nutrition needs to be kept in mind. Rural hinterlands need to produce enough food for urban dwellers. A very wide range of important issues link urbanization and food security. The diverse array of the global food system is changing rapidly in the context globalization and the extension of market forces. The development of resilient food systems for the future through integration of rural and urban areas, and strengthened linkages should benefit both the agricultural sector and the urban population.⁴² "Rapid population growth, urbanisation, rising incomes, and resource constraints are putting enormous pressure on agriculture and forests, which are crucial to food security and livelihoods. Agriculture and land use change also account for 24% of global greenhouse gas emissions.⁴³ These factors together with attractive opportunities to boost investment in well-managed land use systems, make agriculture a top-priority sector for both economic and climate policy, particularly in developing countries."⁴⁴ According to recent studies, the global food insecurity has increased substantially, due to climate change and population increase.⁴⁵ Agricultural productivity needs to sharply increase to keep up with food demand and to overcome food insecurity (Box 4).

⁴²Food and Agriculture Organization. 2011. *Food, Agriculture and Cities*. Rome. October.

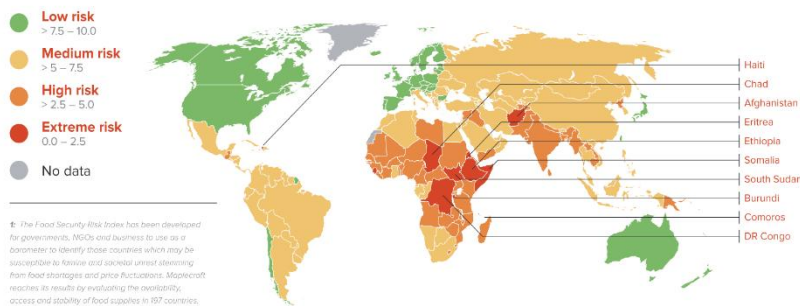
⁴³Intergovernmental Panel on Climate Change (IPCC). 2013. Rural Areas. *Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability*. <http://www.ipcc.ch/report/ar5/wg2/>

⁴⁴World Resources Institute. 2014. *The New Climate Economy*. Washington. Chapter 3: Land Use - Protecting food, forests and people.<http://newclimateeconomy.report/>

⁴⁵FAO, IFAD and WFP. 2014. *The State of Food Insecurity in the World 2014*. FAO. Rome. <http://www.fao.org/publications/sofi/2014/en/>

Box 4. Global Food Insecurity

Global Food Insecurity¹



World Resources Institute. 2014. *The New Climate Economy*. Washington. Chapter 3: Land Use - Protecting food, forests and people. <http://newclimateeconomy.report/>

Due to world-wide urbanization, only 20% of the world population is directly involved in agricultural activities, and on the world economic scale agricultural activities account for only 2.8% of GDP produced. However, with varying degrees, in developing economies these values are much higher, with about 18% of GDP in agriculture and about 54% of labor force participation.⁴⁶ On the regulatory side, Brazil has been one of the most innovative countries in agricultural policies designed to expand agricultural production, and has become one of the world's top producers in orange juice, sugar, coffee, soybean, beef, pork and chicken, and the major grains, as well as ethanol. Modern production techniques and research have generated these important achievements.

Agricultural experts have been calling for a "sustainable" intensification of food production (more food), with fewer non-renewable inputs, less arable land in relation to growing populations, an eco-system-based (more biodiversity, less degradation) on territorial food system planning and equity (less poverty, better health and well-being). The concept of sustainable food production seeks to build diverse supplies geographically close to urban centers, improving local food systems rather than relying on constrained and competitive global food supply systems. The critical question is how can cities preserve the services of the surrounding ecosystems? Recent years have seen dangerous fluctuations in agricultural production, with food supplies being reduced by shifts towards energy producing oil plants, or by impacts of extreme weather situations which in turn have triggered price increases and additional poverty. Recently, McKinsey Global Institute has estimated that 44 million persons have been driven into poverty by raising food prices (in 2010).⁴⁷ This crisis of structural changes in the global food production chain has underlined the need to increase efficiency and new forms of agriculture.

⁴⁶Pardey, P.G., Alston, J.M. 2011. *For Want of a Nail: The Case for Increased Agricultural R&D Spending*. American Boondoggle.

⁴⁷McKinsey Global Institute. 2011. *Resource Revolution: Meeting the World's energy, materials, food, and water needs*.

file:///C:/Users/HP%20SPLIT/Downloads/MGI_Resource_revolution_executive_summary.pdf

The agricultural transformations and crisis, which many countries have experienced can be described by the Colombian example. Its ten bottlenecks persist since three decades: (i) reduction and aging of rural population; (ii) low incomes and limited capacity to generate incomes, (iii) continued poverty gap between rural and urban population, despite new opportunities in the age of globalization, (iv) complicated land ownerships and lack of land for rural poor; (v) low productivity; (vi) increasing costs for agricultural products; (vii) lack of services to develop agro-businesses; (viii) limitations in commercialization and access to markets; (ix) lack of affordable financing for agricultural producers, and (x) high risk exposure.⁴⁸

The interaction of urban and rural food systems, as two complementary sides of the food system should be seen as an expression of urban and rural landscapes and actors. However, it is also recognized that there are significant conflicts and competition for resources such as land and water, as well as significant differences between food systems found in urban, peri-urban and rural areas. Rural-urban interactions have become more tense due to urbanisation. Cities have a growing hunger for land for their expansion, but at the same time there is great antagonism over land required for food production. Food production in peri-urban land is increasingly constrained by the environmental footprint of cities, by pollutants (household waste, industrial pollutants, including dangerous wastes such as heavy metals and liquid wastes, including uncontrolled use of agro-chemicals).

Traditionally, centralized wholesale (and retail) food markets have been located in suburban locations, and close to major transport routes. As cities have grown further, these food markets have become part of the city (example Manila, the Philippines, and Ha Noi in Viet Nam), and are now located in more congested areas of the city, creating problems of access, congestion and conflicting land use. As cities modernize and expand further and develop multi-nodal sub-centers, new and decentralized wholesale (and retail) food markets will emerge.

The Food for Cities initiative of the FAO has the intention to ensure food security and sustainable urban development through management of natural resources. FAO has been supporting dialogue between municipalities, with subnational and national organizations. The goal is to ensure access to safe food, and more healthy and secure environments.⁴⁹ According to the FAO urban poor consumers spend between 60 and 80 percent of their income on food, making them very vulnerable to higher food prices.

