Chapter 2
Health, Sustainable Development Goals and the New Urban Agenda

Joan Clos and Rosa Surinach

2.1 Introduction

Urbanization is one of the few human and social processes that spontaneously takes place as a result of government policies, including those in neighbouring regions, in the case of migration-related urbanization. Urbanization has both positive and negative implications. If managed effectively, it can result in thriving, productive and healthy cities, or, conversely, it can result in suffering and inequity on a large scale. We see this in our growing cities and in the projected growth of our combined urban population from 50% currently to around 70% in the next 30 years. This is why urbanization has become one of the most important global trends of the twenty-first century, and according to OECD recent research, its impacts will be more keenly felt than climate change in the immediate future. Investing in good urbanization is a guarantee of prosperity and development particularly in developing countries, where major urban transformations will inevitably take place. But how do we achieve good urbanization and, more importantly, how do we ensure urbanization results in good health and wellbeing?

The *UN Global Sample of Cities*, a UN-led initiative, was the first scientific analysis of world urbanization based on satellite images of a representative sample of 200 of the world's 4231 cities in 2010. The analysis revealed that current urban practices are unsustainable, even as they remain the main driver of economic development. Cities are increasingly less planned, leading to spontaneous urbanization (and urban poverty growth), which, in turn, decreases the quality of life for millions. The density of cities has also declined by 52.5% and 37.5% in developed and developing countries, respectively. Such urban sprawl and reduced density is a result of a

J. Clos (✉) · R. Surinach (✉)
United Nations Human Settlements Programme (UN-Habitat), Under-Secretary General, United Nations, Nairobi, Kenya
e-mail: jclos.mat@gmail.com; surinach@un.org

M. Nieuwenhuijsen, H. Khreis (eds.), *Integrating Human Health into Urban and Transport Planning*, https://doi.org/10.1007/978-3-319-74983-9_2

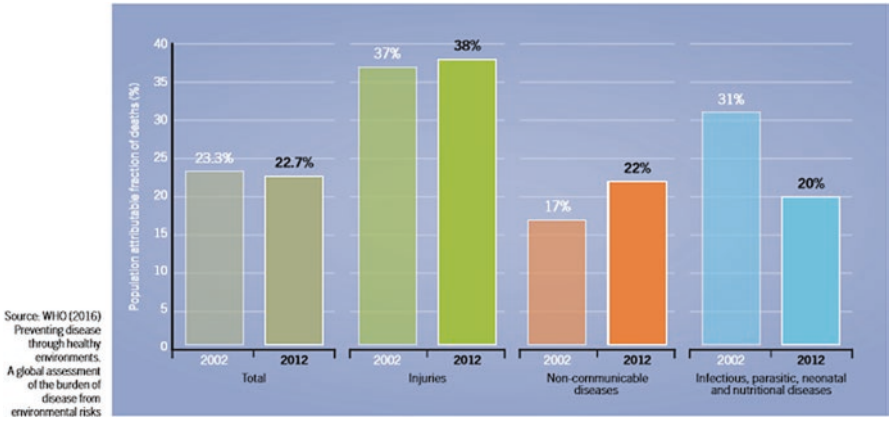

Fig. 2.1 Trend in the proportion of deaths attributable to the environment by disease group, 2002–2012

