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health of people
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Environmental
Stewardship
for Health

Integrated Urban Planning:

Local health and global sustainability

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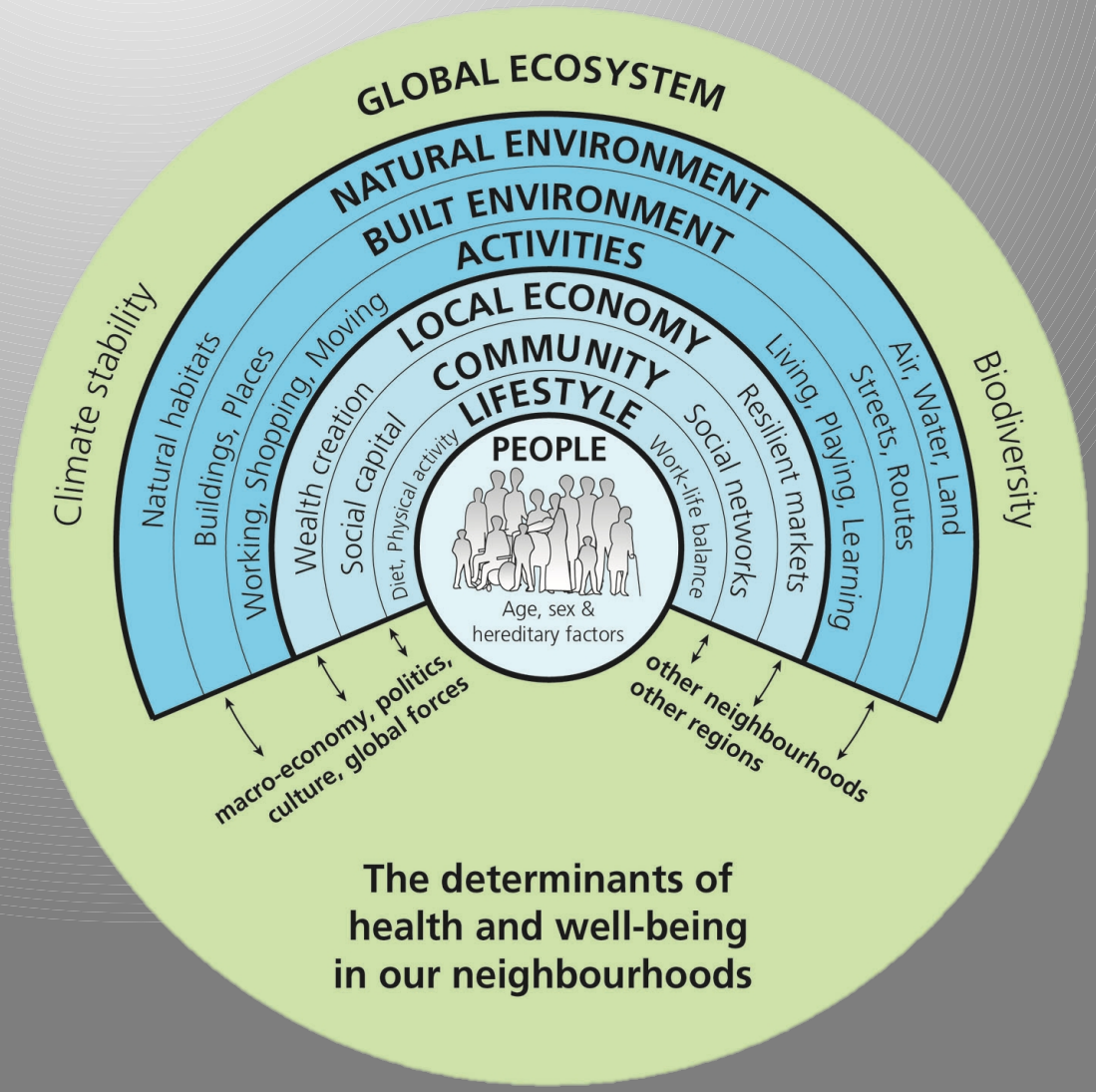
Editor-in-Chief, Cities & Health