For food supply, the goal would a reliable year/round supply of food produced in rural, peri-urban and urban areas. The objective is to enable the journey of food to markets. Market infrastructure (wholesale and retail markets), refrigeration and storage technologies, and transport connectivity from farms to markets, are important elements

⁴⁸ La Crisis del campo: sí hay mal que dure... *Portafolio, El Diario de la Economía*. Bogota. 29 August 2014, p.32; and Food and Agriculture Organization (FAO). 2014. *Perspectiva de la agricultura y del desarrollo rural en las Américas: una mirada hacia América Latina y el Caribe*. Rome.

⁴⁹ Food and Agriculture Organization (FAO). 2006. *Food for Cities*. Rome; and FAO. 2013: *The State of Food and Agriculture*, Rome.

of physical infrastructure to support the access of food to urban consumers. The challenge of feeding cities is two-fold: It consists in facilitating consumer access to food, and to ensure food security (quality and healthiness). On the regulatory side it is required to create favorable conditions to ensure food security (Box 5), and investments in food production and quality control. In urban areas much of the street food, informally sold, is insecure. Besides regulation, investments in infrastructure, and food fortification mechanisms, and awareness building of street vendors can help improve food security. For instance, in Indonesia, food fortification aimed to enrich food through micronutrients has been used to address food insecurity. Control of micronutrient deficiencies targeted to reduce iron, iodine and vitamin A deficiency among low-income groups. Vitamin A deficiency, iron deficiency anemia, and iodine deficiency disorder are common problems in the country that contribute to morbidity, mortality, growth retardation, brain damage, and reduced cognitive and working capacities among children and adults.⁵⁰

Box 5. Mexico capital city: Law on Food Security and Nutrition for the Federal District

The Law on Food Security and Nutrition, approved on the 17th of August 2010 by the Legislative Assembly of the Federal District, is a milestone for the protection of the right to food. This Act means a crucial step for the protection and realization of the right to food for all persons living in food poverty. According to the numbers of INEGI (National Institute of Statistics and Geography), almost half a million people in Mexico City are still food insecure. By approving this new Law, the Mexican capital has made a huge step forward in decentralizing at district level the protection of the right to food. Beside other components, the new Law establishes the Food Security and Nutrition System of the Federal District and reaffirms the role of the Social Development Council, which foresees the participation of society in the planning, design, decision making, programming, execution and evaluation of policies and actions, introduced to realize the right to food in a progressive and sustainable way. Furthermore, the Law creates an Integral Food Security Programme as planning instrument to define priorities, budget allocations, monitoring proceedings and mechanisms to promote the right to food. In addition to the institutional dimension and the human rights principles included in the Law, it is worth mentioning that the Law establishes a system through which people's access to policies, programs and actions undertaken by the Federal Government is facilitated. This is an essential element for the citizens to participate in decision-making process and to hold the competent authorities responsible for their actions and omissions.

The text of the Food Security and Nutrition Law available at:
<http://www.rlc.fao.org/frente/pdf/leysandf.pdf>

Source: http://www.fao.org/righttofood/news33_en.htm

⁵⁰ADB to pilot food fortification among Indonesia's urban poor. 17 March 2005.
<http://www.adb.org/news/adb-pilot-food-fortification-among-indonesias-urban-poor>

VIII. URBAN AGRICULTURE

Despite the trend towards increased urban densification, the interest in urban agriculture has remained permanent for the last decades. Urban agriculture has existed already in ancient cities. In 19th century European cities and at the times of 20th century wars and the Great Depression in the US, urban lands ('allotment gardens' in Germany), were utilized to reduce pressure on food production and to provide means for employment and income supplements.⁵¹ In 2010, New York City saw the building and opening of the world's largest privately owned and operated [rooftop farm](#), followed by an even larger location in 2012. The Council on Agriculture, Science and Technology (CAST) has defined urban agriculture to include aspects of environmental health, remediation, and recreation.⁵² Urban agriculture is a complex system encompassing a spectrum of interests, from a traditional core of activities associated with the production, processing, marketing, distribution, and consumption, to a multiplicity of other benefits and services that are less widely acknowledged and documented. These include recreation and leisure; economic vitality and business entrepreneurship, individual health and well-being; community health and well-being; landscape beautification; and environmental restoration and remediation. Modern planning and design initiatives are often promoting this model of urban agriculture because it fits within the current scope to build sustainable cities (Box 6).⁵³

Box 6. Community Participation, Urban Agriculture and Forestry

"In this project, representatives from two nongovernmental organizations (NGOs) worked with two poor communities in Bangkok to establish citizen working groups to address local environmental problems. Once these working groups had identified problems, they established and enacted plans to address them. During this process, NGO staff also worked with local governments, building bridges between community groups and elected officials. In addition to improving the local environment, this project developed a framework that other communities could follow to establish their own urban green programmes. This framework was adopted and replicated in fifty communities by the Bangkok Metropolitan Administration. Using this process we demonstrate that both environmental goals and social development goals can be met at the same time."

<http://urban-research.blogspot.com/2012/02/urban-ecology-in-bangkok-thailand.html>

see also: Fraser, Evan D.G. 2002. Urban Ecology in Bangkok Thailand: Community Participation, Urban Agriculture and Forestry, *Environments*, Vol.30. No. 1.

Work is currently underway on phase II of this project. ... replicating this process in two more Bangkok communities, including the one described above where the work was initiated by an enthusiastic land owner. A third community in a town outside of Bangkok has also been chosen for phase II. Tambol Na Pralan Municipality, located 2 hours north east of Bangkok, is an industrial town that boasts a number of open pit rock quarries and rock crushing facilities. Local residents live alongside open-air stone crushing and blasting factories, and approximately 1/3 of all hospital visits are due to respiratory ailments. In addition, because all the vegetation has

⁵¹Smit, J., Ratta, A. and Nasr, J. 2001. *Urban Agriculture: Food, Jobs, and Sustainable Cities*. The Urban Agriculture Network, Inc., New York, NY.

⁵²Butler, L. and Moronek, D.M. (eds.). 2002. *Urban and Agriculture Communities: Opportunities for Common Ground*. Ames, Iowa: Council for Agricultural Science and Technology.