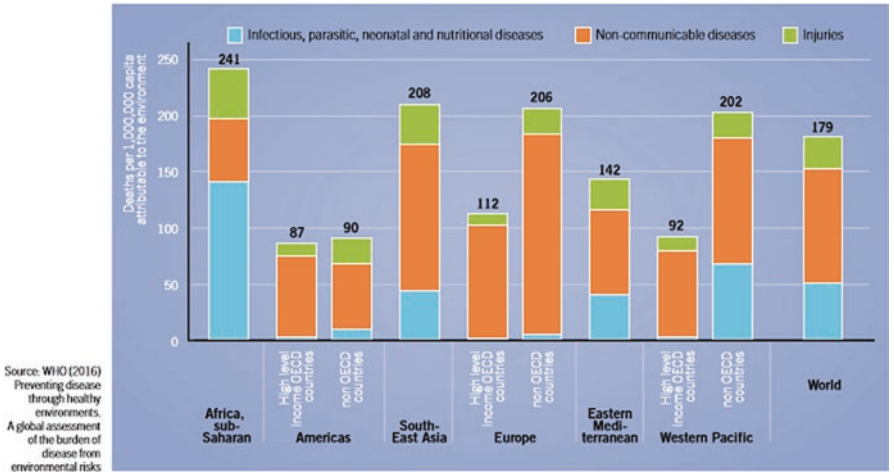

Fig. 2.2 Deaths per capita attributable to the environment, by region and disease group, 2012

change in lifestyle and has significant consequences for urban health both in terms of disease transmission and poor lifestyle.

A recent review of environmental health (WHO 2016a, b, c, d) has clearly shown the changing face of environmentally influenced diseases (see Figs. 2.1 and 2.2). In 2012, it was estimated that 12.6 million deaths were caused by poor environment, which influenced air, food and water quality. This equates to 23% of the global population. Further disaggregation shows that this figure raises to 26% of children under 5 years old and 25% of adults between the ages of 50 and 75. The difference between the total impacts for men and women is 2% extra for men, likely due to increased occupational risk, as the percentage of men employed is 50% higher than

women. It is clear that most of these deaths are entirely preventable and that they could be greatly reduced by limiting exposure to multiple risk factors.

In terms of disease profiles, we see some patterns emerging. In many regions, we see a shift away from infectious, parasitic and nutritional diseases towards NCDs. This is mainly attributed to exposure to chemicals, poor air quality and unhealthy lifestyles. It does, however, give the clear message that in sub-Saharan Africa, for example, communicable diseases (mainly infectious, parasitic and nutritional diseases) will continue to exert a heavy health burden.

The current trends in urbanisation, when combined with epidemiological evidence, show an intensification of both infectious and non-communicable diseases in urban areas.

Historically, the evidence that poor environment is responsible for ill health is not new. The Report of the Sanitary Commission of Massachusetts (Shattuck 1850) not only clearly outlines the health impacts of poor environment, but it also compares Massachusetts with other cities worldwide. It also quantifies very elegantly the economic impact of early death of the breadwinner in a family and the costs of supporting those left behind. It is perhaps not surprising that this report was republished and considered essential reading for public health officials in 1948. The report has stood the test of time and is equally valid today, especially when its principles are applied to the developing country cities of today.

Moving to the present day and considering sustainable urbanisation, health is well articulated in the New Urban Agenda (NUA) which was negotiated in Quito, Ecuador, in 2016. The NUA has a *collective vision and political commitment to promote and realise sustainable urban development. It is a historic opportunity to leverage the key role of cities and human settlements as drivers of sustainable development.*[1] Its significance is that it is an action-oriented guide for national, subnational and local governments and that it is composed of five pillars to effectively address the complex challenges of urbanisation. These are national urban policies, rules and regulations, urban planning and design, financing urbanisation and local level implementation (UN-Habitat 2006).

The New Urban Agenda adopted at Habitat III differs from previous global conferences in its recognition of the fundamental linkages between health and sustainable urban development. It further clarifies the importance of these linkages and that health is not only about the provision of health-care services but that it also reflects decades of experience and advances in our understanding of how the shape and form of urban development influence the health of city residents. The NUA recognises that effective urban planning, infrastructure development and governance can mitigate risks and promote the health and wellbeing of urban populations. There is, however, a need to further address how specific urban policies can contribute to reducing disease burdens.