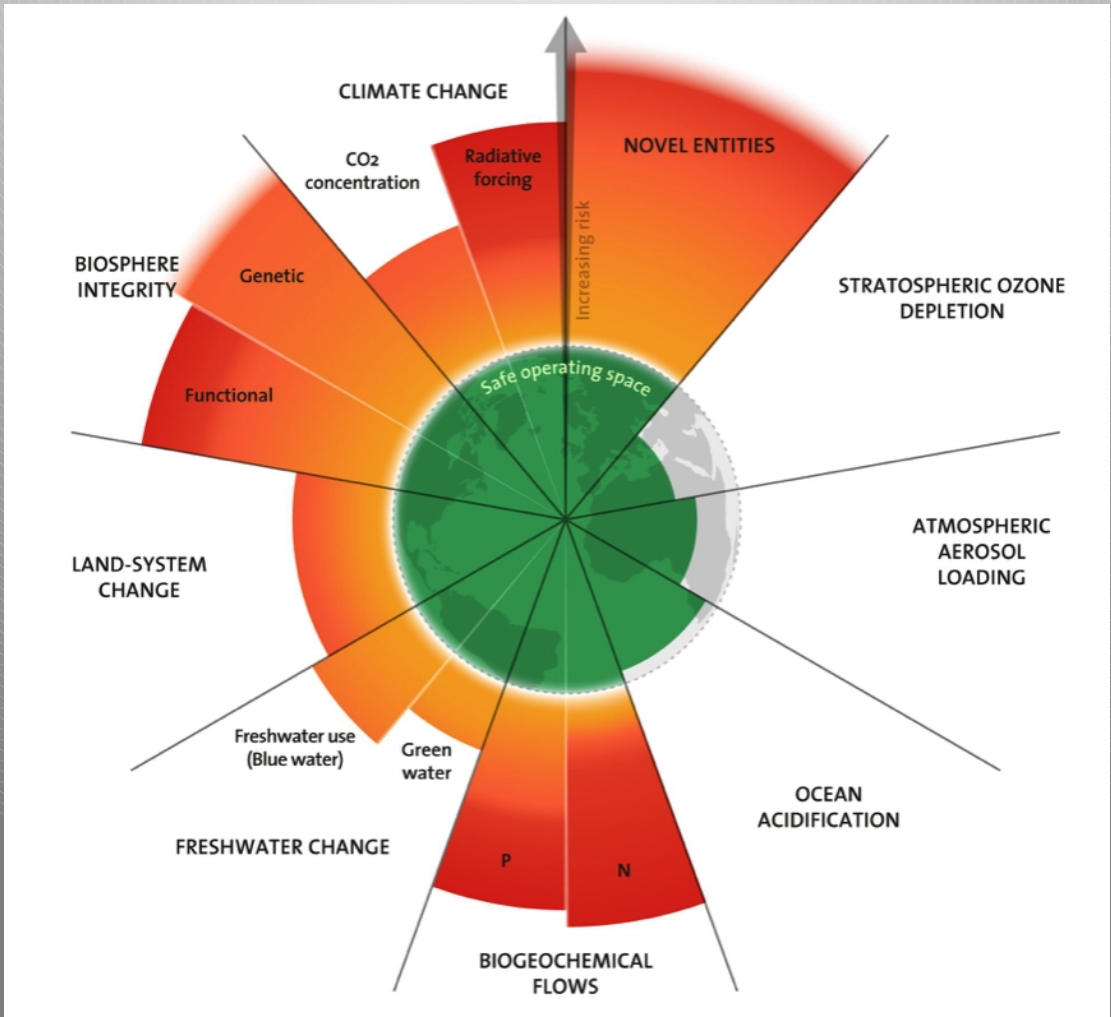
Local health and global sustainability

- Planetary Health
- Neighbourhoods and health
- Urban planning tools and resources for local health and global sustainability