⁵³Fraser, Evan D.G. 2002. Urban Ecology in Bangkok Thailand: Community Participation, Urban Agriculture and Forestry, *Environments*, Vol.30. No. 1.

been removed, this area is prone to droughts and floods. Re-establishing vegetation in this community is of utmost importance. However, due to the extent of the local environmental degradation, it will be a challenge to establish new trees and shrubs.

<http://www.thefreelibrary.com/Urban+ecology+in+Bangkok%2c+Thailand%3a+community+participation%2c+urban...-a093008481>

The energy-efficient nature of urban agriculture can reduce each city's carbon footprint by reducing the amount of transport required for delivery to the consumers. Also these areas can act as carbon sinks offsetting some of carbon accumulation that is innate to urban areas, where pavement and buildings outnumber plants. Plants absorb atmospheric carbon dioxide (CO₂) and release breathable oxygen (O₂). The process of Carbon Sequestration can be further improved by combining other agriculture techniques to increase removal from the atmosphere and prevent release of CO₂ during harvest time. However, this process relies heavily on the types of plants selected and the methodology of farming. Specifically, choosing plants that do not lose their leaves and remain green all year can increase the farms ability to sequester carbon.

Recommendations to policy makers/development practitioners:

- Urban and regional planning should support enhanced agricultural productivity and resilience to impacts of climate change through (i) soil and water management, (ii) designation of space (vacant or peri-urban land) and (iii) infrastructure for urban and peri-urban agricultural (UPA) activities. This would need to be incorporated and institutionalized in urban or regional land use plans.
- Institutional assistance to UPA activities needs to be directed at assistance to irrigation infrastructure; transport and storage infrastructure; insurance systems for harvests, and technology transfer; and commercialization of products (selling products to higher value markets).
- Environmental supervision of UPA activities will be required, since agricultural activities on land that is contaminated (with such metals as lead) pose potential risks to human health. These risks are associated both with working directly on contaminated land and with consuming food that was grown in contaminated soil.⁵⁴ Wastewater and organic solid waste can be transformed into resources for growing agriculture products: the former can be used for irrigation, the latter as fertilizer.

5. Climate Change Impacts are felt both in rural and urban areas, though rural areas may have fewer coping mechanisms

⁵⁴McClintock, N. 2012. Assessing lead contamination at multiple scales in Oakland, California: Implications for urban agriculture and environmental justice. *Applied Geography*. Vol. 35. pp. 460–473.

Key message and underlying issues: Natural catastrophes, some of these linked to the impacts of climate change, have displaced during 2008-2013 some 164.9 million people worldwide. In 2013 alone, displacement has been 21.9 million.⁵⁵ The majority of hazard types, extreme temperatures, storms, floods, landslides, wildfires must be seen connected, directly or indirectly, to the impacts of climate change (Boxes 7 and 8). Much of this displacement has been rural to urban, with notable consequences for urban growth. One can assume that the majority of these migrants will continue to stay in these cities, not migrate back to the places of their rural origins.⁵⁶ Climate change in rural areas will take place in the context of many important economic, social and land-use changes, and these affect still about half of the current world population (and in particular about 70% of the developing world's poor).

The urbanization and climate change connection has important implications for ecological sustainability. Climate change can accelerate ecological pressures on cities, as well as interact with existing urban environmental, economic and political stresses.⁵⁷ Migration decisions will be driven by multiple factors, of which climate change is only one. These other drivers for migration are economic, social, demographic and environmental.⁵⁸

Climate change impacts on rural areas have created a serious instability in food production systems and in food process, which have affected millions of families, both in rural as well as in urban areas. Effects of climate change on crops and food production are evident in several regions of the world. There are effects on the yields and distribution of crops, livestock and aquatic species.⁵⁹ Hazards connected to climate change impacts are extreme temperatures, storms, floods, landslides, and wildfires which are felt both in rural and urban areas. Too well known are the pictures of floods in Asian cities, and the disruption this causes for the lives and economies of the affected areas. The United Nations Framework Convention for Climate Change (UNFCCC) has established a program of nationally appropriate mitigation actions (NAMA) which are directed at reduction of GHGs through cleaner low-carbon production and operations. In urban areas the NAMA are aiming at low-carbon development in transport, industrial development, energy production and solid waste management. For the rural sector it is expected that NAMA for livestock cultivation and large-scale crop production will be established. Different countries will have different nationally appropriate action on the basis of equity and in accordance with common but differentiated responsibilities and

⁵⁵International Displacement Monitoring Centre (IDMC). *Global Estimates 2014 – People displaced by disasters*. Oslo. <http://www.internal-displacement.org/assets/publications/2014/201409-global-estimates.pdf>

⁵⁶Hoornweg, D., Freire, M., Lee, M.J., Bhada-Tata, P. and Yuen, B. (eds.). 2011. *Cities and Climate Change, Responding to an Urgent Agenda*. Urban Development Series. World Bank. Washington: and UN-Habitat. 2011. *Cities and Climate Change – Global Report on Human Settlements 2011*. Earthscan London-Washington.

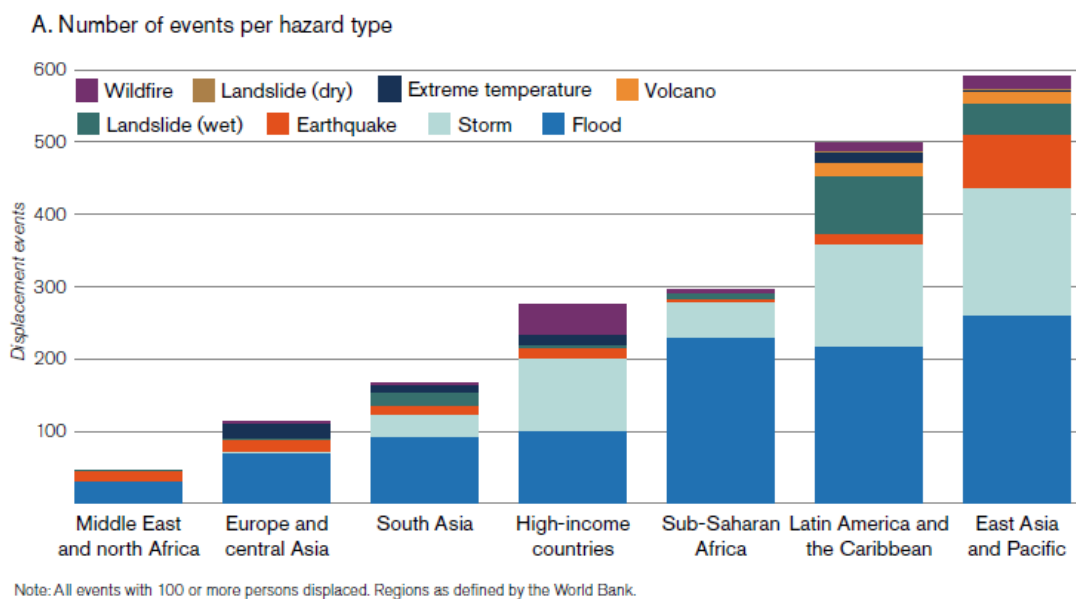
⁵⁷Intergovernmental Panel on Climate Change (IPCC). 2013. Urban Areas. *Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability*. <http://www.ipcc.ch/report/ar5/wg2/>

