

Will considerations of environmental sustainability revitalise the policy links between the urban environment and health?

Anthony J. McMichael

National Centre for Epidemiology and Population Health,
The Australian National University.
Email: tony.mcmichael@anu.edu.au

Abstract: This paper explores when and how considerations of population health have influenced the creation, planning and management of cities. Cities – now the dominant human habitat – must be planned and managed sustainably in a world that is manifestly experiencing increasing environmental and social strains. Early industrialisation entailed crowding, squalor and industrial environmental blight; the two great associated public health hazards were infectious diseases and air pollution. These hazards have been largely controlled in rich countries. Today's main urban health hazards are obesity (with its life-shortening health consequences) and the huge contribution of cities to climate change with the resultant risks to population health. These and other health issues in urban environments need to be understood and addressed at the community or population level. This is an ecological challenge, crucial to attaining real sustainability.

Before the modern Scientific Age, with limited understanding of disease causation, health promotion was not a prominent objective in the development and administration of cities. Plato's utopian ideal city invoked politics, ethics and social relations – but not health. Half a millennium later, imperial Rome struggled to accommodate, feed and service its burgeoning population. The city coped with its massive sewage disposal needs via the engineering works of the *cloacae*, which emptied into the River Tiber.

Over recent millennia, cities have evolved from rural, river-port or seaside villages and towns, usually with little planning. This process continues today in much of the developing world, where urban growth and form is predominantly driven by land markets, 'western' precedents

(roads, cars, shopping malls) and assorted entrepreneurs. The local accumulation of wastes and pollution of air and waterways is regarded as incidental 'collateral'.

Cities have arisen late in the evolutionary–biological experience of the human species. As artificial environments, they confer both benefits and risks to human wellbeing and health. (The squalor and life-shortening risks of urban–industrial life in early 19th century England stimulated the emergence of epidemiological research and the formal agencies of public health.) To what extent then has the betterment of population health been an explicit consideration in the creation, planning and management of cities? This question has growing relevance today. The world's cities – now the dominant human habitat – must be planned and managed sustainably in a world experiencing increasing environmental and social strains. Sustainable urban environments will:

- (i) support healthy living now and into the future (e.g. by providing: equitable access to good food; physical activity; social cohesion; minimised microbial transmission; and aesthetic and cultural fulfilment) and
- (ii) minimise the ecological 'footprint' of cities, so as to sustain the world's health-supporting capacity for future generations.

To foster this ecological perspective and render urban policy and planning processes more attuned to the biological, psychological and social needs of humans, we may benefit from exploring recent history. First, though, it is important to clarify what is meant by 'the ecological perspective'.

Cities and health: thinking ecologically

Within popular culture, we usually think of health and disease in personalised, individual-level terms. However, the relationship between urban environments, city living and health needs to be viewed on a larger canvas; it needs to be understood within a 'human ecology' framework. The urban environment exerts various systemic influences that affect the rates of disease in the urban population at large. While individual-level factors (behaviours, genes, happenstance) influence which particular individuals get sick, the population's overall rate of disease reflects properties of the shared physical, social and cultural environment, that is, the community's overall way of living.

Consider the contemporary problem of the rise of obesity. The conjoined processes of industrialisation, urbanisation, modernisation and the rise of consumer culture have influenced both of the discretionary components of the energy balance equation: (i) food energy intake and (ii) physical activity. While being overweight is not confined to urban populations, cities have been the engine-room of social and technological change that has lead to an ‘obesogenic’ modern environment. From this perspective the problem is primarily one of a systemic change in our way of living, rather than a consequence of defective individual behaviour.

A systems-based approach also enables us to view the various aspects and impacts of the urban transport system within a more integrated framework. This approach highlights the great diversity of direct and indirect health impacts from our transport-related behaviours (Fig. 1).

This approach invites questions about how other systemic influences of the urban environment on the public’s health (sometimes referred to published reports as ‘urban health penalties’) have changed over recent time.