Planetary Health

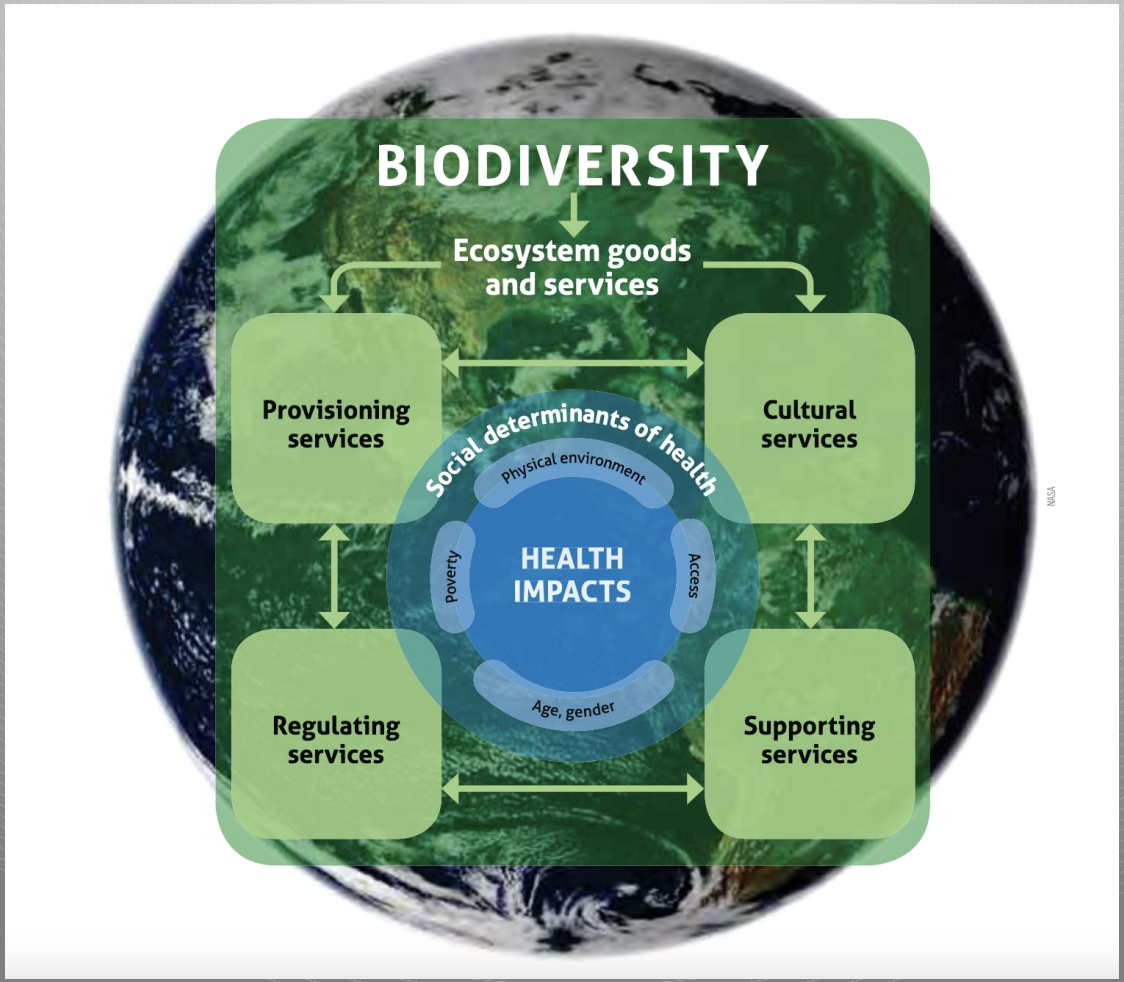
Climate and ecological crises are a threat to human health



Six of nine planetary boundaries are now exceeded

Katherine Richardson, Earth beyond six of nine Planetary Boundaries, Science Advances (2023). DOI: 10.1126/sciadv.adh2458. www.science.org/doi/10.1126/sciadv.adh2458

Planetary Health



Planetary Health is a transdisciplinary field focusing on analyzing and addressing the impacts of human disruptions to Earth's natural systems on human health and all life on Earth.