⁵⁸Intergovernmental Panel on Climate Change (IPCC). 2013. Rural Areas. *Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability*. <http://www.ipcc.ch/report/ar5/wg2/>

⁵⁹Intergovernmental Panel on Climate Change (IPCC). 2013. Food Security and Food Production. *Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability*. <http://www.ipcc.ch/report/ar5/wg2/>

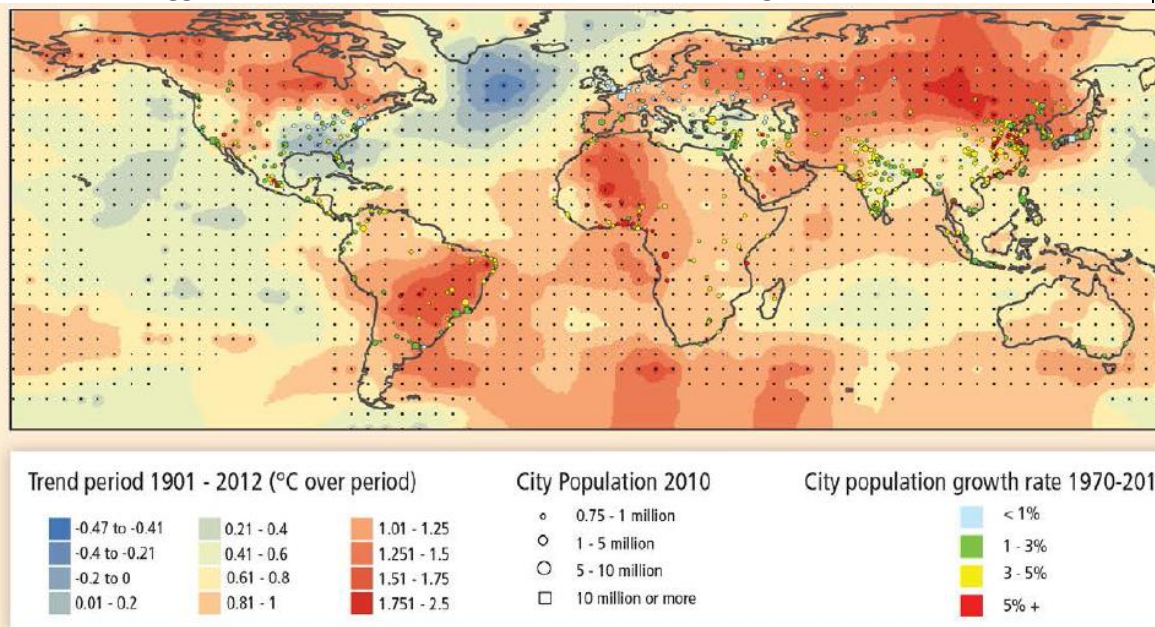
respective capabilities. India has argued that NAMA means *voluntary reductions* by developing countries that *require to be supported and enabled* by technology transfer from developed countries. By definition, NAMAs will vary by country. Indonesia, for example, might focus on integrating climate change policy with other aspects of economic development, such as progressive reduction in oil subsidies, poverty reduction through promotion of alternative income to reduce illegal logging, and exploit more fully the country's renewable resources, especially geothermal energy.

Box 7. Regional displacement by hazard type, 2008-2013



Source: International Displacement Monitoring Centre (IDMC). *Global Estimates 2014 – People displaced by disasters*. Oslo. <http://www.internal-displacement.org/assets/publications/2014/201409-global-estimates.pdf>

Box 8. Urban Agglomerations 2010 with Observed Climate Change, Trend Period 1901-2012



Intergovernmental Panel on Climate Change (IPCC). 2013. *Urban Areas. Fifth Assessment Report – Climate Change 2014: Impacts, Adaptation and Vulnerability*. <http://www.ipcc.ch/report/ar5/wg2/>

The vulnerability of rural and urban areas to the impacts of climate change seems quite equal. But urban areas have seen extreme impacts, which at times have been aggravated by urban densities. Rural areas on the other hand seem to show a lesser degree of preparedness for disasters, and seem to have fewer coping mechanisms to deal with the dangers of climate change impacts.

Recommendations to policy makers/development practitioners

6. Climate change mitigation activities need to be based on the concept of regional planning, taking into account the ecological urban footprint and functional expansion of urban areas into their hinterland.
7. Investments in adaptation to impacts of climate change, such as climate-proofing of major transport and road infrastructure, water and waste water facilities, energy networks, solid waste facilities, and other public utilities need incorporate functional peri-urban areas and the rural hinterland in order to become environmentally meaningful. Partial solutions may offer limited results only.
8. Involve rural population in preparations for risk management and investment planning of adaptation measures.

6. Urban Development Planning and Development needs to cope with impacts of migration, urbanization and urban growth

Key message and underlying issues: Secondary cities often have densities between 50 and 70 percent of primary cities, which tends to be a reflection of land markets and the lower building density of development. In both developing and industrialized economies of the region, average densities of cities have been declining quickly which Angel et al. (2012) estimates at an annual rate of -1.7 percent over the last decade in developing economies, and of -2.2 percent in industrialized economies⁶⁰. The reason for this decline has been (uncontrolled) urban expansion, or peripheral urbanization through informal settlements as well as high-end residential suburbs of low density. Urban density is falling at more than 3 percent per year in some Asian economies.