The changing profile of urban health penalties

In the early stages of industrialisation, 200 years ago, the crowding, squalor, poverty and industrial environmental blight led to two great urban health penalties. Various infectious diseases became rife and were prime killers; meanwhile, in factory towns and cities the air became black with smoke. By the mid-20th century these two great health hazards of early urban–industrial life had largely been controlled in rich countries.

The narrative continues today. Two of the greatest health-endangering correlates of urban environments and living are, first, overweight and obesity (discussed above) and,

second, the increasing contribution of cities to greenhouse gas emissions and the attendant risks to safety, health and survival.

An important new dimension of these two modern health problems is that both extend well beyond the boundaries of cities and affect the population at large. For example, energy use in cities and the resultant greenhouse gas emissions have consequences, via climate change, for humans everywhere. The resultant health risks include the affect of heatwaves, especially in cities; exacerbation of local air pollution; mudslides endangering shanty towns; intensified extreme weather events; and heightened transmission of temperature-sensitive infections.

Time trends in these major urban health penalties are summarised, albeit notionally, in Fig. 2, as are the main social policy responses. Changes over time in theories of the determinants of disease are also shown.

Before next considering in more detail how these systemic urban–environmental public health problems have arisen and been responded to historically, two other modern urban health penalties should be noted.

First, infectious diseases pose an unexpectedly large, resurgent health threat in the modern urban setting. While the ‘classical’ water- and food-borne infections due to poor hygiene have receded, respiratory infections retain the potential for rapid spread in population-dense settings. This is evident from the urban-based outbreak and spread of Severe Acute Respiratory Syndrome (SARS) in 2003. Other aspects of urban culture, including sexual networking and illicit drug use, potentiate the spread of various infections, including HIV/AIDS and hepatitis C.

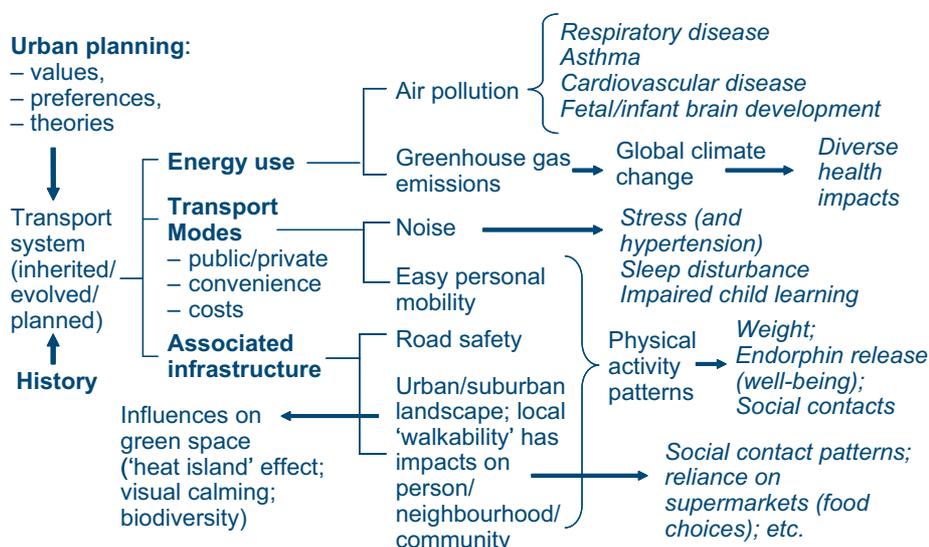


Fig. 1. An ecological perspective of the origins and the social and health impacts of urban transport systems and related human behaviours.

Second, there appears to be an increase (albeit still inadequately researched) in the prevalence of mental health disorders in urban populations, most notably depression. The connection is not straightforward. But cities are the mainspring of the aspirational consumer culture and its associated ‘emptiness’ of spirit – a culture reinforced in the urban setting via sophisticated and pervasive advertising and marketing and where shopping (on credit and by car) is easy. There is evidence that this urban consumer culture fosters dissatisfaction, alienation and mental health problems.¹

The history of urban health problems and policy responses in England and Australia over the past 200 years

We come then to the question of whether and how considerations of risks to health have guided urban planning and management in modern times. The recent history of the fluctuating role of health considerations in city planning begins most observably in early 19th century Europe.