Planetary Health

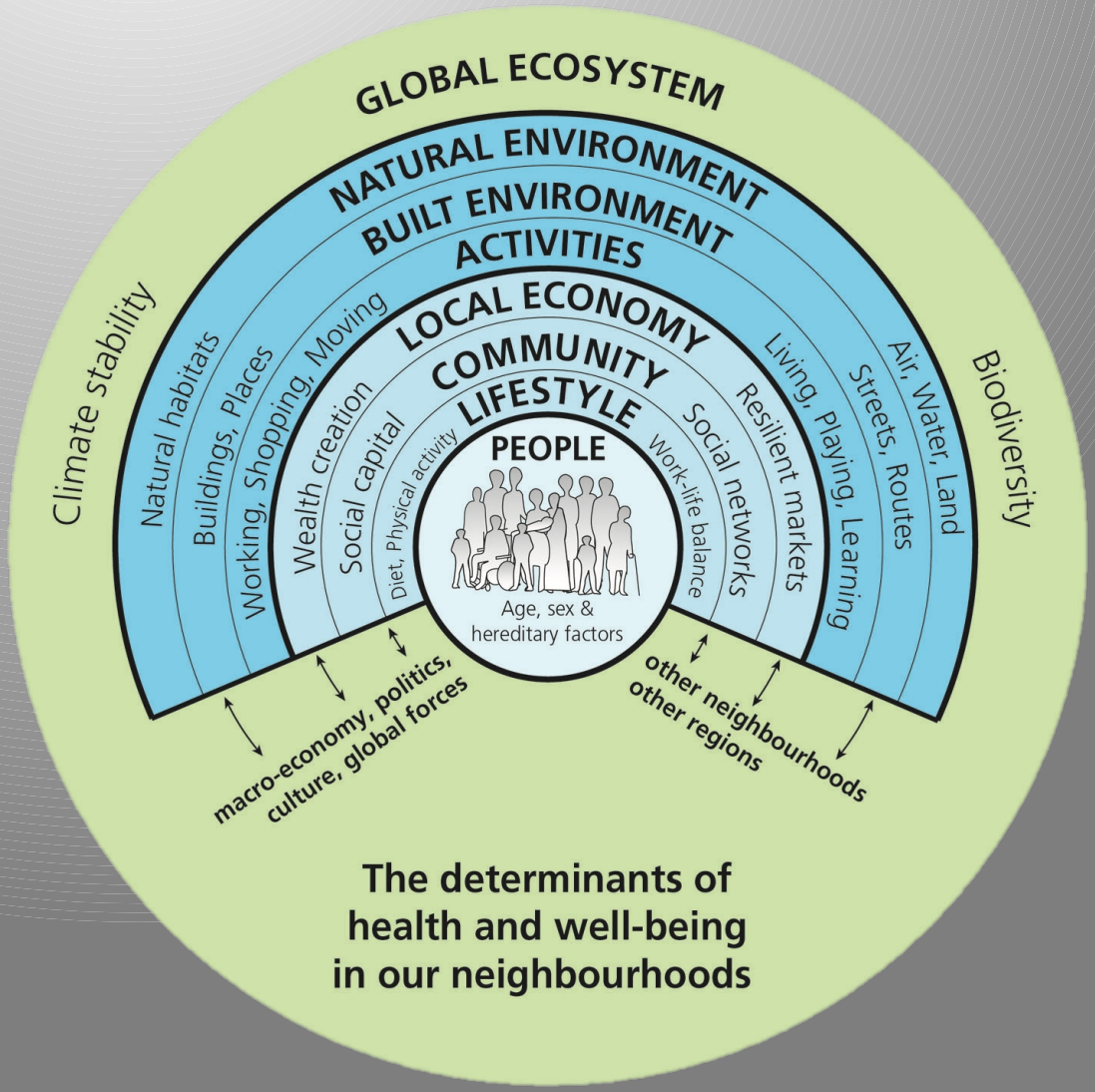
What do we mean by health?