In Latin America, there are few region-wide comparative studies on the process of urban expansion, and these studies have grappled with the definition of urban sprawl and territory. From the research conducted, it was found in cities in most Latin American economies have reached a medium level of density with data showing about 7000 persons per km² as the average density among a sample of cities.⁶¹ While less pronounced than Asian economies, due to lower urban growth, the evidence suggests that densities are falling in North and Latin American economies. Reducing urban

⁶⁰Angel, S., et al. 2012.*Atlas of Urban Expansion*. Acton, Massachusetts, Lincoln Institute of Land Policy; Angel, S., Sheppard, S.C., and Civco, D.L. et al. 2005.*The Dynamics of Global Urban Expansion*. Transport and Urban Development Department. The World Bank. Washington; and Angel, S., Parent, J., Civco, D.L., and Blei, A.M. 2011.*Making Room for a Planet of Cities*. Policy Focus Report. Lincoln Institute of Land Policy. Cambridge, M.A.

⁶¹Angel, S., et al. 2012.*Atlas of Urban Expansion*. Acton, Massachusetts, Lincoln Institute of Land Policy;

density and sprawl have set in, and many cities have expanded with new less densely populated areas. The continuation of this form of development is unsustainable and will have a significant adverse impact on the ecological footprint, logistics, agglomeration efficiencies and infrastructure cost for cities in the future. In the drive for economies of scale and agglomeration, cities have increasingly developed to form 'mega-regions', urban corridors and urban corridor-regions. As cities have grown, they 'swallowed' surrounding villages and rural areas and their 'hinterlands,' and other areas and cities over which they have economic influence.

Almost all cities have outgrown their administrative boundary. Large cities further extended their influence with links of physical infrastructure, mainly inter-city roads, railways and navigable waterways, connecting to smaller cities. In general, markets for both the small and larger cities are developed, increasing incomes and crossing administrative boundaries. In 2005, a total 3,945 cities of populations of 100,000 and above were identified and estimated to total 2.12 billion people or more than three quarters of the world's urban population of 2000.⁶²

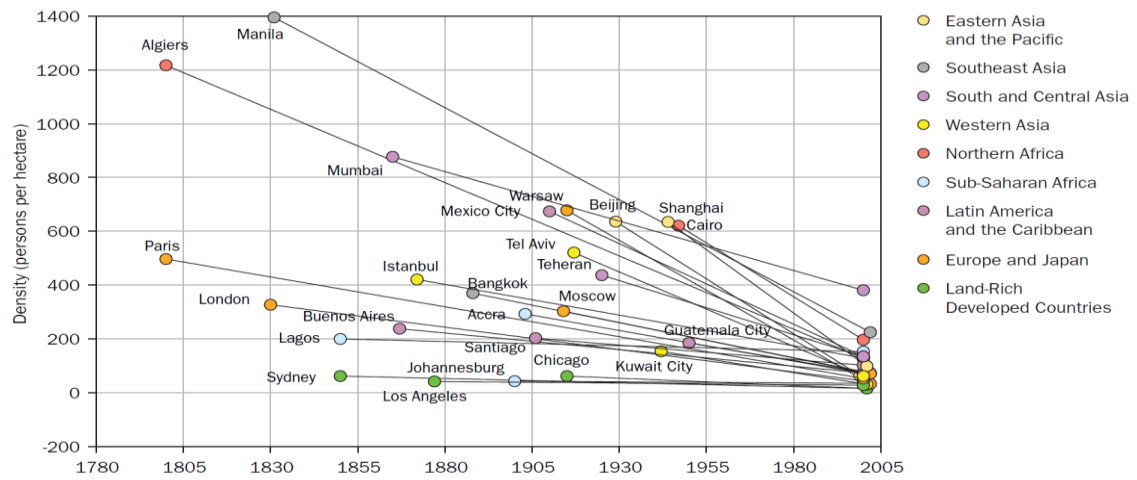
Regional urban systems can be either a single city-centred system where one city plays a crucial role in regional production, employment, and distribution, and encompasses villages, towns/townships, small cities, and intermediate cities; or regional clusters of villages, towns, and cities where no single town or city plays a dominant role; or corridors, which are similar to regional clusters but stretch in a linear form along a major road or rail line.⁶³ Urban built-up area densities are decreasing everywhere (Box 9). Largely because of increased incomes. But built-up areas of developing country cities will at least triple during the 2000-2030 period, unfortunately, much of it without clear elements of guidance (Box 10).

Box 9. Urban Expansion - without densification - has led to decline of urban densities world-wide

⁶²Angel, S., et al. 2012.*Atlas of Urban Expansion*. Acton, Massachusetts, Lincoln Institute of Land Policy; Angel, S., Shepparde, S.C., and Civco, D.L. et al. 2005.*The Dynamics of Global Urban Expansion*. Transport and Urban Development Department. The World Bank. Washington

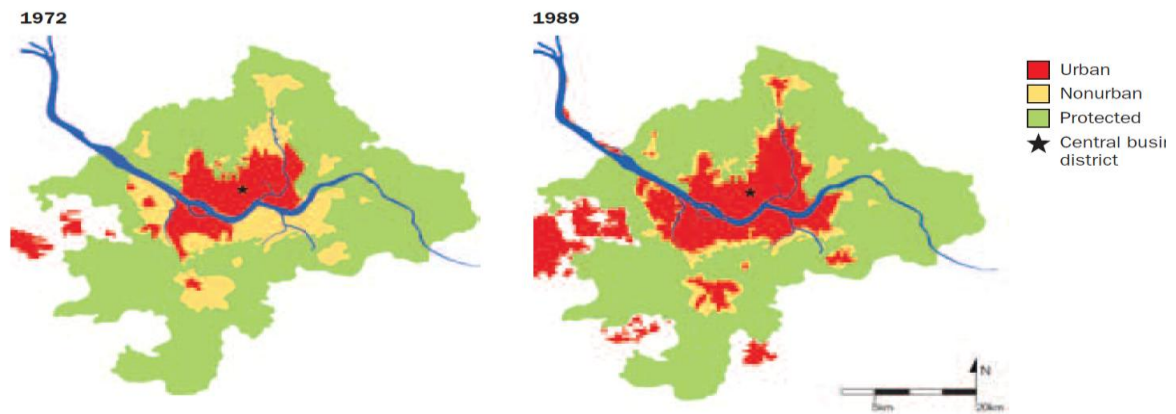
⁶³Major transport lines or trunk infrastructure function as an incentive for "ribbon" development.

