

HEART

HEALTH & EDUCATION ADVICE & RESOURCE TEAM

Helpdesk Report: Health and nutrition drivers in urban areas

Date: 10 April 2015

Query: What are the main drivers of health and nutritional status for poor people in urban areas (the 'urban poor') in low and lower middle income countries? What role do a) working conditions b) diet and lifestyle c) living conditions (including air pollution) d) access to WaSH e) access to health information and services and f) other issues play in the health status of the poor? What evidence is there of effective interventions (including urban planning and other interventions beyond the health sector) to improve the health status of the urban poor in these countries?

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1. Overview

On average, urban health levels are better than those in rural areas. However, averages can be misleading: once the data are disaggregated, it is clear that the urban poor face health risks often as high as and sometimes worse than those of rural residents, despite the proximity of modern health services (UNFPA, 2012).

This report investigates the role of working conditions, diet and lifestyle, living conditions, access to WaSH, access to and quality of health services and other factors on the health status of the urban poor. Some interventions were also identified. However, there was not scope within this report to fully investigate evidence on interventions.

Working conditions

Linda Waldman comments (section 11) that poor people are often “engaged in polluting and dangerous jobs with no union protection, no arrangements for sick leave and little recognition that the work place is contaminating”. Interviews with men in asbestos factories highlighted that people are prepared to risk their health in order to feed their children.

Reliance on the cash economy may lead to poorer nutritional status than those in rural areas who have subsistence farming (Harpham, 2009). Urban residents must buy most of what they eat, therefore food prices are especially important. Factors that raise urban food prices include inefficient marketing systems, inability to buy in bulk, and elimination of food subsidies (IFPRI, 2002).

Women in urban areas are more likely than those in rural areas to work outside the home in order to contribute to the household’s livelihood. This can be beneficial in bringing in extra income to buy food. However, it may mean less time managing the household, buying and preparing food, or taking care of children. Urban women are found to end breastfeeding two to three months earlier than rural women (IFPRI, 2002). Additionally, because urban residents often travel greater distances to work this reduces time to care for infants and children (Harpham, 2009).

Diet and lifestyle

Food access has a direct impact on dietary diversity and has been seriously affected by rising food and fuel prices, conflict, and the primary or secondary effect of natural disasters in urban areas across the globe (Mohiddin et al, 2012).

As cities expand and become denser there is less access to environmental resources and ecosystem services. In India people are increasingly unable to keep livestock and also not able to purchase milk, ghee, and other products they would have received from livestock. The result is changing diets with lower nutritional status (Waldman, Comments section 11).

Urban dwellers often have less time available for buying and preparing food, greater exposure to advertising, and easier access to supermarkets and street foods. As a result they often eat more processed and prepared foods consuming more saturated and total fat and sugar and less fibre. Combined with a sedentary lifestyle, this diet increases the risk of chronic diseases, including obesity (IFPRI, 2002).

A study in India found that migration into urban areas is associated with increases in obesity, which drive other risk factor changes. Migrants have adopted modes of life that put them at similar risk to the urban population (Ebrahim et al., 2010).

Living conditions

This section discusses housing conditions, risks associated with high population densities including infectious diseases and increased impact of natural disasters, children’s health, air pollution and injuries, accidents and crime.

Evidence demonstrates that poor-quality housing conditions (cold, hot, or damp housing, mould, pest infestation, lead paint, and overcrowded housing) are associated with health problems such as respiratory infections, asthma, lead poisoning, tuberculosis, infectious diseases, and injuries in children. Access to affordable housing can also affect health, because paying a large proportion of one’s income for housing can mean increased stress (leading to poor mental health) and less cash for other necessities (such as food, thus leading to poor nutrition) (Harpham, 2009).

Govender (2011) suggests the design of low-cost housing in Cape Town forces inhabitants into unsafe habits because of poor provision or poor layout of basic amenities. The designers of low-cost houses should take note of the pathways of disease created by the provision and layout of sanitation-associated structures. A Technical Training Resource Centre (TTRC) in Karachi is being piloted (Ismail, 2011). The centre's work includes technical advice for constructing or extending houses and schools, training in construction for those with diplomas in civil engineering and architecture, and training for young people to undertake neighbourhood-level documentation and mapping (this is needed for planning upgrading and for negotiating with government authorities for infrastructure and tenure).

Disease is transmitted more easily among densely settled slum dwellers due to high population densities (Montgomery, 2009). Urban crowding increases the risk of contracting tuberculosis, and high density, low-income urban communities may face elevated levels of risk. Zoonotic diseases such as Ebola are more easily spread in overcrowded conditions (Waldman, 2015). Snyder et al. (2014) suggests the primary factor contributing to slum dwellers' disproportionate disease burden—their invisibility and neglect—also makes them an ideal vehicle for the Ebola epidemic. Overcrowding, high densities and inequitable spatial access also are associated with the spread of HIV (McGranahan, 2007). Data from Kenya, Mali and Zambia show urban prevalence rates are much higher than rural rates (Montgomery, 2009). Densely populated areas also cause a high number of people to be affected when natural disasters hit. The earthquake in Haiti in 2010 had devastating effects as 86 per cent of the people living in Port-au-Prince were in tightly-packed, poorly-built, concrete buildings, largely contributing to the high death toll (estimated at 220,000 people) (RTPI, 2014).

Children's health can also be adversely affected in specific ways. Children without safe places to play are likely to encounter faecal material in the neighbourhood environment. Children with diarrhoeal infections (or respiratory infections) represent a particular hazard, to their play and workmates and to their families (McGranahan, 2007). In Mexico, a program that replaced dirt with cement floors significantly improved the health of young children, leading to reductions in rates of parasitic infection, diarrhoea, and anaemia. As in the case of hygiene interventions, such narrowly focused programs may be affordable in poor countries even if large-scale housing and infrastructure upgrades are not (Montgomery, 2009). Street children tend to have a higher prevalence of health problems related to their exposure to a particularly corrosive physical environment (e.g., skin diseases, respiratory problems, infectious diseases) (Harpham, 2009).

Indoor air pollution is a problem among the urban poor (UNFPA, 2012). Solid fuels, traditional stoves, and open fires for cooking can generate hazardous pollutants. These include suspended particulate matter, carbon monoxide, nitrogen dioxide, and other harmful gases that are believed to substantially raise the risks of acute respiratory infections and chronic obstructive pulmonary disorders. Such fuels are often used by the urban poor, who must cook in enclosed or inadequately ventilated spaces (Montgomery, 2009). It is estimated that 1.5 million people die every year as a result of indoor air pollution from unclean fuels (RTPI, 2014). Latin American literature highlights scientific analyses of outdoor urban air pollution and its effects on respiratory illness via the intake of airborne particulates and other pollutants emitted by industry and vehicles (Montgomery, 2009).

Finally, injuries and death from violence and road accidents are widely cited as a major cause of death in urban areas. This dominates in early adulthood (Harpham, 2009).

Access to WaSH

The recent literature on water and sanitation has drawn attention to unsafe hygiene and water storage practices that cause water to be contaminated after it has been drawn from the pipes. Domestic hygiene interventions, including an emphasis on hand washing (especially

after defecation), control of flies, and encouragement of safer practices in food preparation and water storage can achieve substantial reductions in diarrheal diseases (Montgomery, 2009).

McGranahan (2007) lists features of urban living that reduce barriers for the infectious organisms that cause diarrhoea in crowded, unserviced urban settlements including:

- If the toilets are distant or have long queues, some people will defecate in the open or dispose of faeces by wrapping them in paper or in plastic bags – known variously as the “wrap-and-throw” method or, more facetiously, as “flying toilets” as the bags are sometimes literally thrown away.
- Children are especially unlikely to use distant, crowded or costly toilets, and their faeces are especially hazardous.
- Household solid waste remains unbagged and uncollected, providing a breeding ground for flies and other pests.
- Food preparation is often done outside, or in unscreened kitchens where flies are present.
- Handwashing is often inconvenient.
- Shared toilets, and particularly public toilets, are especially difficult to keep clean, and especially hazardous when they are unclean.

Women affected by schistosomiasis, a parasitic disease common in the absence of adequate sanitation, often end up with lesions in their urogenital tract, which makes them three times more vulnerable to HIV infection. Mothers are seven times more likely to pass HIV to their babies if infected by worms; HIV-infected people who also have malaria can be seven times more contagious (UNFPA, 2012). Lack of water and sanitation also makes people more susceptible to a range of illnesses that overall compromise their immune system and make them more prone to HIV infection and accelerated progression to AIDS.

Experts have expressed concern that, judged in terms of their health benefits, water provision receives undue priority over sanitation and hygiene behaviour, and that water quality receives excess attention over the quantity of water households have available for washing. Within the range of interventions typically identified within the WaSH sector McGranahan (2007) finds the number of rigorous epidemiological studies to be too few to create diagnostic procedures allowing the most effective improvements to be derived from local environment and health conditions. One study does estimate effects and finds water supply through house connection reduced diarrhoea by 63%, hygiene promotion led to 48% reduction, excreta disposal improvements 36% and water supply by public source 17%.

Randhawa and Marshall (2014) argue that enhanced understanding of the policy process, and the alternative arrangements that emerge in response to its shortfalls, could be important contributory factors in identifying realistic intervention strategies for enhanced, more socially just, water management in peri-urban situations.