*"**Health** is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

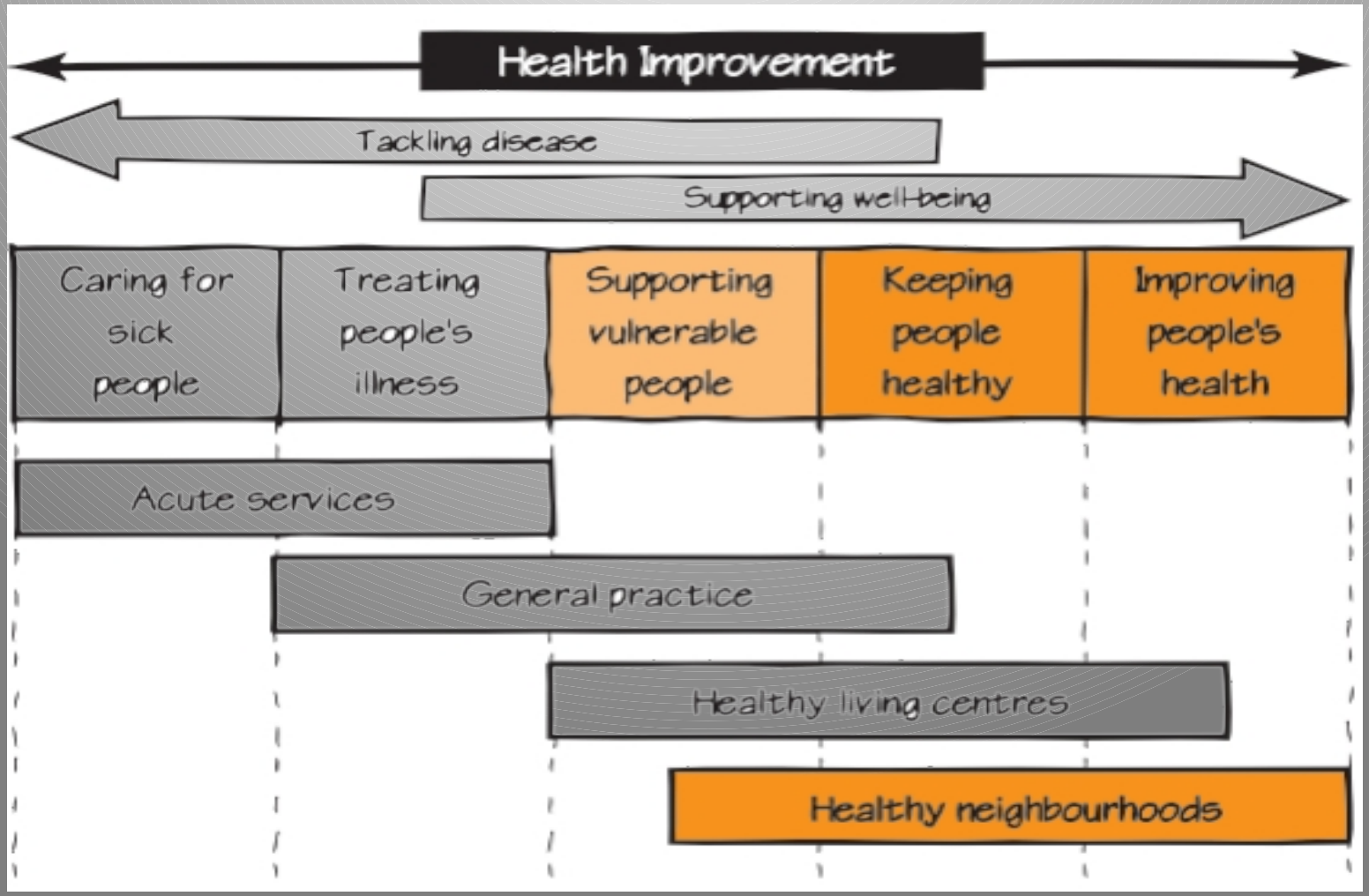
World Health Organization
Constitution 1946

Neighbourhoods and human health

- Human health: direct and indirect
- Human health via global systems: Planetary health
- Health equity