The General Decline In Built-Up Area Densities In 25 Representative Cities, 1800–2000



Source: Angel, S., Parent, J., Civco, D.L., and Blei, A.M. 2011. *Making Room for a Planet of Cities. Policy Focus Report. Lincoln Institute of LandPolicy. Cambridge, M.A. p. 23.*

Box 10. Urban growth and sprawl without clear guiding structures
Seoul, Korea's Greenbelt and Its Built-up Area in 1972 and 1989



Source: Angel, S., Parent, J., Civco, D.L., and Blej, A.M. 2011. *Making Room for a Planet of Cities. Policy Focus Report. Lincoln Institute of LandPolicy. Cambridge, M.A., p. 51.*

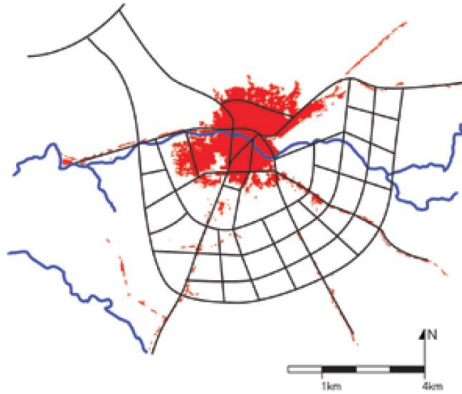
Three policy options commonly advocated are: (i) keeping people on the farm; (ii) resisting primacy of cities, (iii) planning for urban growth and expansion. The first two of these have been outright failures, and need to be dismissed. Only the third option seems to be relevant, and this is valid for secondary cities as well as for metropolitan urban regions.

The prevailing urban planning paradigm now guiding the expansion of cities is containment of urban sprawl. But given rapid urbanization taking place already, the pressures from the country-side and the close rural-urban linkages, containment seems inappropriate. This trend indicates it is more relevant to focus on the "making room" paradigm, to prepare cities - , both secondary and primary cities - for their inevitable expansion (Box 11).⁶⁴ The costs of failure to anticipate and prepare for urban growth will be felt world-wide, and will have serious impacts on developing and emerging economies.

⁶⁴Angel, S., et al. 2012. *Atlas of Urban Expansion*. Acton, Massachusetts, Lincoln Institute of Land Policy.

Box 11. Planning for Expansion and Densification

The Proposed Arterial Grid in the Expansion Areas of Millagro, Ecuador, 2007



Source: Angel, S., Parent, J., Civco, D.L., and Blei, A.M. 2011. *Making Room for a Planet of Cities. Policy Focus Report. Lincoln Institute of LandPolicy. Cambridge, M.A., p. 66.*

Recommendations to policy makers/development practitioners:

- Establishing the principle of “Making room” for densification and expansion, both in secondary and primary cities. Overcome the absence (or failure) of planning for urban expansion through pro-active measures. Urban land will be required to absorb migrants and natural population growth. Guided land development⁶⁵ and densification are adequate forms to stem urban sprawl, countering further unguided or uncontrolled urban expansion and growth on rural environments. Prevention of new slums or informal settlements will be an element of development control.
- Minimal planning and infrastructure-led urban expansion needs to be promoted. Arterial grids for transport infrastructure and other key infrastructures seem most adequate to guide future urban growth (both expansion and densification).
- Absorption of new labor forces in urban employment: measures to train and guide labor force towards new forms of (formal) employment need to complement spatial and infrastructure initiatives. Vocational training programs and incubators for support of new small and medium enterprises seem to be best suited to cater for these needs.⁶⁶

⁶⁵ See Archer, R. Land pooling and land-readjustment, in: Singh, K. Steinberg, F. dan von Einsiedel, N. (1996). *Integrated Urban Infrastructure Development In Asia*. New Delhi: Oxford & IBH Publishing CO.PVT.LTD.

⁶⁶ Preparing rural populations for urban life should be an essential part of primary and secondary education, to support this social change and adjustment.

IX. CONCLUDING REMARKS

Policies based on a better understanding of the new economic geography (NEG) of systems of cities and their hinterland, which sees cities as systems of linked economic activities, have contributed much to the development of emerging economies. The rural-urban linkages are part of this bigger scenario. Due to the role played by cities (and their hinterland), economies will only be competitive as the sum of the parts and the efficiency of the linkages between them that foster trade, investment and local economic development. Processes of change can be seen in land use (shift from agricultural to industrial and residential uses), and in the use of natural resources (deforestation, water depletion and pollution). This causes problems (loss of agricultural land, loss of livelihoods, and shortages in food production) as well as opportunities (new sources of employment, land for low cost housing, better transport links, and improved access to infrastructure and social facilities).⁶⁷ Three levels of necessary intervention emerge: the rural perspective, the regional perspective, and an urban perspective. The intervention areas need to cover the above measures which will help to (i) strengthen closer rural and urban linkages, (ii) reduce the negative impacts of urban footprints; (iii) modernize labor markets and increase their reach beyond urban borders; (iv) improve food markets and supply systems; (v) mitigate and adapt to climate change impacts in rural and urban areas; and (vi) prepare urban areas for growth (through expansion and densification), and for absorption of new labor.

Since secondary cities, and particularly the smaller towns and cities of 100,000 inhabitants and below, have considerable capacity limitations, it will be rather challenging to implement these suggestions above. Many of the above initiatives will require technical assistance and hand holding by higher level governments (provincial-regional or national governments), by bigger cities, or municipal organizations and knowledge institutions (universities, or professional associations).

⁶⁷Allen, A. 2003. Environmental planning and management of peri-urban interface: perspectives on an emerging field. *Environment and Urbanization* Vol. 15. No.1, pp. 135-147, figure 1.