Joshi et al. (2011) sought urban residents’ views on sanitation and hygiene programmes. Views were that programmes provided inappropriate sanitation, or demanded personal investments in situations of highly insecure tenure, and/or teach “hygiene practices” that relate neither to local beliefs nor to the ground realities of a complex urban poverty.

In India, a programme was introduced to use domestic waste water to grow vegetables in. This has a positive effect as it acts as a fertiliser for the vegetables, but it is not clear what the health implications may be (Waldman, Comments section 11).

Access to and quality of health services

Financial constraints and the increasing requirement to pay for services under cost-recovery policies have a significant role in excluding the urban poor. Perhaps even more importantly,

the low standards of care the poor receive translate into reluctance to use services. This is especially the case with cheap but often less qualified and unregulated private providers (UNFPA, 2012).

Recognising that private sector health care will increasingly dominate in the urban health system, a number of program interventions have sought to foster constructive engagement between the private and public sectors, often with the participation of NGOs in key intermediary roles. Public-private interventions include voucher systems that provide subsidies for the poor, accreditations schemes, and system-wide regulation. Very few of the interventions in these areas have had their health outcomes evaluated in quantitative terms, and little is known yet about the effects on the urban poor (Montgomery, 2009).

Other drivers of health and nutritional status

This section discusses several other factors which impact the health of urban residents. Current health risks and the social inequities that underpin them are likely to be exacerbated by climate change, with impacts ranging from increased frequency of extreme weather events and sea-level rise, extreme temperatures, the rise in the range and spread of infectious diseases, and pressures on urban food security (UNFPA, 2012).

Kith and Lyth (2011) investigate the Lafarge Ecosystems Programme, in the coastal city of Mombasa, Kenya. They find that a well-managed system of green landscapes in resource-poor urban areas can generate net social benefits under a range of future climate scenarios.

Another issue is that anxiety and depression are typically more prevalent among urban women than men and are believed more prevalent in poor than in non-poor urban neighbourhoods (Montgomery, 2009). One of the reasons for this is thought to be a lack of community and inter-household mechanisms for social security, relative to those in rural areas (Harpham, 2009).

Crime and violence in urban areas increases mortality, injury and mental health problems. Intimate partner violence causes injury and mental health problems. Analysis of community-based data for eight urban areas in the developing world indicates that mental and physical abuse of women by their partners is distressingly common, with damaging consequences for women's physical and psychological well-being (Montgomery, 2009).

There is evidence that malaria vectors have adapted to urban conditions in sub-Saharan Africa and there are indications of urban risks in parts of Asia as well (Montgomery, 2009).

Solutions

The literature agrees there is a need for the public health sector to work in tandem with other government agencies. The social capital of the urban poor is also important. Preventing excessive transmission of faecal-oral diseases in urban neighbourhoods typically requires coordinated action on the part of government authorities, utilities and the residents themselves (McGranahan, 2007).

In India, associations of slum dwellers have provided the poor with an effective "voice" in local bureaucratic and political circles, but there are now examples of similar associations across the developing world. A number of these associations began as grassroots savings groups, but with assistance from NGOs have expanded their reach to improve local sanitation (public toilets in Mumbai) and water supply (extensions of water and sewer lines in Karachi) (Montgomery, 2009).

McGranahan (2007) suggests reducing indoor air pollution, like improving water and sanitation, is often presented as a question of improving service delivery (and providing clean

fuels, rather than clean water). He goes on to say that in conditions of extreme poverty, it also raises issues of behaviour, and finding second-best solutions that are affordable.

Zhang and Li (2011) describe awards and competitions used to motivate cities in China to improve public hygiene. Though there was some success, the design of the schemes used in China tends to prioritise disproportionately the winning mentality, and sometimes causes high costs and social tension.

Waldman (2015) highlights that conventional approaches to contagious disease, such as quarantine, are impossible to sustain. Poor peri-urban residents do not have the money to purchase and store in bulk so need to work and buy essentials on a daily basis. Therefore, when quarantine is imposed people find new ways to move through quarantined areas to access to food and water, their immediate priority.

Shanahan et al. (2014) suggests testing causality that transcends disciplinary boundaries between ecology and health will lead to cost-effective and tailored solutions that could enhance population health and reduce health inequalities.

Public health observatories have been useful for evidence-based decision-making, particularly in major urban areas. WHO (2014) describes a case study of City Juarez in Mexico.

IFPRI (2002) note that even in crowded areas, people can often find space to grow vegetables or raise animals to supplement the food they buy. City governments must pay attention to the potential of urban agriculture for improving households' food and livelihood security.

Further investigation on solutions and interventions is required outside of this helpdesk report.

2. Review papers

Urban poverty and health in developing countries

Montgomery MR (2009) Population Reference Bureau

<http://www.prb.org/pdf09/64.2urbanization.pdf>

This Population Bulletin provides a sketch of urban health in developing countries, documenting the intraurban differences in health for a number of countries and showing how the risks facing the urban poor compare with those facing rural villagers.

Data from Mexico urban areas do not necessarily present health profiles that are wholly distinct from those of rural areas. The causes of DALYs lost are broadly similar in urban and rural areas. Of the top five causes in Mexico's cities and towns, three (deaths related to motor vehicles, homicide and violence, and cirrhosis) are also among the top five in rural areas. Violence and traffic-related deaths and injuries are two of the most important causes of death and disability in urban Mexico, but in many countries measures to combat these health risks would be considered outside the scope of the public health system. The data show that even in a middle-income country such as Mexico, diarrheal disease and pneumonia continue to be major causes of urban death and disability.

Urban health averages mask wide socioeconomic differentials; when these are disaggregated, it is clear that the urban poor often face health risks that are nearly as severe as those of rural villagers and are sometimes worse.

Investments in urban public health infrastructure require substantial financial sums, and although public health authorities can help publicise needs and exert pressure, key decision

makers generally reside in other sectors of government. There are, however, complementary initiatives that lie within the purview of public health. The recent literature on water and sanitation has drawn attention to unsafe hygiene and water storage practices that cause water to be contaminated after it has been drawn from the pipes. Domestic hygiene interventions, including an emphasis on hand washing (especially after defecation), control of flies, and encouragement of safer practices in food preparation and water storage can achieve substantial reductions in diarrheal diseases.

Improvements in housing quality can also make a difference to health. In Mexico, a program that replaced dirt with cement floors significantly improved the health of young children, leading to reductions in rates of parasitic infection, diarrhoea, and anaemia. As in the case of hygiene interventions, such narrowly focused programs may be affordable in poor countries even if large-scale housing and infrastructure upgrades are not.

It is difficult to divide the overall health risks that slum dwellers face into the risks attributable to household poverty and the additional risks produced by the spatial concentration of poverty in slum neighbourhoods. Data in this report suggests an impact of concentrated poverty on child mortality in Nairobi, Kenya. The additional risk in Nairobi's slums may be due to multiple factors: the poor quality and quantity of water and sanitation in these communities; inadequate hygienic practices; poor ventilation and dependence on hazardous cooking fuels; the transmission of disease among densely settled slum dwellers; and the city's highly monetised health system, which delays or prevents access to Nairobi's modern health services for the poor.

A distinguishing feature of urban health systems is the prominence of the private sector. In the more monetised urban economy, the urban poor without cash on hand can find themselves unable to gain entry to the modern system of hospitals, clinics, and well-trained providers. Many countries offer subsidies that allow the poor to purchase certain medicines or types of care. But these subsidies often require poor patients and their families to spend time searching for and negotiating with a bewildering variety of providers and suppliers. The poor can be discouraged by the difficulties of finding affordable transport, inconvenient hours of operation at clinics or health centres, the frequent absence of key staff, and long waits to receive care. There are also doubts about the quality of care the poor receive.

Recognising that private-sector health care will likely be an enduring feature of the urban health system, a number of program interventions have sought to foster constructive engagement between the private and public sectors, often with the participation of NGOs in key intermediary roles. An analytic review identified eight general types of public-private interventions: social marketing, whereby commercial marketing methods are used to increase demand for health services; voucher systems that provide subsidies for the poor or other groups; the pre-packaging of medicine kits to encourage proper dosages and lengths of treatment; contracting out for purchasing; franchising of health services to private providers, usually with an NGO or government agency in a monitoring role; accreditation to spread awareness and standardise diagnoses and clinical practice; targeted training; and system wide regulatory interventions. Very few of the interventions in these areas have had their health outcomes evaluated in quantitative terms, and little is known yet about the effects on the urban poor.

Health insurance systems are also being considered with the poor in mind, particularly in Latin America.

Underappreciated urban health risks discussed in this report include:

- Mental health. Anxiety and depression have been found to be typically more prevalent among urban women than men and are believed more prevalent in poor than in non-poor urban neighbourhoods.