[1] Article 22 of the New Urban Agenda

2.2 Urban Policy and Its Contribution to Reducing Infectious and Non-communicable Diseases

Cities have the huge responsibility and opportunity of promoting healthier urban environments. They can do this through taxation and advocacy and by encouraging citizens to adopt a healthier lifestyle. Good examples include the control of tobacco, alcohol use and poor or "junk food". For infectious diseases, cities can provide incentives to improve access to cleaner water, sanitation, solid waste management and energy and through improved housing.

The global pandemic of non-communicable diseases, which include heart diseases, strokes, cancers and respiratory diseases, is the largest cause of death globally. In India, for example, cardiovascular diseases and cancer are the two leading causes of death. The design of urban space and planning policy greatly influence the main risk factors such as the lack of access to public transport and safe spaces for walking and cycling and increased use of motor vehicles which promote sedentary attitudes in addition to exposure to traffic-related air pollution. Citizens often have little control over these issues and certainly a limited ability to influence policy. When coupled with personal risk factors such as poor diet and alcohol and tobacco use, the result is a huge economic burden both in terms of lost productivity and health-care costs.

Considering infectious diseases, the lack of access to a good water supply and sanitation results in high levels of water-borne diseases including cholera and typhoid. Poor garbage or solid waste management causes blocked drainage channels which promote the spread of vector-borne diseases such as dengue, Zika and chikungunya, which are emerging disease threats in rapidly unplanned urban areas.

2.3 Urban Health Risks from Poor Air Quality and Extreme Climate Events

Air pollution is a major cause of NCDs. Vulnerable populations are often at risk from a variety of sources which may expose them to pollutants, including vehicle emissions and industrial discharges. In a recent analysis of data from 3000 cities around the world, 80% of them did not meet the recommended WHO air quality guidelines, a critical parameter being the presence of fine particulate matter, produced mainly by vehicle diesel-engines. 60% of European cities, 20% of North American cities and 40% of high-income Asian cities fail to meet adequate air quality standards. Effective planning policies can significantly reduce this problem (WHO 2016a, b, c, d).

Air pollution affects everyone in a city, both the rich and the poor. However, marginalised populations can often get the best benefits from air pollution mitigation policies. Many dwellers in low-income communities are exposed to multiple risk factors, not only air pollution from traffic, industrial plants and waste dumpsites

but also indoor air pollution from poor cooking and heating and additional exposures in the workplace. Policies that support use of cleaner fuels for cooking, etc. can greatly assist in this respect. Women and children, as the most intensive users of housing, are generally in a more vulnerable situation.

The increasing effects of climate change are now very evident. Many people, especially in poorer communities, are forced to live in areas which are prone to flood risk and landslides. They lack access to green and blue spaces, they do not benefit from the reduced heat island effect and they lack access to areas free from pollution or places to exercise. In addition to physical health, wellbeing and, in particular, mental health are compromised when individuals do not have access to such facilities (Campbell-Lendrum and Corvalan 2007).

Urban design can help to reduce inequities both in service provision and health status and lead to more inclusive and productive urban societies.

2.4 Translating the Evidence into Good Policy

The body of evidence is considerable, but there is still room for improvement in terms of policy development. Despite the fact that it is likely that discrete, stepwise improvements in health care are achieved, there is the need to provide resource-constrained urban administrations with tools to help determine the disaggregated risks from multiple sources. To put it more simply, if you need to know where the most impact can be made for a specific investment, a better understanding of the discrete health benefits and their spatial disaggregation is critically important. The intra-urban differential then becomes very important.

In some cases, scientific research has greatly assisted policy. The case of cycling in polluted urban environments is a good example. For outdoor air $PM_{2.5}$ concentrations of 90 $\mu m/m^3$, the health benefit gained from exercise exceeds the health risks of inhaling particulates. However, if the $PM_{2.5}$ concentration exceeds 160 $\mu m/m^3$, the risks from air pollution are greater than the benefit of exercise (Tainio et al. 2016).

Concerning infectious diseases related to poor water and sanitation provision, it has to be stated that although the bulk of opinion shows that significant advances have been made where infrastructure provision has improved, there is a need for a more exhaustive research to quantify the incremental benefits from improved water, sanitation and waste management.