X. ANNEXES

Annex 1. Secondary Cities – Definitions

The term of “secondary cities” is relative to the primate city or metropolitan cities of a country. The definitions of size categories, however, vary. A “secondary city” always follows after a [primate city](#) and can be seen in the [urban hierarchy](#). Secondary cities have between “500,000 to 5 million inhabitants, but are often unknown outside of their national or regional context. Secondary cities in the Global South will undergo massive expansions in the next few decades, comparable to city growth in Europe and North America one to two hundred years ago. As cities and their populations grow, everything else grows with them: wealth and creativity, as well as traffic, criminality, disease and pollution.”⁶⁸

“A secondary city is largely determined by population, size, function, and economic status. Commonly, secondary cities are geographically defined urban jurisdictions or centres performing vital governance, logistical, and production functions at a sub-national or sub-metropolitan region level within a system of cities in a country. In some cases, their role and functions may expand to a geographic region of the global realm. The population of secondary-cities range between 10 and 50% of a country's largest city, although some can be smaller than this. They will likely constitute a sub-national or sub-metropolitan second-tier level of government, acting as centres for public administration and delivery of education, knowledge, health, community, and security services; an industrial centre or development growth pole; a new national capital; or a large city making up a cluster of smaller cities in a large metropolitan region.”⁶⁹

Furthermore, secondary cities “usually form more recent poles of growth, often also with a more diffuse genealogy, than larger metropolises. The ambivalent situation of these towns (in the periphery of the center and in the center of the periphery, in so far as these notions still retain their meaning) generates a particular, and by definition highly hybrid, socio-cultural urban dynamic which in turn influences the outlook of social, political and economic life in the more visible national metropolises.”⁷⁰

Secondary cities have their own socio-economic and political culture that may differ from other cities such as Primate cities. Moreover, in the secondary city (and more generally in the margin of the state) there often is more room for improvisation. Local commerce, trading routes and smuggling networks determine the economic sphere in important ways; local forms of associational life (the middle ground of ‘civil society’) has a far greater influence on local politics than is the case in larger urban centers, and the

⁶⁸Brillembourg, A., Hubert Klumpner, H. 2014. Gran Horizonte: Taking a Walk in the Urban Planet. *Network City and Landscape*. <http://www.nsl.ethz.ch/index.php/it/content/view/full/2582>

⁶⁹Roberts B., Hohmann R. 2014. *The Systems of Secondary Cities - The neglected drivers of urbanizing economies*, CIVIS #7, Cities Alliance: Brussels.

⁷⁰Cassiman, A., De Boeck, F., Van Wolputte, S. 2009. *Recentring the City: An Anthropology of Secondary Cities in Africa*. Institute for Anthropological Research in Africa (IARA), University of Leuven, Belgium.

functioning of local, decentralized political authorities is often shaped and cross-cut to a far greater extent by constantly shifting alliances between local stakeholders."⁷¹

According to UN-Habitat, "In 1950 there were 86 cities in the world with a population over one million, today there are 400, and by 2015, there will be at least 550."⁷² Moreover, cities have absorbed nearly two-thirds of the global population explosion since 1950 and are currently growing by a million babies and migrants each week.⁷³

Consequently, countries like India are developing secondary cities to absorb informals—as India's chief economic planner, Montek Singh Ahluwalia in 2007, observes: "One hundred million people are moving to cities in the next 10 years, and it's important that these 100 million are absorbed into second-tier cities instead of showing up in Delhi or Mumbai."⁷⁴ In Latin America, where primary cities long monopolized growth, secondary cities like Tijuana, Curitiba, Temuco, Salvador and Belem are now booming, "with the fastest growth of all occurring cities with between 100,000 and 500,000 inhabitants."⁷⁵

Furthermore, China "may still be under the radar for many westerners but China's second and third-level cities will rise in profile over the next few years."⁷⁶ New city developments by governments and other organizations are now focusing on secondary cities. Sociologist Saskia Sassen suggests that "small cities can be a global platform for companies' global expansion."⁷⁷ Also in China, "[t]he world's top hotel companies are clambering to open properties in China's second- and third-tier cities across all their brands. The sheer size of even tertiary cities, coupled with the growth in domestic travel and the potential gains of modern, international meeting facilities, has led to hotel development at unprecedented levels."⁷⁸ These new developments are trying to integrate secondary cities into the global and local economy as well from the examples that are seen from China. Another development is that some airlines have increased the number of flights to secondary cities in China.⁷⁹

According to the World Bank, secondary cities make up almost 40% of the world cities population. Nearly two-thirds of these are located in Africa and Asia: "They form an important part of an emerging global system of cities."⁸⁰ While the large cities play a significant role in shaping the new economic geography of cities in fostering global

⁷¹Rondinelli, D.A. 1983. Dynamics of Growth of Secondary Cities in Developing Countries. *Geographical Review*, American Geographical Society, Vol. 73, No. 1. January, pp. 42-57.

⁷²UN Population Division. 2002. *World urbanization prospects*, 2007 Revision, New York.

⁷³Population Information Program. 2002 *Population reports: meeting the urban challenge*, Vol. xxx, No. 4, World Bank. p. 1.

⁷⁴Giridharadas, A. 2007. Second Tier' City to Rise Fast Under India's Urban Plan, *New York Times*, May 13, 2007.

⁷⁵Villa, M., Rodriguez, J. 1996. Demographic trends in Latin America's metropolises, 1950-1990, in Gilbert, A. *The mega-city in Latin America*, Tokyo 1996, pp. 33-34

⁷⁶The Travel and Expense News Source. 2013. Special Report: China's Secondary Cities, February 2, 2013.

⁷⁷World's Next Great Cities, *Forbes*, October 23, 2010.

⁷⁸Big Hotel openings in China's Secondary Cities, CEI Asia, July 12, 2012.