Infectious diseases: miasmas, germs and people

The need for domestic hygiene and public sanitation was increasingly recognised by European governments from the mid-19th century. Sanitary reforms and new infrastructure yielded health gains. Motives were mixed: personal protection, enhanced economic productivity and environmental amenity all loomed large.

The record is well documented in England. Sanitary reform was framed largely in relation to the longstanding ‘miasma’ theory of disease. The foul air-borne emanations (‘miasmas’) that spread diseases were attributed to dank squalor and filth. Edwin Chadwick and his celebrated

Report on the Sanitary Conditions of the Labouring Population of Great Britain (1842) looms large in any such account.² Chadwick believed that local miasmas caused the ‘endemic and contagious diseases’ rife within the poorer crowded sections of London. The Public Health Act of 1848 flowed from Chadwick’s report, giving local boards of health power to install and improve sewage and sanitation.

While this legislative initiative apparently reflected recognition that good health must be a prime goal of urban planning, Chadwick’s motivation was essentially utilitarian. Successful industrialisation required a healthy workforce and much of the weakness and poverty of the ‘labouring population’ was due to chronic poor health from a squalid miasma-ridden environment.

In Australia in the latter 19th century, urban epidemics of diarrhoeal and respiratory diseases persisted. The stench of Melbourne’s inner suburbs was dire. In 1876, after two bad years of epidemics of measles and assorted streptococcal infections, the Melbourne Board of Health reported:³

‘The contagium which causes epidemics is the offspring of insanitary habits, and is nurtured and spread by the impure air of unventilated houses. ... In a great many parts, the houses are not only damp, but impregnated with poisonous gas from pent-up sewage.’

Miasma theory was evidently then central to public health thinking in Melbourne, and helped propel the introduction of sewerage. This almost certainly contributed to the

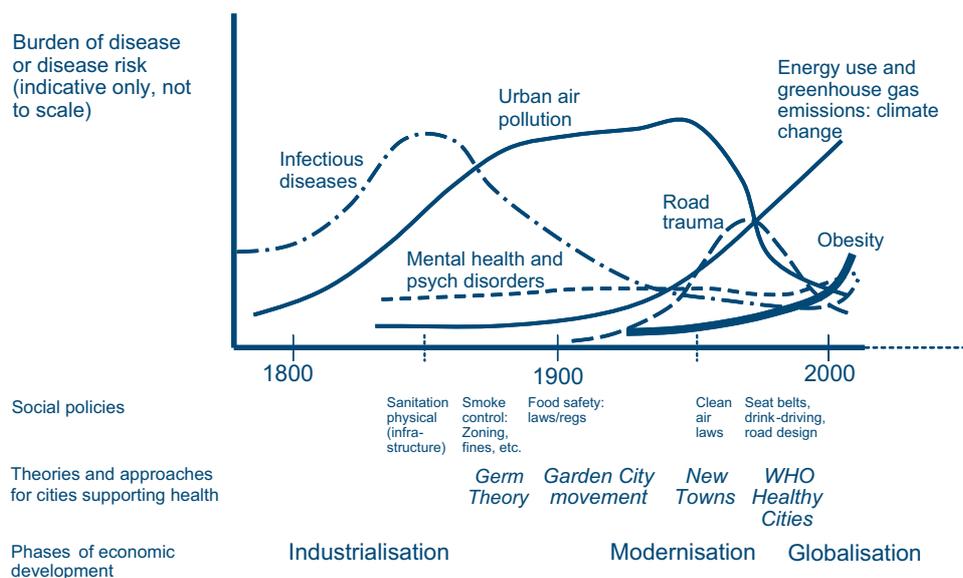


Fig. 2. The rise and fall of major urban health penalties in developed countries over the past two centuries. (The main remedial responses and influential emergent theories of cities, wellbeing and health are shown at the bottom.)

marked fall in infant mortality that began around 1890, halving rates of death in Victoria overall by around 1920.⁴

Meanwhile, in late 19th century Europe the ideas of Pasteur and Koch were replacing miasmatic thinking with the specific concepts of the Germ Theory. This nurtured a paradigm shift in public health thinking, with new focus on specific disease agents and the possibilities for prevention at individual and family levels.