2.5 Focusing on the Most Vulnerable Populations

There is clear evidence that socio-economic deprivation and health inequity are inextricably linked. Early death and disability are significantly higher amongst slum and informal settlement communities. The current migration patterns have greatly exacerbated slum formation due to civil strife. In fact, in the Middle East region, the proportion of urban dwellers living in slums has increased, as compared to a

decrease in other areas. Although the overall trends are declining, slum dwellers are increasing in terms of absolute numbers. The national statistics also mask the trends in some rapidly expanding areas such as the smaller urban centres in many sub-Saharan African countries (WHO and UN-Habitat 2016).

2.6 Critical Constraints to Delivering Improved Health

2.6.1 Understanding Urban Form

Perhaps one of the biggest hurdles to designing improved health systems is the failure to understand that the definition "urban" covers a range of possible situations depending on where you are in the world. It is often only an arbitrary or an administrative definition, and it has little bearing on the population demographics. Many settlements fall somewhere in between megacities and rural homesteads. These can be small towns, large villages, secondary urban centres or, indeed, conurbations. These settings have the population densities and the lack of access to basic services commensurate with the urban dwellings in megacities, but they suffer from the inefficiency of local authorities, who are severely resourced constrained and typically not fully supported by the central government and line ministries. A better understanding of the type of urban settlement will also be a critical factor in determining:

- Access to primary health-care facilities
- The potential to improve one's lifestyle
- The opportunities for community cohesion/engagement to support more formal health interventions

Assuming there is a better comprehension of the urban form, there is a need to fully understand that intra-urban health differentials exist. National estimates, or indeed city-wide data, may hide huge differentials between the wealthier and their poorer neighbours. Formal government structures have neither the resources nor the outreach to collect this information, and this is perhaps where local authority partnerships with civil society groups show a great deal of promise. Lower socioeconomic residents are often exposed to multiple risks, as they lack services, they face risk of injury at their place of employment, and they live in areas prone to flooding or other risks and higher environmental stress.

2.6.2 Multisectoral Approaches to Support Health Interventions

It is generally being recognised that health systems delivery needs support from those outside the health sector if advances in global health are to be made. This is particularly important with respect to preventative approaches to health care, driven

by poor environment, for example. The approach has been documented in areas such as malaria management (RBM 2013), but it has yet to reach its full potential. There is some evidence that it may be easier to promote the uptaking of multisectoral approaches in more resource-constrained urban areas. This may be driven out of necessity, where strong local leaders are convinced of the benefits, and, perhaps, at times of disease epidemics. The reason that the uptaking of multisectoral approaches is slow is also due to ignorance and fear and due to the concern that budget cuts or staff redundancy may result. In poorer cities, where resources are constrained, conditions will most likely encourage resourceful officials to adopt innovative approaches.

2.7 Urban Policies that Support Improved Public Health

2.7.1 Transport and Mobility

The provision of safe, affordable and accessible transport is a key element of the Sustainable Development Goals (SDGs) Target 11.2. It seeks to expand public transportation making it easier for vulnerable groups to use. Good mass transportation, high density and compact urban design go hand in hand. Efficient planning will result in lower travel times and costs, especially if the right mix of walking and cycling facilities are combined with public transport and rapid transit systems. This must be done in a way that reduces hazards for pedestrians and cyclists from motorised transport, which has been shown to greatly reduce the prevalence of NCDs. Encouraging less private motor vehicle use impacts positively on air and noise pollution. Public transport can also help to promote equity in access to employment, educational and social amenities.

Recent evidence indicates that significant health gains can be made from restricting the use of diesel engines for both commercial and private vehicles in dense urban systems. The exhaust gases are carcinogenic and emit a greater proportion of small particulate matter which is associated with increased stroke, heart and respiratory disease and early death (WHO 2003).