- Intimate partner violence. Analysis of community-based data for eight urban areas in the developing world indicates that mental and physical abuse of women by their partners is distressingly common, with damaging consequences for women's physical and psychological well-being.
- Reproductive health. The unmet need for modern contraception is markedly higher among poor urban women than among other urban women.
- HIV/AIDS. Data from Kenya, Mali and Zambia show urban prevalence rates are much higher than rural rates.
- Urban malaria. There is evidence that malaria vectors have adapted to urban conditions in sub-Saharan Africa and there are indications of urban risks in parts of Asia as well.
- Tuberculosis. Urban crowding increases the risk of contracting tuberculosis, and high density, low-income urban communities may face elevated levels of risk.
- Indoor air pollution. Solid fuels, traditional stoves, and open fires for cooking can generate hazardous pollutants. These including suspended particulate matter, carbon monoxide, nitrogen dioxide, and other harmful gases that are believed to substantially raise the risks of acute respiratory infections and chronic obstructive pulmonary disorders. Such fuels are often used by the urban poor, who must cook in enclosed or inadequately ventilated spaces.
- Outdoor air pollution. Latin American literature is especially rich in scientific analyses of outdoor urban air pollution and its effects on respiratory illness via the intake of airborne particulates and other pollutants emitted by industry and vehicles.
- Traffic-related injuries and deaths. One identified problem is that the time pressures on urban parents limit the effort they can devote to closely supervising their children.
- Future risks from climate change. Cyclone, flooding and storm surge risk.

Geographic targeting may be an effective health strategy for reaching slum dwellers, but other approaches will need to be devised to meet the needs of the poor who live outside slums. The health needs of small-city residents—who account for the vast majority of urban dwellers—cannot continue to be neglected.

A main theme in this Bulletin is the need for the public health sector to work in tandem with other government agencies. Public health professionals cannot mandate the provision of safe water and adequate sanitation for the urban poor by themselves; nor can they reorganise traffic flows and pedestrian activities to reduce deaths and injuries, or make cities ready to adapt to upcoming threats from climate change. These priorities will require a strategy of “joined-up governance,” whereby public health agencies join with concerned actors in other sectors of municipal, regional, and national government.

The social capital of the urban poor was emphasised throughout this report—as embodied in their personal networks and in the local political or economic associations with which municipal governments could engage as partners. In the well-documented case of India, associations of slum dwellers have provided the poor with an effective “voice” in local bureaucratic and political circles, but there are now examples of similar associations across the developing world. A number of these associations began as grassroots savings groups, but with assistance from NGOs have expanded their reach to improve local sanitation (public toilets in Mumbai) and water supply (extensions of water and sewer lines in Karachi).

III-health and poverty: a literature review on health in informal settlements

Sverdlik A (2011) *Environment and Urbanization*, 23: 123-155.

<http://eau.sagepub.com/content/23/1/123.full.pdf+html>

This paper reviews the literature on health in the informal settlements (and “slums”) that now house a substantial proportion of the urban population in Africa, Asia and Latin America.

Although this highlights some important gaps in research, available studies do suggest that urban health inequalities usually begin at birth, are reproduced over a lifetime (often reinforced by undernutrition), and may be recreated through vulnerabilities to climate change and a “double burden” of communicable and non-communicable diseases. The review begins with a discussion of papers with a life-course perspective on health, poverty and housing, before considering recent literature on chronic poverty and ill-health over time. It then discusses the literature on the cost, quality and access to care among low-income groups, and the under-recognised threat of unintentional injuries. This includes recent literature that discusses where low-income residents may suffer an “urban penalty” rather than benefiting from urban bias – although there are also studies that show the effectiveness of accessible, pro-poor health care. The concluding section examines emerging risks such as non-communicable diseases and those associated with climate change. It notes how more gender- and age-sensitive strategies can help address the large inequalities in health between those in informal settlements and other urban residents. With greater attention to the multi-faceted needs of low-income communities, governments can create interventions to ensure that urban centres fulfil their enormous potential for health.

Hidden cities: Unmasking and overcoming health inequities in urban settings

WHO and UN-HABITAT (2010).

http://www.who.int/kobe_centre/publications/hiddencities_media/who_un_habitat_hidden_cities_web.pdf?ua=1

Hidden cities highlights the challenges and opportunities urbanisation brings and its effect on the well-being of all urbanites. While it is generally understood that city dwellers on average, enjoy better health than their rural counterparts, very little is known about health differences that exist within cities. The report Hidden Cities reveals the urban health inequities that are the result of the circumstances in which people grow, live, work and age, and the health systems they can access. No city – large or small, rich or poor, east or west, north or south – has been shown to be immune to the problem of health inequity. The future of our urban world has yet to be realised, but brings both a price and a promise. To what extent we will pay the price, as opposed to fulfilling the promise is in our hands.

Our cities, our health, our future: Acting on social determinants for health equity in urban settings

WHO, 2008

http://www.who.int/social_determinants/resources/knus_final_report_052008.pdf

This Knowledge Network on Urban Settings (KNUS) report summarises the findings concerning structural and intermediate social determinants of health that are of importance in the urban setting. The framework of the Commission on Social Determinants of Health (CSDH) guided the work. While unmasking the health inequities and inequalities in urban settings, it was decided at an early stage to make a strategic focus on slums and informal settlements where one billion people live in deplorable conditions. This number may double in coming decades unless appropriate policies for economic, social and health equity are developed and implemented. An example of the health inequalities in these circumstances is the strong gradient in infant and child mortality rates within Nairobi, Kenya, with rates in the slums more than three times higher than the city average and possibly ten or more times higher than in the richer parts of the city. Other data from Africa shows that these mortality rates among the urban poor are, on average, almost as high as the rates among the rural poor, while among the richer urban groups the rates are the lowest.

The key to improved health equity lies in optimising urban settings for health. Urbanisation can be a positive determinant of health in the appropriate circumstances. Social systems based on democracy and strong equity policies have been successful in creating more equitable urban areas in a number of countries. The KNUS process has assembled a wealth

of evidence, facilitated by the fact that there is a current international focus on urbanisation. However, quantitative evidence of health inequalities within cities is seldom available and more research on this topic is needed to underpin policy development.

There is a web of interlinking determinants, both at structural and intermediate levels, which influence urban living conditions and health. These include economic, social and environmental conditions. The links to health impacts, negative or positive, are in many cases well-established. The focus of the CSDH is on policies that address the “causes of the causes” of ill-health. This report identifies contextual factors that affect the growing, living and working conditions in urban settings.

Improving urban health equity through action on the social and environmental determinants of health: Final Report of the GRNUHE (Global Research Network on Global Health Equity)

GRNUHE (2010)

<https://www.ucl.ac.uk/gheg/GRNUHE/GRNUHEPublication/gnuhefinal>

Section 1 of this report provides an overview of the nature of 21st century urbanisation globally. It describes how urbanisation sits within the context of globalisation and how the combination of these two large global processes has contributed to urban health inequities, particularly in LMICs.

In Section 2 the authors demonstrate the plausible causal relationships between the four themes of GRNUHE (urban planning and design, social environment, climate change and urban governance) and urban health inequities. In Section 2 and again in the final section of the report data issues relevant to the social and environmental determinants of urban health inequities are identified.

Section 3 of this report argues that urbanisation can, and must, take place in such a way that improves human health and reduces health inequities. Drawing on evidence in Sections 1 and 2, it lays out what GRNUHE considers to be essential component parts of urban management, if it were to be based on principles of health, equity and environmental sustainability. Learning from the literature and from tacit knowledge of the GRNUHE members about what works to reduce and prevent urban health inequities, it offers suggestions for actions that can be taken to reduce urban health inequities through policy and programs aimed at improving the social and environmental determinants described in Section 2. Central to action in these areas is monitoring of urban health inequities and evaluation of action.

Finally and importantly, based on gaps identified in the evidence base, especially research emanating from LMICs, GRNUHE recommends key elements of a global research agenda. The research agenda is aimed at supporting the development of urban management policy and practice in such a way that it reduces and prevents urban health inequities, particularly but not exclusively, in LMICs.

Urban environments, wealth and health: shifting burdens and possible responses in low and middle-income nations

McGranahan G (2007) IIED

<http://pubs.iied.org/pdfs/10553IIED.pdf>

The chronic conditions and diseases suffered by the urban poor are often neglected, as the formal health system records only the complications or outcomes that require their intervention. Thus, hypertension is often not recorded, but an eventual stroke or heart failure is; mental illness is often not recorded, but suicide, homicide or other violent events are;

diabetes is not recorded, but kidney failure is; early-stage tuberculosis is not recorded, but late-stage is.

The environmental contribution to the current global burden of diseases is closely linked to conditions in and around people's homes and workplaces.

It is estimated that in the year 2000, unsafe water, sanitation and hygiene accounted for about 1.7 million deaths (3.1 per cent of all deaths), and the loss of 54 million disability adjusted life-years (3.7 per cent of DALYs). In the same year, indoor air pollution accounted for an estimated 1.6 million deaths and the loss of 39 million DALYs.

Most of this mortality and disease is linked to diarrhoea in the case of unsafe water, sanitation and hygiene, and lower respiratory infection in the case of indoor air pollution. In 2001, diarrhoeal diseases accounted for an estimated 2 million deaths and 62 thousand DALYs lost, while lower respiratory infections accounted for 3.9 million deaths and 91 thousand DALYs lost. These have long been among the principal diseases at the starting point of the epidemiological transition. The burden of these diseases falls predominantly on (infants and) children living in low-income settings in what are termed developing countries. Thus, it is estimated that 99.8 per cent of the deaths associated with unsafe water, sanitation and hygiene are in developing countries, and 90 per cent of the deaths are of children. The relative importance of these risks in the urban centres of low-income countries is difficult to estimate.