'Dark satanic mills': coal combustion, particulates and health

During those early infection-blighted decades another great public health blight was the escalating concentration of black smoke in urban–industrial air. Coal-burning in England dates from at least 1000 years ago. During the High Middle Ages and Renaissance centuries, royal edicts were issued to curb the burning of coal, especially in London. Queen Elizabeth I complained that coal smoke caused her grievous annoyance.

The dense smoke pollution in mid-19th century industrialising Britain posed a different type of challenge from miasmas and sewage. The latter was an infrastructural issue, requiring government intervention. However, factory smoke was politically more difficult because of its direct association with the desired economic expansion.⁵ Official awareness of the health risks from air pollution emerged in the 1840s. The Smoke Acts of the 1850s were targeted specifically at London, empowering the police to enforce provisions against factories, furnaces, public baths and steam-boats on the Thames.

It took another 100 years before serious attention was paid to controlling rampant urban air pollution with its often-dramatic health impacts. That turnabout in public thinking and policy finally happened following the notorious London Smog of 1952. The long-overdue Clean Air Act was passed in the late 1950s. Similar legislation was enacted during the following two decades in most other industrialised countries.

The story continues

In England, the Health of Towns Association had formed in the 1840s, allied with the emerging sanitary reforms. In 1875, Benjamin Ward Richardson, an English physician–sanitarian and social reformer, proposed *Hygeia*: medium-density cities of 100 000 persons, green spaces, a good transport system, and clean air and water. In the 1890s, Ebenezer Howard proposed building health-supporting self-sufficient 'garden cities' for populations of approximately 32 000. He prescribed a specific layout, with concentric layering of commercial, green-space, market-garden and residential areas.⁶

The garden city idea had influences in the USA and in

Germany. In Australia, the design of Canberra, by the American architect Walter Burley Griffin during 1910–11, drew heavily on Howard's ideas. The Garden City concept was revived again in England after World War II; the New Towns Act (1946) promoted Howard's egalitarian and health-promoting vision.

This 'build better to live better' rhetoric, however, can nurture an uncritical assumption that the right physical layout will, of itself, promote health. Reality is more complex; social environments, population mix, economic currents, history, good planning and inspired local leadership are all important. This integrated perspective was adopted in the 1970s–80s as global population growth rates soared and urbanisation accelerated. This coincided with the rise of community-based health promotion strategies, as in WHO's international 'Healthy Cities' program, which provided frameworks and guidance for the development of healthy urban environments.^{7,8}

Australia has recently had a federal parliamentary enquiry into 'Sustainable Cities 2025'.⁹ The real index of sustainability is the quality of human experience and its durability across generations. The widely invoked 'triple bottom-line accounting' (comprising indices of economic activity, environment and social conditions) actually refers to intermediate markers – markers of the conditions that determine human experience. Therefore, population health must now be mainstreamed, as a key criterion of sustainability, into the planning and management of our cities.

Conclusion

We humans are social animals, seeking comfort, security, variety and opportunity. Settled living in villages, towns and cities attracts us. Worldwide, as cities proliferate, we have become a predominantly urban species. We must now learn to shape and manage the urban environment to accord with the needs of human biology and of the ecosphere.¹⁰

In the early 19th century, health problems were conceptualised and addressed at the population–community level. The Germ Theory redirected attention towards specific individual-level factors. Much of modern epidemiological research has continued in that individualist vein, focusing on personalised behaviours and circumstances that account for why some persons have heart attacks or cancer and some do not. Today, we are necessarily recognising, again, the fundamental role of environmental systems and processes as ecological determinants of population health.