For example, traffic congestion in Mexico City needed urgent action to reduce congestion and improve air quality. Over the past 10 years, improved bus rapid transport systems serving around one million passengers a day encouraged 10% of the population to leave their cars at home. The reductions in air pollution resulted in the saving of 6100 days of lost work, together with reduced cases of bronchitis and deaths (WHO and UN-Habitat 2016). Additionally, an innovative bike-sharing programme was developed, and it was integrated with the metro rail and bus systems, offering one payment for all. Greater access to parks and green spaces was also made possible.

2.7.2 Energy

Inefficient energy use in homes in urban areas contributes significantly to both indoor and outdoor air pollution and greenhouse gas generation (WHO 2016c). A change in energy systems from fossil fuel to renewable sources will reduce these emissions and indirectly impact on health both in terms of extreme climate events and global warming.

It is reported that in Indian cities, close to a third of outdoor air pollution comes from indoor sources. The use of biomass fuels in Southeast Asia and African domestic environment is popular and results in more than one million deaths from chronic obstructive pulmonary disease (COPD). It is also responsible for half of all deaths from childhood pneumonia. Policies promoting the use of clean efficient cook stoves and similar devices for heating and lighting can avert a large number of these deaths. The use of photovoltaic lighting, for example, in addition to improved air quality, is much less risky in respect of injuries. Recent public-private partnerships (PPPs) have seen the cost of such solutions greatly reduced to a level at which they are affordable for the poor (WHO 2016c).

For example, a 2008 scheme in Cape Town, South Africa, where PPPs were used to initiate a housing improvement programme in a low-income area Khayelitsha Township, has had significant health outcomes. Houses have been upgraded with insulation, compact fluorescent lamps and solar heating, which has reduced energy costs by approximately USD 110 per household and 2.8 t of CO_2 per household per year. Huge reductions in respiratory diseases were also shown.

2.7.3 Water Sanitation and Waste Management

Not having access to clean and safe water and to sanitation facilities ranks as one of the highest causes of early death, particularly in children. There are not only risks from gastrointestinal diseases but also of many diseases related to water availability, such as the so-called water washed diseases, which include skin infections and trachoma. The results, when combined with malnutrition, can kill very young children rapidly. In addition to early death, many of the more chronic water-borne diseases cause anaemia. Chronic helminth infections result in sick children whose learning capacities are affected.

Solid waste management is also becoming increasingly important, as it is a source of local contamination, it pollutes water resources and it contributes to air pollution through the burning of waste and spontaneous combustion at landfilling sites. The collection and recycling of wastes is a popular occupation amongst young children, who reside at refuse tips and make a living from separating and selling valuable materials. This is often carried out in an unsafe manner, with little protection. Increased cases of chronic respiratory infections, chloro-acne and other diseases are common. Discarded waste also serves as a reservoir for disease vectors,

such as rats, sandflies and mosquitos. This results in increased incidence of vector-borne diseases such as plague and leishmaniasis. More recently, there is evidence that Zika vectors bred in discarded refuse (PAHO 2016).

Although in the developing world much reusable waste is recycled, the remaining organic fraction is frequently discarded. This contributes to greenhouse gas emissions in the form of methane from landfills and wastewater sludge and biomass. Energy from waste needs to be better utilised as much of the organic material could be used to generate biogas for power generation.

In Nairobi, Kenya, between 2000 and 2012, a coordinated effort between government ministries, development agencies and civil society greatly improved access to water and sanitation in the city slums. Piped water access increased from 3% to 60% and the use of water-borne sanitation increased by six times. As a result, there have been marked declines in childhood death from diarrhoea. The results clearly demonstrated that removing the excreta from the immediate living environment is perhaps the most critical step in breaking the disease transmission route (WHO and UN-Habitat 2016).

2.7.4 Land Use Planning and Design and Provision of Green Space

Land use planning plays a critical role in health, as green spaces promote exercise and, hence, healthy lifestyles. But perhaps most importantly, green spaces have a great impact on mental health and wellbeing. This is an often neglected area of health which is responsible for a significant proportion of health care and social costs.