Features of urban living which reduce barriers for the infectious organisms that cause diarrhoea in crowded, unserviced urban settlements include:

- If the toilets are distant or have long queues, some people will defecate in the open or dispose of faeces by wrapping them in paper or in plastic bags – known variously as the “wrap-and-throw” method or, more facetiously, as “flying toilets” as the bags are sometimes literally thrown away.
- Children are especially unlikely to use distant, crowded or costly toilets, and their faeces are especially hazardous.
- Household solid waste remains unbagged and uncollected, providing a breeding ground for flies and other pests.
- Children without safe places to play are likely to encounter faecal material in the neighbourhood environment. Children with diarrhoeal infections (or respiratory infections) represent a particular hazard, to their play- and work-mates and to their families.
- Food preparation is often done outside, or in unscreened kitchens where flies are present.
- Handwashing is often inconvenient.
- Shared toilets, and particularly public toilets, are especially difficult to keep clean, and especially hazardous when they are unclean.

Not everyone in a deprived neighbourhood is equally vulnerable, or has similar responsibilities for the home and neighbourhood environments. The young are especially likely to contract diarrhoeal diseases, and also often have different hygiene behaviours and responsibilities. Women often have the primary responsibility for securing water and maintaining sanitary standards, but often have comparatively little influence over the underlying infrastructure, facilities and service delivery. Thus, age and gender politics can have an important influence on water, sanitation and health. However, without state support, or at least cooperation, it is very difficult to organise effective measures to prevent faecal–oral disease transmission.

Experts have long expressed concern that, judged in terms of their health benefits, water provision receives undue priority over sanitation and hygiene behaviour, and that water

quality receives undue priority over the quantity of water households have available for washing.

Within the narrow range of interventions typically identified with the water and sanitation sector (sanitation, water availability, water quality and hygiene behaviour) the number of rigorous epidemiological studies are too few to create diagnostic procedures allowing the most effective improvements to be derived from local environment and health conditions.

One study estimated water supply through house connection reduced diarrhoea by 63%, hygiene promotion led to 48% reduction, excreta disposal improvements 36% and water supply by public source 17%.

The high-density settlement characteristic of urban living would be expected to make the (average) cost of piped water and sewerage systems lower, and the health impacts of not having such systems higher. Density makes bad sanitation a particular problem, and increases the likelihood that groundwater resources will be contaminated. Indeed, in many urban areas, well-water use is forbidden, although it remains an important source of drinking and, even more often, washing water.

Preventing excessive transmission of faecal–oral diseases in urban neighbourhoods typically requires coordinated action on the part of government authorities, utilities and the residents themselves.

In affluent settings, a combination of taxes and tariffs can fund convenient services that encourage people to engage in hygienic behaviour, and overcome any temptation to engage in practices like open defecation, open dumping, drinking from unsafe water sources, or releasing human waste into open waterways. When it comes to low-income settings, and in particular in informal settlements or those whose legality is questioned, governments, utilities and residents all face far greater challenges.

Efforts to extend water and sanitation networks to all residents of cities in low- and middle-income countries have had limited success. Public utilities ended up in financial difficulties. In the 1990's public-private partnerships were promoted on the grounds that commercial efficiency would replace public bureaucracy and political clientelism, and that the private partners would bring in or attract private capital. However, the private sector did not want to invest private capital in extending water and sanitation to deprived households. Privatisation is not now actively pursued and good governance is now thought the best precondition. This includes creating better relations with the residents of deprived neighbourhoods, and with their organisations.

In addition to faecal–oral diseases, there are numerous other health problems linked to the quality of people's homes, workplaces and neighbourhoods that can also be addressed by locally driven initiatives. Acute respiratory infection is often linked to indoor air pollution, just as diarrhoeal diseases are often linked to bad water and sanitation. Reducing indoor air pollution, like improving water and sanitation, is often presented as a question of improving service delivery (and providing clean fuels, rather than clean water). Yet, particularly in conditions of extreme poverty, it also raises issues of behaviour, and finding second-best solutions that are affordable. There are also gender and childcare issues, some linked to the fact that it is women and young children who are most exposed to smoke, women who are most often responsible for cooking, and young children who suffer most from acute respiratory infections. Not only can further parallels be made with environmental hazards in people's homes and workplaces, but there are also parallels with and indeed direct links to the spread of HIV/AIDS. Malnutrition and infections related to bad hygiene increase susceptibility to HIV, for example.

Other urban conditions associated with the spread or severity of HIV include:

- overcrowding and high densities
- inequitable spatial access and city form
- competition over land and access to urban development resources
- pressure on environmental resources
- pressure on urban development capacity and resources

Urban health in developing countries: What do we know and where do we go?

Harpham T (2009) Health and Place, Volume 15, Issue 1, 107–116.

<http://www.sciencedirect.com/science/article/pii/S1353829208000385>

Because cities are particularly complex in terms of the range of environmental, social and service factors that can determine health, it helps to have a broad understanding of the health system. Essentially this breadth means thinking about determinants in both multi-sector and multi-level dimensions. This paper also suggests the urban poor face appalling choices when it comes to health services. The urban poor die disproportionately of both infectious and chronic, degenerative diseases.

Some of the determinants discussed include:

- Commoditisation. This leads to poorer nutritional status (than those in rural areas who have subsistence farming) and reduced care of infants and children due to distant work places.
- Overcrowded living conditions. Leading to increased spread of infectious diseases and higher accident rates.
- Environmental hazards from dense settlements and exposure to pollutants. Leading to respiratory illness and diarrhoea
- Lack of community and inter-household mechanisms for social security, relative to those in rural areas. This increases the incidence of mental ill health.
- Crime and violence. Increases mortality, injury and mental health problems.
- Traffic accidents lead to injury and death.

Evidence demonstrates that poor-quality housing conditions (cold, hot, or damp housing, mould, pest infestation, lead paint, and overcrowded housing) are associated with health problems such as respiratory infections, asthma, lead poisoning, tuberculosis, infectious diseases, and injuries in children. Access to affordable housing can also affect health, because paying a large proportion of one's income for housing can mean increased stress (leading to poor mental health) and less cash for other necessities (such as food, thus leading to poor nutrition).

While infectious diseases associated with poor environmental conditions (diarrhoea, respiratory illnesses, malaria) are the main killers of children, among adolescents it is often the infectious diseases associated with person-to-person transmission that cause the heaviest burden of disease (TB, STDs including HIV/AIDS). Injuries and death from violence and road accidents unsurprisingly dominate in early adulthood. Certain diseases have much higher levels in certain groups; for example, in almost every low-income urban setting that has been studied, common mental disorders (CMDs) (depression and anxiety) have a prevalence that is typically double in women compared to men (this is found in the North also). Street children tend to have a higher prevalence of health problems related to their exposure to a particularly corrosive physical environment (e.g., skin diseases, respiratory problems, infectious diseases). They are exposed to risky sexual behaviour and related sexually transmitted diseases and health problems associated with drug use. The elderly remain a neglected population in urban health studies: we know very little about their health profile and in many settings they remain a 'hidden' group.

Challenges in improving the health of the urban poor include:

- Financial obstacles are a major challenge for urban health development
- Health and social insurance remain out of reach of the majority of the urban poor.
- A key political challenge to urban health development is the general weakness of municipal structures in low-income countries.
- A variety of partnerships are needed for large-scale urban health action.

3. Working conditions

Urbanization, gender and urban poverty: paid work and unpaid care work in the city UNFPA, 2012

<http://www.unfpa.org/sites/default/files/resource-pdf/UEPI%207%20Tacoli%20Mar%202012.pdf>

On average, urban health levels are better than those in rural areas. However, averages can be misleading: once the data are disaggregated, it is clear that the urban poor face health risks often as high as and sometimes worse than those of rural residents, despite the proximity of modern health services. Residents of informal settlements suffer disproportionately from disease, injury and premature death, and the combination of ill-health and poverty entrenches disadvantage over time.

Household and neighbourhood physical hazards can have a significant health impact on large sections of the urban populations in low- and middle-income countries. These include accidental burns and scalding, indoor air pollution due to inefficient cooking stoves, and the consequences of flooding and extreme weather events. In all cases, women and children are more likely to be affected. Food insecurity and hunger also have consequences for health: between one-quarter and one-third of urban children in low-income nations are commonly found to be stunted. Caring for sick children, ensuring that the family is fed, and cooking in often inadequate spaces with poor facilities is typically part of women's reproductive responsibilities, and has a dramatic impact on their time burden.

These health risks and the social inequities that underpin them are likely to be exacerbated by climate change, with impacts ranging from increased frequency of extreme weather events and sea-level rise, extreme temperatures, the rise in the range and spread of infectious diseases, and pressures on urban food security.

In low-income urban settlements, inadequate access to basic services compounds these risks. Lack of water and sanitation makes people, and especially women, more susceptible to a range of illnesses that overall compromise their immune system and make them more prone to HIV infection and accelerated progression to AIDS. Women affected by schistosomiasis, a parasitic disease common in the absence of adequate sanitation, often end up with lesions in their urogenital tract, which makes them three times more vulnerable to HIV infection. Mothers are seven times more likely to pass HIV to their babies if infected by worms; HIV-infected people who also have malaria can be seven times more contagious.

Urban maternal and newborn mortality also remain high in many low-income countries. A recent analysis of Demographic and Health Survey data from 30 low- and middle-income countries in Africa, Asia and Latin America on access to maternal and newborn services for groups with different levels of poverty found that in some cases maternal, newborn and child mortality rates in poor and marginalised urban sub-groups can be as high as or even higher than among the rural poor. While in some countries this reflects a generalised level of exclusion, where most of the urban (and rural) populations do not have access to services, in others there is a clear marginalisation of the urban poor, with wealthier groups (including rural ones) having disproportionately better access to services. Only very few countries provide access to services to all urban groups, effectively moving towards universal health provision for mothers and babies.