Our growing awareness that health risks to whole populations arise from changes in ways of living, in cultural priorities and from the ever-widening impacts of humans on environmental assets and systems (including the climate system) underscores the urgent need to understand that

population health is the central criterion of sustainability. Our prime, anthropocentric reason for seeking social stability, a congenial and safe urban environment, and the maintenance of nature's life-support systems is to ensure the protection and improvement of human wellbeing, health and survival.

References

1. Eckersley R. Is modern Western culture a health hazard? *Int J Epidemiol* 2006; 35: 252–8. doi:10.1093/ije/dyi235
2. Finer SE. *The life and times of Sir Edwin Chadwick*. London: Methuen and Co., 1952.
3. McCalman J. 'All just melted with heat': mothers, babies and 'hot winds' in colonial Melbourne. In: Sherratt T, Griffiths T, Robin L, editors, *A change in the weather*. Canberra: National Museum of Australia Press, 2005, p. 114.
4. Cumpston J. *Health and disease in Australia*, Lewis MJ, editor. Canberra: AGPS, 1989, p. 108.
5. Kessel A. *Air and public health*. Cambridge: Cambridge University Press, 2005, p. 56.
6. Howard E. *To-morrow: a peaceful path to real reform*, 1898. Republished London: Routledge, 2003.
7. Awofeso N. The Healthy Cities approach — reflections on a framework for improving global health. *Bull World Health Organ* 2003; 81(3): 222–3.
8. Stephens C. Healthy cities or unhealthy islands? The health and social implications of urban inequality. *Environ Urban* 1996; 8: 9–30. doi:10.1177/095624789600800211
9. House of Representatives Standing Committee on Environment and Heritage. *Sustainable cities 2025*. Canberra: The Parliament of the Commonwealth of Australia, 2005.
10. McMichael AJ. Chapter 9. In: *Human frontiers, environments and disease: past patterns, uncertain futures*. Cambridge: Cambridge University Press, 2001.

Developing a national approach to building healthy and sustainable cities

Renate T. Howe

School of History and Heritage Society, Deakin University.
Email: renate.howe@deakin.edu.au

Abstract: Effective strategies to build a national approach to the integration of health and urban planning at all levels of government is essential if the health problems of urban Australians, such as obesity and respiratory illnesses, are to improve. This paper examines some policies and initiatives that could facilitate intergovernment cooperation on health and sustainability within the constraints of Australia's federal government system. These include recommendations for an Australian Sustainability Commission and Charter of Sustainability, evaluations of the Better Cities Program of the 1990s, and current proposals for improving urban governance to enable the implementation of a healthy and sustainable cities agenda.

Health is not generally perceived as an urban planning issue although 'many of today's health problems are embedded physically and culturally in the ways that we

build and inhabit our cities.'¹ In Australia's federal system of government, urban planning requires coordination between three levels of government (national, state and local);^{2,3} however, there has been limited effort over the past decade to promote a coordinated national response to urban issues. This paper examines some emerging governance strategies to facilitate the better integration of health and urban planning in Australian cities.

Australian House of Representatives inquiry into sustainable cities

A recent development has been the appointment, with bipartisan support, of a House of Representatives Standing Committee to inquire into sustainable cities. In 2005, the inquiry produced the *Sustainable Cities Report*,⁴ recommending: the establishment of an Australian Sustainability Commission to monitor progress in cities; the appointment of a Sustainability Commissioner; and the development of a Charter of Sustainability. The possibility of identifying and including health objectives in a charter is an encouraging starting point, although there has been little evidence of high-level political support from the Australian Government for implementation of the Charter's recommendations.

Submissions received by the committee encouraged them to revisit the Better Cities Program (1991–96) as a model for intergovernmental cooperation in the planning and