Everyone benefits from a well-designed city. Neighbourhood development strategies foster local traders and other services and amenities, which reduce transport burdens themselves. Careful design of urban spaces can reduce segregation and isolation and encourage interaction across different income groups and generations. Recent experiments, linking elderly residents in care homes with primary school children in Australia and the UK, noted significant improvements in the quality of life for the elderly.

Greening strategies designed to improve urban spaces are being recognised as a cost-effective intervention, compared to changes in infrastructure. The use of tree belts to filter air and dust and to reduce urban heat islands is well documented (FAO 2016). Tree planting can reduce energy costs by providing shade and so a temperature reduction in the need for climate control. In arid zones, they can be used to improve water retention and to act as wind breaks. Greening can also improve the social spaces where people meet, as they induce. Recycled wastewater can be used in urban food production for local consumption or to enhance lawns and verges. If the wastewater is used for non-food crops, standards of treatment can be relaxed. Tree-lined streets encourage pedestrian traffic and attract birds and other wildlife.

2.7.5 Food and Nutrition

Urban design and access to food systems can sometimes mean that obesity and stunting can co-exist in the same low-income area. If you live in a poor neighbourhood where there is little fresh food available, you are more likely to have a poor diet, rich in sugars and fats and highly processed food. This, in turn, means a greater likelihood of obesity. The proximity of fast-food outlets to schools and colleges has shown that institutions closer than 400 m show greater incidences of childhood obesity.

Effective planning can promote local food production, stimulate urban agriculture and enhance the possibility of recycling of waste to further promote food production. Much food is wasted during transportation, and supermarkets in wealthy areas of the city regularly throw food away whilst poor communities in the same city have insufficient food.

2.7.6 Housing

The method of construction and the contents and furnishings in many houses constitute a significant health risk. Aside from accidents from fires in cooking and heating, exposure to toxic substances such as lead in paint, asbestos, etc. mean that such risks kill more people than road traffic accidents (WHO 2011). Pest infestation can cause food poisoning, and overcrowding carries a major risk of mental illness. Poor housing is also expensive to run. Homes without insulation use too much energy, promoting poor ventilation and causing mould and associated respiratory illness. Conversely, ventilation may be very important to reduce risk from toxic building materials of naturally occurring substances such as radon gas (WHO 2011).

2.7.7 Slum Upgrading

Slum upgrading offers a great opportunity to reduce urban inequities, especially health inequities. Slums are frequently the “dormitories” where a large proportion of the urban workforce reside. Many support families in the rural hinterland, and as such, they may or may not have an interest in improving their living conditions. After all, if rents can be kept as low as possible, repatriating money to rural-based families can be maximised. Slums are increasingly being seen as an important part of the city, often cited close to the cities business districts. Intra-urban slums are often established on vacant sites. It is often not realised that many slums are complete communities that offer a parallel range of services found in the formal city. Integrating not just the physical infrastructure, but also breaking the social divide, can greatly enhance the overall economic gains. Basic standards with respect to

housing need to be established, and supportive infrastructure such as water, sanitation, road networks, power, etc. must be developed. Many poor communities pay for services that the rich get for free. Improving slums and, in particular, reducing poverty and increasing security benefit the whole city and lift an otherwise frightening reputation that slum populations in cities may have for outsiders, who see them as no-go areas where safety and security are compromised.

2.8 The SDGs, the New Urban Agenda and Health

The SDGs present a real opportunity to bring change and, for the first time, to look at goals shared amongst all citizens of the world. It is true that the unfinished business of the Millennium Development Goals needs to be completed, but it is also clear the world is very much at risk as many rapidly industrialising economies exert a toll on the environment, with dramatic consequences if they continue without some course correction. The SDGs and the NUA are closely linked and mutually supportive. Health is a cornerstone of both.