Financial constraints and the increasing requirement to pay for services under cost-recovery policies have a significant role in excluding the urban poor. Perhaps even more importantly, the low standards of care the poor receive translate into reluctance to use services. This is especially the case with cheap but often less qualified and unregulated private providers, which poor urban women are more likely to use.

4. Living conditions, diet and lifestyle

Ambient (outdoor) air pollution in cities database

WHO, 2014

http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/

The database contains results of ambient (outdoor) air pollution monitoring from almost 1600 cities in 91 countries. Air quality is represented by annual mean concentration of fine particulate matter (PM10 and PM2.5, i.e. particles smaller than 10 or 2.5 microns).

The database covers the period from 2008 to 2013, with the majority of values for the years 2011 and 2012. The primary sources of data include publicly available national/subnational reports and web sites, regional networks such as the Asian Clean Air Initiative and the European Airbase, and selected publications. The database aims to be representative for human exposure, and therefore primarily captures measurements from monitoring stations located in urban background, residential, commercial and mixed areas.

Housing conditions, sanitation status and associated health risks in selected subsidized low-cost housing settlements in Cape Town, South Africa

Govender T (2011) Habitat International, Volume 35, Issue 2, 335–342.

<http://www.sciencedirect.com/science/article/pii/S019739751000072X>

This paper provides an assessment on the structural living conditions of selected government-subsidised low-cost housing settlements in the City of Cape Town and the associated health conditions of the inhabitants.

At present the design of these low-cost housing schemes contribute to an increased risk of communicable diseases, rather than an improvement. The recipients of these houses were previously disadvantaged and their sanitation behaviour is inter alia shaped by the amenities at their disposal. The designers of low-cost houses should take serious note of the pathways of disease created by the provision and layout of sanitation-associated structures. The design of low-cost housing should not force the inhabitants of such houses into unsafe habits because of poor provision or poor layout of basic amenities.

The Effect of Rural-to-Urban Migration on Obesity and Diabetes in India: A Cross-Sectional Study

Ebrahim S et al (2010) PLoS Medicine

<http://www.plosmedicine.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pmed.1000268&representation=PDF>

Background: Migration from rural areas of India contributes to urbanisation and may increase the risk of obesity and diabetes. We tested the hypotheses that rural-to-urban migrants have a higher prevalence of obesity and diabetes than rural non migrants, that migrants would have an intermediate prevalence of obesity and diabetes compared with life-long urban and rural dwellers, and that longer time since migration would be associated with a higher prevalence of obesity and of diabetes.

Methods and Findings: The place of origin of people working in factories in north, central, and south India was identified. Migrants of rural origin, their rural dwelling sibs, and those of urban origin together with their urban dwelling sibs were assessed by interview, examination, and fasting blood samples. Obesity, diabetes, and other cardiovascular risk factors were compared. A total of 6,510 participants (42% women) were recruited. Among urban, migrant, and rural men the age- and factory-adjusted percentages classified as obese (body mass index [BMI] ≥ 25 kg/m²) were 41.9% (95% confidence interval [CI] 39.1–44.7), 37.8% (95% CI 35.0–40.6), and 19.0% (95% CI 17.0–21.0), respectively, and as diabetic were 13.5% (95% CI 11.6–15.4), 14.3% (95% CI 12.2–16.4), and 6.2% (95% CI 5.0–7.4), respectively. Findings for women showed similar patterns. Rural men had lower blood pressure, lipids, and fasting blood glucose than urban and migrant men, whereas no differences were seen in women. Among migrant men, but not women, there was weak evidence for a lower prevalence of both diabetes and obesity among more recent (#10 y) migrants.

Conclusions: Migration into urban areas is associated with increases in obesity, which drive other risk factor changes. Migrants have adopted modes of life that put them at similar risk to the urban population. Gender differences in some risk factors by place of origin are unexpected and require further exploration.

5. Access to WaSH

Policy transformations and translations: lessons for sustainable water management in peri-urban Delhi, India

Randhawa P, Marshall F, (2014). Environment and Planning C: Government and Policy 32(1) 93 – 107

<http://www.envplan.com/abstract.cgi?id=c10204>

This paper explores the complex interactions that occur as formal policies are interpreted and utilised to develop water management plans in peri-urban Delhi. With an emphasis on people's participation in decision making, the paper examines some of the disjunctures between formal assumptions about water management in peri-urban areas and practices on the ground. In doing so it attempts to reveal some of the key processes responsible for social fragmentation of services. The paper describes informal coping strategies adopted by poor and marginalised peri-urban communities with little or no access to formal provision. Within this, the role of 'hidden' interactions with the formal system are highlighted in the context of failures of formal participatory platforms. The paper argues that enhanced understanding of the policy process, and the alternative arrangements that emerge in response to its shortfalls, could be important contributory factors in identifying realistic intervention strategies for enhanced, more socially just, water management in peri-urban situations.

Indian cities, sanitation and the state: the politics of the failure to provide

Chaplin SE (2011) Environment and Urbanization, 23: 57-70.

<http://eau.sagepub.com/content/23/1/57.full.pdf+html>

The environmental problems confronting Indian cities today have arisen because millions of people have been forced to live in illegal settlements that lack adequate sanitation and other basic urban services. This is the result of two factors. The first is the legacy of the colonial city characterised by inequitable access to sanitation services, a failure to manage urban growth and the proliferation of slums, and the inadequate funding of urban governments. The second is the nature of the post-colonial state, which, instead of being an instrument for socioeconomic change, has been dominated by coalitions of interests accommodated by the use of public funds to provide private goods. This has enabled the middle class to monopolize what sanitation services the state has provided because the urban poor, despite their political participation, have not been able to exert sufficient pressure to force governments to effectively implement policies designed to improve their living conditions. The

consequence is that public health and environmental policies have frequently become exercises in crisis intervention rather than preventive measures that benefit the health and well-being of the whole urban population.

Health, hygiene and appropriate sanitation: experiences and perceptions of the urban poor

Joshi D, Fawcett B, Mannan F (2011) *Environment and Urbanization* 23: 91-111

<http://eau.sagepub.com/content/23/1/91.full.pdf+html>

“Don’t teach us what is sanitation and hygiene.” This quote from Maqbul, a middle-aged male resident in Modher Bosti, a slum in Dhaka city, summed up the frustration of many people living in urban poverty to ongoing sanitation and hygiene programmes. In the light of their experiences, such programmes provide “inappropriate sanitation”, or demand personal investments in situations of highly insecure tenure, and/or teach “hygiene practices” that relate neither to local beliefs nor to the ground realities of a complex urban poverty. A three-year ethnographic study in Chittagong, Dhaka, Nairobi and Hyderabad illustrated that excreta disposal systems, packaged and delivered as low-cost “safe sanitation”, do not match the sanitation needs of a very diverse group of urban men, women and children. It is of little surprise that the delivered systems are neither appropriate nor used, and are not sustained beyond the life of the projects. This mismatch, far more than an assumed lack of user demand for sanitation, contributes to the elusiveness of the goal of sanitation and health for all. The analysis indicates that unless and until the technical, financial and ethical discrepancies relating to sanitation for the urban poor are resolved, there is little reason to celebrate the recent global declaration on the human right to water and sanitation and health for all.

Strengthening pro-poor targeting of investments by African utilities in urban water and sanitation - the role of the International Development Association of the World Bank

Newborne P, Tucker J, Bayliss K (2012) ODI

<http://www.odi.org/publications/6397-strengthening-pro-poor-targeting-investments-by-african-utilities-urban-water-sanitation-role-international-development-association-world-bank>

This report presents findings from research into the impact of selected projects on water supply and sanitation (WSS) services in urban areas of sub-Saharan Africa (SSA), with particular emphasis on the way in which poor areas and households are included in those investments.

The research has focused on projects carried out by utilities and funded by the International Development Association (IDA). The IDA is an important source of funding for investments in WSS in low-income countries through concessional loans and grants. The research covered utility-implemented, IDA-funded projects in three countries, Ghana, Burkina Faso and Tanzania, focusing on the following cities: Accra (and one other urban centre in Ghana), Ouagadougou and Dar es Salaam.

The study assessed how the inclusion of low-income areas and households is conceptualised in urban WSS policies and strategies, designed in the specific projects under consideration - including the approaches of the water utilities/operators as observed in relation to those projects - and implemented on the ground.

6. Health services

The social determinants of health and health service access: an in depth study in four poor communities in Phnom Penh Cambodia

Soeung et al. (2012) International Journal for Equity in Health, 11 (46).

<http://www.equityhealthj.com/content/pdf/1475-9276-11-46.pdf>

Background: Increasing urbanisation and population density, and persisting inequities in health outcomes across socioeconomic groupings have raised concerns internationally regarding the health of the urban poor. These concerns are also evident in Cambodia, which prompted the design of a study to identify and describe the main barriers to access to health services by the poor in the capital city, Phnom Penh.

Sources and Methods: Main sources of data were through a household survey, followed by in-depth qualitative interviews with mothers, local authorities and health centre workers in four very poor communities in Phnom Penh.