⁷⁹China Eastern links secondary Chinese cities, *Business Traveller*, November 18, 2012

⁸⁰World Bank. 2009. *Systems of Cities Integrating National and Local Policies Connecting Institutions and Infrastructures*. World Bank: Washington.

trade, travel and investment, it is secondary cities which will have a much stronger influence in the future upon the economic development of countries."⁸¹

Secondary cities fall into three categories or typologies: 1. Sub-national cities being centres of local government, industry, agriculture, tourism and mining; 2. City cluster development associated with expanded, satellite and new town cities which surround large urban metropolitan regions, and; 3. Economic trade corridors which are urban growth centre or poles planned or developing along major transport corridors.⁸²

"While the industrial revolution and 20th century national self-sufficiency industrialization policies, were to have a profound impact in shaping the development of countries, the current thrust of globalization is changing the dynamics and development of cities, especially developing cities, in ways few would have envisaged half a century ago. There is now growing levels of functional specialization and linkages occurring within the system of secondary cities. The new economic geography has increased competition in small, medium sized cities from international producers and markets. Growing specialization of production systems, supply chains, SMART logistics and inter-modal transfer systems, and the externalization of decision making by expanded consultation, decision-making and investment decisions well outside local government jurisdictions."⁸³ If the efficiency of secondary cities were to improve this could double or triple the GDP of many poor cities and rural regions. In the countries where there is a less distorted system of secondary cities, countries that are not dominated by one mega city, there is generally lower levels of regional development disparities, higher levels of national productivity and income per capita"⁸⁴

⁸¹Roberts B., Hohmann, R. 2014. Secondary Cities: Managing Urban Land Governance Systems. Paper presented at the World Bank and Land Poverty 2014: Uses of Spatial Data in Urban Management

⁸²Roberts B. 2014. The Systems of Secondary Cities. Definition, Trends and Policy Responses in International Development. Cities Alliance: Brussels

⁸³Roberts B., Hohmann R. 2014. [Secondary Cities: Managing Urban Land Governance Systems](#). Paper presented at the World Bank and Land Poverty 2014: Uses of Spatial Data in Urban Management

⁸⁴Roberts B. 2014. System of Secondary Cities: Why they are Important to the Sustainable Development of Nations and Regions, Power Point presentation for the Networking Event: Secondary Cities- Key Links for Equitable and Sustainable City Systems organized by Cities Alliance and IADB at the WUF 7 in Medellin

Annex 2. Global Population by Cities by Population Size, Proportion and Growth 1995, 2010, 2025

Size class of urban settlement	1990	2000	2010	2015	2020	2025	2010 %	2025 %	2010-2025
	Population	Population	Population	Population	Population	Population	Ratio	Ratio	An % Inc
10 million or more	145,005	242,814	352,465	451,145	560,211	630,005	9.9	13.6	3.95%
5 to 10 million	141,999	187,768	266,078	281,226	323,877	401,961	7.5	8.7	2.79%
1 to 5 million	455,502	597,943	759,919	887,590	999,814	1,127,589	21.4	24.3	2.67%
500 000 to 1 million	205,417	269,117	353,802	403,053	450,436	515,720	9.9	11.1	2.54%
Less than 500 000	1,333,482	1,560,991	1,826,313	1,903,779	1,955,479	1,967,307	51.3	42.4	0.50%

Source: UN Urban Prospectus 2011

Cited in: Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.

Percentage of Population Living in Cities by City Size 1995, 2010, 2025

	> 10 million			5 -10 million			1- 5 million			0.5-1 million			<0.5 million		
	1995	2010	2025	1995	2010	2025	1995	2010	2025	1995	2010	2025	1995	2010	2025
WORLD	7.3	9.9	13.6	5.6	7.5	8.7	20.8	21.4	24.3	9.1	9.9	11.1	57.2	51.3	42.4
Less-Developed Regions	6.6	9.6	13.7	6.4	8.2	8.9	20.1	21.2	25.0	9.1	10.3	11.2	57.8	50.7	41.2
Africa	—	5.4	7.5	6.4	2.1	9.1	20.9	26.0	26.9	10.5	9.6	9.4	62.1	56.8	47.1
Sub-Saharan Africa	—	3.6	6.6	3.5	2.8	8.9	22.5	28.7	30.5	12.2	10.3	9.3	61.8	54.6	44.7
Asia	8.6	11.4	15.8	6.7	9.5	9.2	19.4	19.1	23.5	7.9	10.3	11.8	57.4	49.7	39.7
Europe	—	4.1	6.2	5.2	3.9	3.5	16.6	15.3	16.9	10.2	10.2	11.2	68.0	66.6	62.3
Latin America/ Caribbean	15.3	14.0	17.8	3.4	6.2	5.4	20.7	23.7	27.3	10.1	9.0	9.1	50.5	47.1	40.3
Northern America	12.4	11.8	15.4	3.4	11.3	17.0	35.3	33.8	31.4	10.4	9.9	12.4	38.5	33.2	23.9
Oceania	—	—	—	—	—	17.8	53.3	56.4	41.3	4.8	4.2	11.6	42.0	39.4	29.2

Source: UN Urban Prospectus 2011

Cited in: Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.

Proportional Shift in the Growth Rate of Cities by Sizes by Regions 2010-2025

Proportional Shift	10 million	5–10 million	1–5 million	0.5–1 million	> 0.5 million
WORLD	3.7	1.2	2.9	1.2	-8.9
Less-Developed Regions	4.1	0.7	3.7	0.9	-9.5
AFRICA	2.0	7.0	0.8	-0.1	-9.7
Sub-Saharan Africa	3.0	6.1	1.8	-1.0	-9.9
ASIA	4.4	-0.3	4.3	1.5	-10.0
EUROPE	2.1	-0.4	1.6	1.0	-4.3
Latin America and the Caribbean	3.8	-0.8	3.7	0.1	-6.8
Northern America	3.6	5.6	-2.4	2.6	-9.4
Oceania	0.0	17.8	-15.0	7.4	-10.2

Source: UN Urban Prospectus 2011

Cited in: Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.

Number of Cities by Population Size 1995, 2010, 2025 (est.)

	> 10 million			5–10 million			1–5 million			0.5–1 million		
	1995	2010	2025	1995	2010	2025	1995	2010	2025	1995	2010	2025
WORLD	13	23	37	19	38	59	270	388	572	338	513	750
Africa	—	2	3	2	1	9	26	47	81	36	55	91
Sub-Saharan Africa	—	1	2	1	1	7	21	40	71	29	44	71
Asia	7	13	22	11	25	32	119	188	305	139	274	424
Europe	—	2	3	3	3	3	47	49	57	77	83	96
Latin America and the Caribbean	4	4	6	2	4	5	37	55	74	51	60	73
Northern America	2	2	3	1	5	9	36	43	50	34	39	60
Oceania				—	—	1	5	6	5	1	2	6

Source: UN Urban Prospectus 2011

Cited in: Roberts, B. and Hohmann, R. P. 2014. *The system of Secondary Cities – Definition, Trends and Policy Responses in International Development*. Cities Alliance. Brussels.