2.8.1 Setting the Health-Based Targets for Clean Air, Water and Energy

The SDGs aim to protect the planet and to reduce the impact of human kind, but the consequences on health pose a more immediate threat. International standards for the SDGs targets need to be developed in a way to ensure protection without unnecessarily imposing a burden on countries, both from the costs of monitoring systems and in setting targets that are both impractical and unachievable.

Recent work on SDG 6 on access to water and sanitation by UN-Habitat and by the WHO (2015) has indicated that a progressive approach to monitoring is the preferred way ahead. The idea is that modest monitoring frameworks can be adopted at the outset, with the more in-depth systems being used as countries better see how monitoring can contribute to national processes.

2.8.2 Urban Polices and Their Health Implications

The health sector needs to provide better evidence-based guidance on the impact of urban policies, building on the work on its guidelines on drinking water, household energy, air quality, etc. The guidelines for housing are currently under development (WHO 2016d). These documents will provide practical guidance to local authorities to help in setting local bye-laws and other policies. Some areas need further

development including waste management. The WHO "health in all policies" framework provides a suitable way to address health inequities in the urban setting.

2.8.3 Reducing the Health Costs Through Good Urban Design

More evidence is needed on the opportunities to reduce health costs by improved urban design and management. It is very likely that if current lifestyle patterns continue, the health-care cost burden, even for the best systems in the world, will collapse. The implications of the obesity epidemic in children can result in chronic ill health when they reach adulthood. If the current threats from drug resistance come to fruition, diseases that are now easily treated could become killers. Scarce resources could be stretched to their limits. Urban design for good health outcomes will be a popular tool to help combat disease.

Further analysis on the costs of inaction also needs to be done. Cost-benefit analyses drawing on the large databases of health services can be undertaken. New schemes can use such tools to do health economic assessments.

2.8.4 Monitoring and Tracking Health Impacts in Cities

Urban inequities, especially in low- and middle-income countries, will need to be further highlighted and better understood. Differentiated approaches to health care, advocacy campaigns and resources to tackle particular health problems can be targeted to those who are most needy, further reducing health costs. As more complex models will allow socio-economic strata to be studied more closely, spatial analysis of health-care patterns will become more important.

2.8.5 Community Engagement in Supporting Improved Health Outcomes

Currently, the huge potential locked up in communities to contribute to urban health improvements remains under exploited. Not only can communities play a key role in monitoring health patterns, but they can also assist in the improved delivery of services. Civil society has much expertise in organising advocacy campaigns and providing oversight on access to official facilities such as health-care centres, etc. Tapping this potential will need good local leaders with a vision of improved health and productivity for their cities. Matching capacity will also be needed within local authorities. Multi-stakeholder partnerships, used successfully in other sectors, can be used by the health sector. Sometimes, the efforts will translate into improved local legislation.

2.9 Conclusions

The unprecedented rates of urbanisation will bring significant changes to the health status of urban residents, and when coupled with climate change, many of the effects will be amplified, specifically heat and water stress. In developed economies, the elderly population is increasing, and, in the developing world, younger populations are at risk of poor lifestyle choices.

Not only inadequate urbanisation will increase the possibilities of communicable disease transmission, but poorly designed urban spaces will discourage healthy lifestyles and put urban populations at higher risk of many NCDs. The provision and cost of basic services, including access to primary health care, are linked to urbanisation density. If urbanisation is "inefficient", then the costs of provision of services are going to be much higher.

The disease threats fall into the two basic categories of the NCDs and communicable diseases. Countries at all levels of development will not escape the effects of these epidemics, and there are a variety of new threats which have the potential to cripple even the best health systems.

There is a huge need for disaggregation of urban health data to understand the intra-urban differences. This, when overlaid with socio-economic data and physical infrastructure and topology, can provide the information to support decision-making at the local level.