Main findings: Despite low incomes and education levels, the study communities have moderate levels of access to services for curative and preventive care. However, qualitative findings demonstrate that households contextualize poor health and health access in terms of their daily living conditions, particularly in relation to environmental conditions and social insecurity. The interactions of low education, poor living conditions and high food costs in the context of low and irregular incomes reinforce a pattern of “living from moment to moment” and results in a cycle of disadvantage and ill health in these communities. There were three main factors that put poor communities at a health disadvantage; these are the everyday living conditions of communities, social and economic inequality and the extent to which a society assesses and acts on inequities in their health care access.

Conclusions: In order to improve access to health and health services for the urban poor, expansion of public health functions and capacities will be required, including building partnerships between health providers, municipal authorities and civil society.

Health Service Access among poor communities in Phnom Penh

UNICEF, 2009

[http://www.unicef.org/eapro/Health_Service_Access_Among_Poor_Communities_Phnom_Penh_\(Low.pdf](http://www.unicef.org/eapro/Health_Service_Access_Among_Poor_Communities_Phnom_Penh_(Low.pdf)

This study of selected poor populations in Phnom Penh confirmed that health care access to basic preventive and curative services for women and children has relatively high coverage, considering people's capacity to pay. Immunisation rates are high and antenatal services are well used. Mothers have a good knowledge of the risk factors for vaccine-preventable disease, HIV infection, dengue fever and communicable disease. There is also a wide range of market choice of health care service providers, covering traditional, private and public sector services. However, although the quality could not be confirmed, and services come at a high cost relative to income.

Despite the available access and high coverage of health services, the respondents in the study reported poor health outcomes. But they attributed their poor health primarily to the unhealthy social and environmental conditions in which they live.

Findings from the communities studied include:

- poor solid and waste management as well as inadequate shelter and water supply in some locations

- families spent an average of \$66 on health care during the three months prior to the research study
- coverage for immunisations, antenatal care and birth delivery at a facility is surprisingly high, even in the poorest communities
- water, sanitation, waste removal, nutrition, security and income generation were perceived to be the main cause of poor health
- electronic forms of media and word of mouth are the main channels for spreading health information in communities
- overall, people identified poor health in the context of the social conditions in which they live rather than gaps in health service access

In Cambodia, there is no single unified health system in the urban context. There is in fact a health market with a wide range of choice of providers and types of service, even for the urban poor. A better understanding of the dynamics of this health market for the poor would guide policy makers towards improving quality health care and social protection for them.

Policies and systems interventions are needed to protect the poor from the burden of the disproportionate costs through social protection, improvements in public health functions and the health care system. Although the fixed facility strategy has been successful in maintaining coverage, there is still concern regarding pockets of non-immunised children in selected high-risk locations. More investment is required for health centres to micro plan, conduct health education outreach and build stronger partnerships with local practitioners, authorities and NGOs in high-risk communities.

Although there is some degree of clarity of role in relation to the medical service provision through health facilities, the broader functions of public health and primary health care are ill defined. This leaves communities at high risk of communicable disease outbreak. Essential functions of public health need to be defined and resourced, with clear lines of accountability for the Ministry of Health staff, local authorities and communities.

Five recommendations are made under the following headings:

- Community-based services for the urban poor
- Community-based health monitoring of the urban poor
- Health services quality improvement
- Review of the public health functions
- Review and scaling up the social protection policy

Who services the urban poor? A Geospatial and descriptive analysis of health services in slum settlement in Dhaka, Bangladesh

Adams AM, Islam R, Ahmed T (2015) Health Policy Research, 30, i32-i45.

http://heapol.oxfordjournals.org/content/30/suppl_1/i32.full.pdf+html

This spatial analysis of health service supply in poor urban settlements emphasises the importance of taking the informal private sector into account in efforts to increase effective coverage of quality services. Features of informal private sector service provision that have facilitated market penetration may be relevant in designing formal services that better meet the needs of the urban poor.

Motivating service improvement with awards and competitions - hygienic city campaigns in China

Zhang Y, Li B (2011) Environment and Urbanization, 23: 41-5

<http://eau.sagepub.com/content/23/1/41.full.pdf+html>

Awards and competitions are often used to motivate public servants, and this paper examines how the central government of China uses these to try and motivate cities to improve public hygiene. The authors argue that apart from improving performance, awards and competitions are good at motivating user participation and spreading good practice. However, the design of the schemes used in China tends to prioritise disproportionately the winning mentality, and sometimes causes high costs and social tension.

7. Nutrition

Living in the City: Challenges and Options for the Urban Poor

IFPRI, 2002

<http://www.ifpri.org/sites/default/files/publications/ib9.pdf>

Considerations for urban nutrition security:

- The urban cash economy. Urban residents must buy most of what they eat food prices are thus especially important. Factors that raise urban food prices include inefficient marketing systems, inability to buy in bulk, and elimination of food subsidies. Urban residents need secure sources of income, yet they often work for low wages in casual or temporary jobs. When households cannot earn enough income to pay for their own food, safety nets can play an important role.
- The link between city and countryside. In secondary cities many people depend directly on farming within or outside city limits. Policies must take into account that the livelihoods of the urban poor do not exist in geographical isolation.
- Women's work. Women in urban areas are more likely than those in rural areas to work outside the home in order to contribute to the household's livelihood. This can be beneficial in bringing in extra income to buy food. But may mean less time managing the household, buying and preparing food, or taking care of children. Urban women end breastfeeding two to three months earlier than rural women.
- Urban agriculture. Even in crowded areas, people can often find space to grow vegetables or raise animals to supplement the food they buy. City governments must pay attention to the potential of urban agriculture for improving households' food and livelihood security.

Urbanisation often brings with it changes in diets that may pose new risks to people's health and nutrition status. Urban dwellers often have less time available for buying and preparing food, greater exposure to advertising, and easier access to supermarkets and street foods. As a result they often eat more processed and prepared foods. Whereas urban residents typically consume more micronutrients and animal proteins than rural residents, they also consume more saturated and total fat and sugar and less fibre. Combined with a sedentary lifestyle, this diet increases the risk of chronic diseases, including obesity.

Surrounded by uncollected garbage, unsafe water, and overflowing sewers, the urban poor must work hard to prevent contamination of their food and water, to maintain household hygiene, and to control disease carriers like rats and mosquitoes. These conditions contribute to disease and death in children and cause illness among adults.

Urban malnutrition: a review of food security and nutrition among the urban poor

Mohiddin L, Phelps L, Walters T (2012) Save the Children

<http://www.alnap.org/pool/files/nw-urban-malnutrition-jun-13-website.pdf>

This review looks at what is known about the mechanisms by which poor people attempt to achieve food security in urban slums; and to examine how this is related, if at all, to their nutritional status, ideally in comparison with the rural poor in the same countries to assess any relative differences.

Development effort, particularly in the humanitarian and food security sectors, has tended to focus on rural areas. This focus is starting to appear misplaced as more poor people live in urban areas than in rural areas, and as the significant risks faced by urban dwellers are being better understood and given appropriate focus.

The main determinants of food, livelihood and nutrition security are the same for urban and rural areas. However, there is a wide variation in the factors that affect these determinants. For example urban households are more dependent on food purchase, which, if they have sufficient purchasing power, can lead to a more varied diet and higher reliance on 'ready-made' and fast foods, compared to rural households. Food access has a direct impact on dietary diversity and has been seriously affected by rising food and fuel prices, conflict, and the primary or secondary effect of natural disasters in urban areas across the globe.

Poor female-headed urban households or those with high dependency ratios tend to have a dietary diversity equal to that of the rural poor, however existing tools for analysis, such as food consumption scores, tend to be misleading in urban areas where diets may appear diverse, but quantities of dairy products or meat consumed might be negligible. As the urban poor tend to be dependent on income from precarious informal sector jobs that rarely meets their consumption needs, they are more likely to employ risky coping mechanisms, including high levels of debt. Women are more likely than men to have less secure and irregular jobs that are not subject to labour laws and do not offer social or medical benefits. This affects breastfeeding, infant feeding and child care practices, especially for those without family support who must adapt their work patterns or use poor quality childcare.

Environmental issues (e.g. over-crowding, poor water and sanitation, pollution, open sewerage and contamination) are most acute in cities and exacerbated in slums. They have a significant impact on child and household health. Where urban data has been disaggregated by wealth group or studies have focused on the urban poor, high rates of undernutrition (both acute and chronic malnutrition) have been recorded for children under-5 years of age, which are comparable with, or higher than, the rates in rural under-5s. Data that exists for urban poor women reveals high rates of undernutrition combined with rising levels of overweight or obesity in some cases, reflecting the 'double burden of malnutrition'.

8. Zoonoses

Urbanisation, the Peri-urban Growth and Zoonotic Diseases

Waldman L (2015) IDS Practice Paper in Brief 22

<https://www.ids.ac.uk/publication/urbanisation-the-peri-urban-growth-and-zoonotic-disease>

This practice paper in brief uses the spread of Ebola in peri-urban and urban West Africa as an example of how the unprecedented urban growth in Africa and Asia has tested the limits of city planning and public service delivery. The residents of these areas maintain vital connections with rural populations while intermingling with and living in close proximity to urban and elite populations. These interconnections fuel the spread of Ebola. The degradation of natural resources, temporary housing, inadequate water supplies, hazardous conditions and dense concentrations of people in peri-urban areas exacerbate the potential

for zoonotic disease spread. Yet the peri-urban remains largely unacknowledged and under-addressed in development.