In terms of the priorities, the developing world is at risk from both communicable diseases *and* NCDs. Communicable diseases still exert a heavy toll, such as those resulting from contaminated water and lack of sanitation and vector-borne diseases (mainly malaria). However, even in the poorest economies, poor lifestyles are killing in similar proportions. For more developed economies, NCDs are the biggest killers, with mental health conditions deteriorating, including for displaced persons and refugees.

There is still a strong focus on curing the sick rather than prevention. Globally, approximately one third of diseases are the result of environmental factors, with children being some of the most vulnerable. If we consider the multiple risk factors that some communities live in (e.g. slums), the figures are most likely much higher.

Future health burden will never be reduced without an increased effort on prevention of disease through resilient, liveable and healthy cities, where access to basic services and reduction of environmental risks reduce disease and early death. Ageing populations will become a drain on health services if we don't ensure citizens have a healthy and active life. Threats from overuse of antibiotics are also an issue. If resistant strains develop, everyday diseases could kill.

As a priority, urgent analyses using the SDGs framework (and the UN-Habitat sample cities) of the health status in cities, disaggregated and overlaid with socio-economic profiles are needed. A city-city analysis of the problems and solutions driven by the urban authorities is needed alongside the realisation that many of the interventions that frame and support health improvements are needed to stem from outside the health sector. Localised plans of action for "sanitary revolutions" to

reduce communicable diseases and campaigns to combat NCDs, led by urban design and continuous monitoring, need urgent attention.

References

Campbell-Lendrum, D., & Corvalan, C. (2007). Climate change and developing-country cities: Implications for environmental health and equity. *Journal of Urban Health, 84*(3 Suppl), i109–i117.

FAO. (2016). *Benefits of urban trees*. Rome: Food and Agriculture Organization. Retrieved October 20, 2017, from http://www.fao.org/resources/infographics/infographics-details/en/c/411348/.

PAHO. (2016). Retrieved October 20, 2017, from http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&andItemid=270andgid=37114andlang=en.

RBM. (2013). *Multisectoral action framework for malaria, RBM partnership*. Retrieved October 20, 2017, from http://www.rollbackmalaria.org/files/files/about/MultisectoralApproach/Multisectoral-Action-Framework-for-Malaria.pdf.

SHATTUCK. (1850). *The 1850 report of the Sanitary Commission of the State of Massachusetts*. Retrieved October 20, 2017, from www.deltaomega.org/documents/shattuck.pdf.

Tainio, M., de Nazelle, A. J., Götschi, T., Kahlmeier, S., Rojas-Rueda, D., Nieuwenhuijsen, M. J., et al. (2016). Can air pollution negate the health benefits of cycling and walking? *Preventive Medicine, 87*, 233–236.

UN-Habitat. (2016). *The New Urban Agenda*. Retrieved October 20, 2017, from http://habitat3.org/the-new-urban-agenda/.

UN-Habitat and WHO. (2015). *Report of a meeting on GEMI*. Geneva: World Health Organization.

WHO. (2003). *Investing in mental health*. Geneva: World Health Organization.

WHO. (2011). *Health in the green economy: Health co-benefits of climate change mitigation – Housing sector*. Geneva: World Health Organization.

WHO. (2016a). Preventing disease through healthy environments. In A. Prüss-Ustün, J. Wolf, C. Corvalán, R. Bos, & M. Neira (Eds.), *A global assessment of the burden of disease from environmental risks (WHO, 2016)*. Geneva: World Health Organization.

WHO. (2016b). *Air pollution levels rising in many of the worlds' poorest cities*. Geneva: WHO.

WHO. (2016c). *Burning opportunity: Clean household energy for health, sustainable development, and wellbeing of women and children* (p. 2016). Geneva: World Health Organization.

WHO. (2016d). *Health and sustainable development – Housing indicators, guidance and tools*. World Health Organization. Retrieved October 20, 2017, from http://www.who.int/sustainable-development/housing/indicators/en/.

WHO and UN-Habitat. (2016). *Global report on urban health: Equitable, healthier cities for sustainable development*. Geneva: World Health Organization and UN-Habitat.