Four reasons are listed as to why it is critical to recognise the links between Ebola and urbanisation. First, the peri-urban lacks basic hygiene, which could pre-empt the spread of zoonotic disease. Overcrowding, lack of sanitation and clean water coupled with the lack of health facilities for the poor (despite the often close proximity of hospital and other health institutions) has ramifications for how people deal with Ebola and other diseases. Second, conventional approaches to contagious disease, such as quarantine, are impossible to sustain. Poor peri-urban residents do not have the money to purchase and store in bulk so need to work and buy essentials on a daily basis. When quarantine is imposed therefore, people find new ways to move through quarantined areas to access to food and water, their immediate priority. Third, peri-urban contexts are often characterised by political instability. They are often excluded from rural and urban jurisdictions, partly because residents are often illegal, informal or unrecognised and have little or no political influence. The poor residents' most pressing need, sanitation, becomes a means to undermine their resilience and status. Finally, there is future zoonotic disease spread. Assumptions that urban areas are devoid of wildlife and that bushmeat consumption is a rural phenomenon are problematic.

Development must acknowledge these ever-burgeoning settlements and address the ability of the poor to live safely. This includes the provision of decent hygiene and sanitation, context-appropriate forms of disease containment, the recognition of the peri-urban poor as legitimate citizens, and improved understandings of human/animal interactions.

Ebola in urban slums: the elephant in the room

Correspondence.

Snyder R, Marlow M, Riley L (2014) The Lancet, Volume 2, e685

[http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(14\)70339-0.pdf](http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(14)70339-0.pdf)

This paper highlights urban informal slums as a factor in the Ebola epidemic. Conditions in slums are the perfect breeding ground for Ebola. The presumed introduction of the virus to the slums of Kenema and Freetown in Sierra Leone is likely to have increased its spread. Similarly a slum area in Liberia was key to spread there. Urban residents are likely to be more mobile which makes screening measures difficult.

The primary factor contributing to slum dwellers' disproportionate disease burden—their invisibility and neglect—also makes them an ideal vehicle for the epidemic.

9. Planning

Promoting Health Cities. Why planning is critical to a healthy urban future

RTPI (2014) Planning Horizons, No. 3

http://www.rtpi.org.uk/media/1119385/rtpi_promoting_healthy_cities.pdf

A key issue for developing countries is the 'double burden of disease' which occurs as part of the 'epidemiological transition' associated with development from communicable to non-communicable diseases. Although in the mid-twentieth century urban mortality rates fell below rural mortality rates in low-income countries, the urban poor can often be worse off than the rural poor. In Africa, Asia and the Americas children from the poorest urban families are roughly twice as likely to die as those from the richest urban families. Access to healthcare, social services, and cultural activities are in many cases better in the cities, but may not be evenly distributed among the population.

In the developing world, urbanisation has generally been associated with improved health outcomes. This is because cities offer more or improved basic services (for example potable

water and sanitation) and health facilities including specialised services, which is not always the case in rural settings. However, the picture is more complex and these improvements mask the fact that health outcomes can be worse in cities than in rural areas.

Nearly 12 per cent of the global population live in informal settlements today. Urban growth is projected to be highest in developing regions, where 32.6 per cent of the urban population lived in slums in 2010. Slums are characterised by crowded living conditions and inadequately constructed housing, which put people most at risk of injury. Although this is not limited to developing countries, according to the WHO over 95 per cent of people killed by natural disasters are from low-income countries. These risks were realised in the aftermath of the earthquake that devastated Haiti in January 2010 for example, where 86 per cent of the people living in Portau-Prince were in tightly-packed, poorly-built, concrete buildings, largely contributing to the high death toll (estimated at 220,000 people). In many lower income countries, the exposure to indoor air pollution from the burning of biomass and other cheap energy sources for heating and cooking can cause significant health burdens. It is estimated that 1.5 million people die every year as a result of indoor air pollution from unclean fuels. Investing in cleaner household energy will also help contribute to achieving global greenhouse-gas reductions.

Rapid urbanisation in developing countries results in a lack of basic infrastructure. The lack of an effective planning framework can have negative consequences for health, particularly when it is coupled with poor or non-existent basic infrastructure services, such as paved streets, housing and public transport. In most low-income, and many middle-income countries, local governments do not have the human and financial resources to fulfil these responsibilities, which are done by central government agencies or not at all. For this reason, many new developments take place spontaneously and informally, through individual households or private developers. Well-planned public infrastructure is also important to build resilience to climate change.

It is estimated that 2.6 billion people worldwide do not have adequate access to sanitation, the largest proportion in south Asia, eastern Asia and sub-Saharan Africa. This puts a great number of people in urban areas at risk of developing diseases related to poor water and hygiene, including gastrointestinal infections and diarrhoeal diseases. Most disease transmission occurs at the neighbourhood-scale, although city authorities often see on-site toilet facilities as the responsibility of individuals. Improving access to sanitation in informal settlements remains an ongoing long-term challenge, including for planning.

Untreated wastewater presents a health challenge for many cities and in particular in lower income countries, as it can contain high concentrations of organic material, pathogens, and toxic compounds which can be very detrimental for health. In Asia, an average of only 35 per cent of total wastewater is treated, with the proportion decreasing to 14 per cent in some parts of Latin America and the Caribbean and to zero in some parts of Sub-Saharan Africa. It is also a missed opportunity for water reuse – wastewater can be treated and then used for horticulture, providing nutritious food for city dwellers. For example, in Adelaide waste water is treated and delivered to the nearby Virginia horticultural region where vegetables are grown.

Toward a research and action agenda on urban planning/design and health equity in cities in low and middle-income countries

Smit W, Hancock T, Kumaresen J, Santos-Burgoa C, Sánchez-Kobashi Meneses R, Friel S (2011) *Journal of Urban Health*; 88(5):875-85.

<http://www.ncbi.nlm.nih.gov/pubmed/21858601>

The importance of re-establishing the link between urban planning and public health has been recognised in recent decades; this paper focuses on the relationship between urban

planning/design and health equity, especially in cities in low and middle-income countries (LMICs).

The physical urban environment can be shaped through various planning and design processes including urban planning, urban design, landscape architecture, infrastructure design, architecture, and transport planning. The resultant urban environment has important impacts on the health of the people who live and work there. Urban planning and design processes can also affect health equity through shaping the extent to which the physical urban environments of different parts of cities facilitate the availability of adequate housing and basic infrastructure, equitable access to the other benefits of urban life, a safe living environment, a healthy natural environment, food security and healthy nutrition, and an urban environment conducive to outdoor physical activity.

A new research and action agenda for the urban environment and health equity in LMICs should consist of four main components. We need to better understand intra-urban health inequities in LMICs; we need to better understand how changes in the built environment in LMICs affect health equity; we need to explore ways of successfully planning, designing, and implementing improved health/health equity; and we need to develop evidence-based recommendations for healthy urban planning/design in LMICs.

Toward Improved Public Health Outcomes from Urban Nature

Shanahan DF et al. (2015) AJPH

<http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2014.302324>

There is mounting concern for the health of urban populations as cities expand at an unprecedented rate. Urban green spaces provide settings for a remarkable range of physical and mental health benefits, and pioneering health policy is recognising nature as a cost-effective tool for planning healthy cities.

Despite this, limited information on how specific elements of nature deliver health outcomes restricts its use for enhancing population health. The authors articulate a framework for identifying direct and indirect causal pathways through which nature delivers health benefits, and highlight current evidence.

The authors see a need for a bold new research agenda founded on testing causality that transcends disciplinary boundaries between ecology and health. This will lead to cost-effective and tailored solutions that could enhance population health and reduce health inequalities.

Providing Health Intelligence to meet local needs: A practical guide to local and urban communities through public health observatories

WHO (2014)

http://apps.who.int/iris/bitstream/10665/152645/1/9789241508162_eng.pdf?ua=1

Health observatories have developed the expertise that local decision-makers need to target resources effectively in order to tackle the root causes of inequalities in health, both locally and city-wide. The analytical and knowledge outputs of local health observatories have become essential tools for local evidence-based decision-making, particularly in major urban areas.

This guide draws together the learning and experiences of a broad range of local health observatories. Detailed case studies are provided on the City of Juarez in Mexico and, London.

The Technical Training Resource Centre (TTRC): building community architects

Ismail A (2011) *Environment and Urbanization*, 23: 183-193.

<http://eau.sagepub.com/content/23/1/183.full.pdf+html>

This paper describes how the Technical Training Resource Centre (TTRC) was set up by a young trainee of the Orangi Pilot Project–Research and Training Institute (OPP–RTI) to support better quality housing and infrastructure provision in the kaatchi abadis (informal settlements) of Karachi. The centre’s work includes technical advice for constructing or extending houses and schools, training in construction for those with diplomas in civil engineering and architecture, and training for young people to undertake neighbourhood-level documentation and mapping (this is needed for planning upgrading and for negotiating with government authorities for infrastructure and tenure). The paper also discusses the difficulties that the TTRC faced, including generating sufficient funding to cover its costs.

10. Other issues/background

On the Edge of Sustainability: Perspectives on Peri-urban Dynamics, STEPS Working Paper 35

Marshall, F., Waldman, L., MacGregor, H., Mehta, L. and Randhawa, P. (2009). Brighton: STEPS Centre.

<http://www.ids.ac.uk/publication/on-the-edge-of-sustainability-perspectives-on-peri-urban-dynamics>

This paper examines some of the many ways in which the peri-urban has been theorised, considering, in particular, the implications for a normative research agenda towards improved environmental and social justice. The paper discusses the value of different notions of sustainability in the context of the peri-urban, challenging the view that ‘sustainability’ is not an appropriate goal in relation to cities which are seen, by some urban theorists, as inherently ‘unsustainable’. Drawing on examples, largely from south Asia, in health service provision, water management and agriculture and food systems, the particular challenges posed by the peri-urban situation in relation to environmental integrity and social justice are reviewed (in line with the STEPS definition of Sustainability which emphasises that the objects being sustained are increasing levels of social justice and enhancing environmental integrity). The contribution of both peri-urban theoretical conceptualisations and empirical research to date in the context of Sustainability goals are reviewed, offering suggestions for complementary approaches and progression. Drawing on a notion of pathways (as self-reinforcing trajectories of change - both existing and potential), alternative perspectives in planning and management of the peri-urban are considered through examples from policy and practice across sectors; initiatives to increase participation in urban planning processes; citizen action to mobilise access to key resources for the poor, and the engagement of poor and marginalised groups.

Sustainable cities: research in rapidly urbanising India

Overview of STEPS Research, February 2014

http://steps-centre.org/wp-content/uploads/Urbanisation_web.pdf

This brochure sets out some key resources from the STEPS Centre’s work on urbanisation, tackling how citizens, science, policy and politics interact and how pathways to sustainability based on an enhanced understanding of complex, diverse and risk-prone urban and peri-urban situations can be achieved.

Urban wildscapes and green spaces in Mombasa and their potential contribution to climate change adaptation and mitigation

Kitha J, Lyth A, (2011) Environment and Urbanization 23: 251-265

<http://eau.sagepub.com/content/23/1/251.abstract>

Well-planned urban green landscapes, including wildscapes and green spaces, have the potential to contribute to climate change adaptation and mitigation. Yet for cities in low-income countries, the value of these urban landscapes in climate change response strategies is often disregarded and remains largely unexploited and unaccounted for. This paper discusses the potential role of urban green landscapes as a “soft engineering” climate change response strategy, and calls for the pursuance of management practices that preserve and promote the use of these urban spaces. It does so by combining theoretical arguments with an empirical example based on an innovative and novel approach to landscape rehabilitation, the Lafarge Ecosystems Programme, in the coastal city of Mombasa, Kenya. The paper finds that a well-managed system of green landscapes in resource-poor urban areas can generate net social benefits under a range of future scenarios. It further finds that climate change adaptation and mitigation responses can be initiated by a range of stakeholders operating at all scales.

Understanding the nature and scale of urban risk in low- and middle-income countries and its implications for humanitarian preparedness, planning and response

Dodman D, Brown D, Francis K, Hardoy J, Johnson C, Satterthwaite D (2013) IIED

<http://pubs.iied.org/pdfs/10624IIED.pdf>

Urban risks from environmental hazards are divided into physical hazards, biological pathogens and chemical pollutants. Physical hazards include floods, storms and drought. Biological pathogens are disease-causing agents, which can be spread through air (such as TB), water and food (such as diarrhoeal diseases) and disease vectors (such as malaria and dengue). Cities are also exposed to a range of technological disasters, such as transport or industrial accidents often caused by chemical pollutants. Many cities also have high-risk levels from violence and conflict.

Key points on the nature and scale of urban disaster risk:

- There are a wide range of physical, biological, technological and chemical hazards within urban areas that cause or contribute to both intensive (disasters) and extensive (small disaster and everyday) risk.
- Urban centres can be environments of extremely low or high risk, depending on a number of interrelated factors of which the presence of basic protective infrastructure, and the quality and capacity of local governance, are usually the most important.
- Across a city some groups will be more vulnerable to hazards than others, determined by cross-cutting issues such as income, gender, age, health status and so on.
- Urban risk often accumulates over time as urban centres expand without the required investments in infrastructure, services and land-use management.
- There is a growing focus on building resilience within cities to a wide range of hazards.

Key points on geographical distribution of risks:

- There are no disaster risk assessments for many cities, and where they do exist they frequently focus only on exposure to hazards. Together with a lack of local analysis, this makes it difficult to compare risk between different cities.
- A significant proportion of the literature on risk focuses on flood risks in large cities. There is a growing body of literature on risk from urban violence, particularly in Latin America and the Caribbean.

- There is little data on urban risk in sub-Saharan Africa and in smaller urban centres worldwide.
- Urbanisation is likely to further complicate the disasters-conflict interface in fragile and/or conflict-affected states.
- Risks are generally much lower in cities in which protective infrastructure has been developed over long periods of time, and in which there are competent, accountable, adequately resourced municipal governments that work well with their low-income population.

Urban risk is often created or exacerbated by local government's incapacity to act in the public good, guide urban growth and ensure infrastructure and service provision. There are a number of cities where risks have been greatly reduced through 'accumulated resilience', good local governance and community-based responses. Disaster risk reduction needs to be mainstreamed into urban and development planning for the most resilient cities.

It is not possible to predict precisely how extreme weather related risks for cities will change, but it is possible to build into city development a resilience to more intense or frequent extreme weather. Few detailed risk/vulnerability assessments have been undertaken at the city scale, and of those that have been undertaken, most do not cover the complete spectrum of risks (including everyday risks and small disasters). Human-induced climate change is adding an extra dimension to understanding risk. There has been a gradual shift in focus to managing uncertainty (through developing resilience) rather than focusing on specific risks. To plan effectively, multi-hazard and vulnerability risk assessments (both present and future) need to be conducted at the city scale, using scientific data and local knowledge.

Policy implications for humanitarian preparedness, planning and response:

- Humanitarian actors and agencies are increasingly directing their attention to urban areas and pursuing urban policy initiatives.
- Working in urban areas is outside the comfort zone of most humanitarian agencies. A rural approach will not fit most urban contexts.
- Understanding 'how cities work' from a systems perspective provides a useful entry point for understanding urban risk.
- More investment should be directed towards linking response, early recovery and reconstruction to long-term development, risk mitigation and resilience. Responses need to work with and be accountable to those who are most vulnerable.

The state of urban health in India; comparing the poorest quartile to the rest of the urban population in selected states and cities

Agarwal S (2011) Environment and Urbanization, vol. 23, No. 1, 13-28

<http://eau.sagepub.com/content/23/1/13.full.pdf+html>

India has the world's second largest urban population (after China). This paper shows the large disparities within this urban population in health related indicators. It shows the disparities for child and maternal health, provision for health care and housing conditions between the poorest quartile and the rest of the urban population for India and for several of its most populous states. In the poorest quartile of India's urban population, only 40 per cent of 12 to 23 month old children were completely immunised in 2004–2005, 54 per cent of under-five year-olds were stunted, 82 per cent did not have access to piped water at home and 53 per cent were not using a sanitary flush or pit toilet. The paper also shows the large disparities in eight cities between the poorest population (the population in the city that is within the poorest quartile for India's urban areas), the population living in settlements classified as "slums" and the non-slum population. It also highlights the poor performance in some health-related indicators for the population that is not part of the poorest quartile in

several states – for instance in under-five mortality rates, in the proportion of stunted children and in the proportion of households with no piped water supply to their home.

Off the map: the health and social implications of being a non-notified slum in India

Subbaraman R, O'Brien J, Shitole T, Shitole S, Sawant K, Bloom DE and Patil-Deshmukh A (2012) *Environment & Urbanization*, 24(2):643-663.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3565225/pdf/nihms431240.pdf>

Approximately half of all slums in India are not recognised by the government. Lack of government recognition, also referred to as “non-notified status” in the Indian context, may create entrenched barriers to legal rights and basic services such as water, sanitation and security of tenure. In this paper, we explore the relationship between non-notified status and health outcomes in Kaula Bandar, a slum in Mumbai, India. We illustrate this relationship using the findings of a four-year long series of studies in the community. By comparing Kaula Bandar’s statistics with those from other Mumbai slums captured by India’s National Family Health Survey–3, we show that Kaula Bandar has relative deficiencies in several health and social outcomes, including educational status, child health and adult nutrition. We then provide an explanatory framework for the role that Kaula Bandar’s non-notified status may play in generating poor health outcomes, by discussing the health consequences of the absence of basic services. We also highlight the criminalisation by the government of activities necessary for fulfilling access to fundamental needs such as water, toilets and shelter. We argue that the policy vacuum surrounding non-notified slums such as Kaula Bandar results in governance failures that lead to poor health outcomes. Our findings highlight the need for cities in India and other developing countries to establish and fulfill minimum humanitarian standards in non-notified slums for the provision of basic services such as water, sanitation, solid waste removal, electricity and education.

Climate and health in informal urban settlements

Kovats S, Lloyd S, Scovronick N. (2014) IIED, LSHTM.

<http://pubs.iied.org/10719IIED.html>

This paper guides those who are interested in the current and potential health impact of climate change on urban populations in low- and middle-income countries. It describes the sources and types of health data available to assess current disease burdens and the relative importance of environmental risk factors. This includes how to identify sources of mortality and morbidity data in cities. It also shows how health data are incorporated into survey designs with examples of how this can assess weather and climate related disaster impacts on health in particular cities. Such work is challenging when routine health data (including the recording of causes of death) are not available.

11. Additional information

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