Neighbourhoods' role in human health



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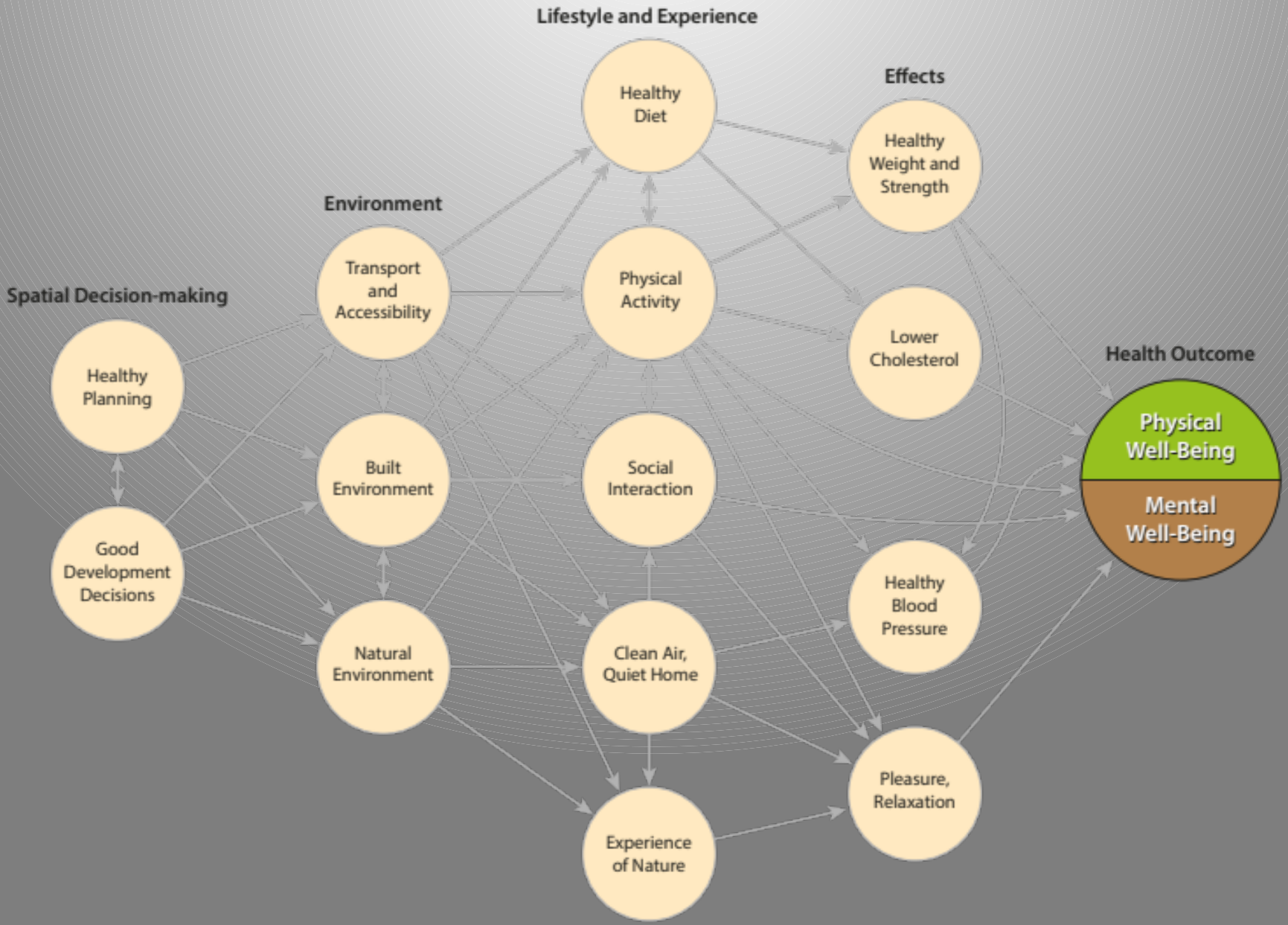
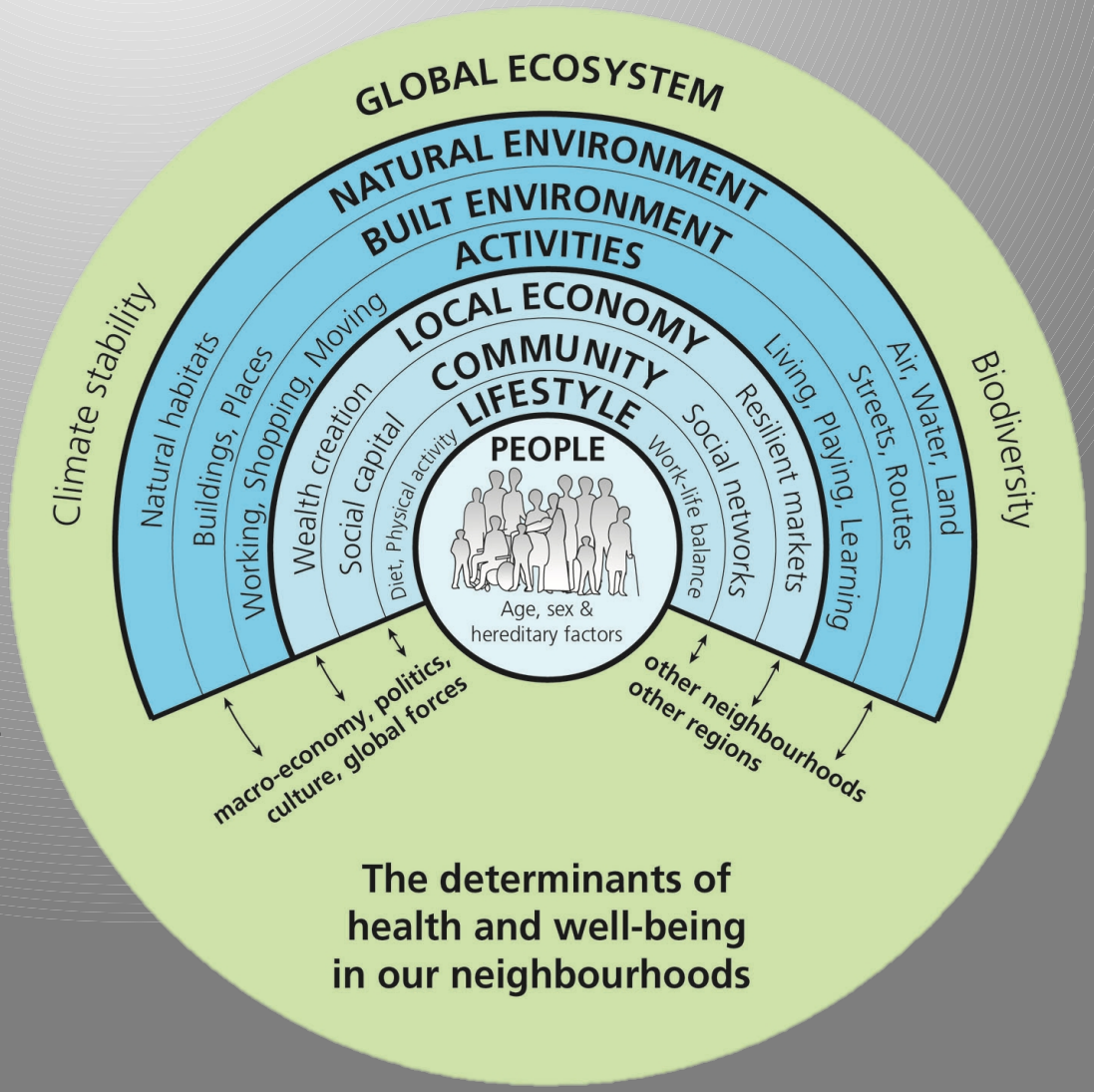


Neighbourhoods' role in human health

Direct and indirect influence

Many of neighbourhood characteristics influenced by urban planing have health impacts, such as housing density, street and open space design, mixed or segregated land uses, modes of movement, access to food and nature, air quality and noise, availability of nearby employment, presence and ease of access to amenities (local and further afield).



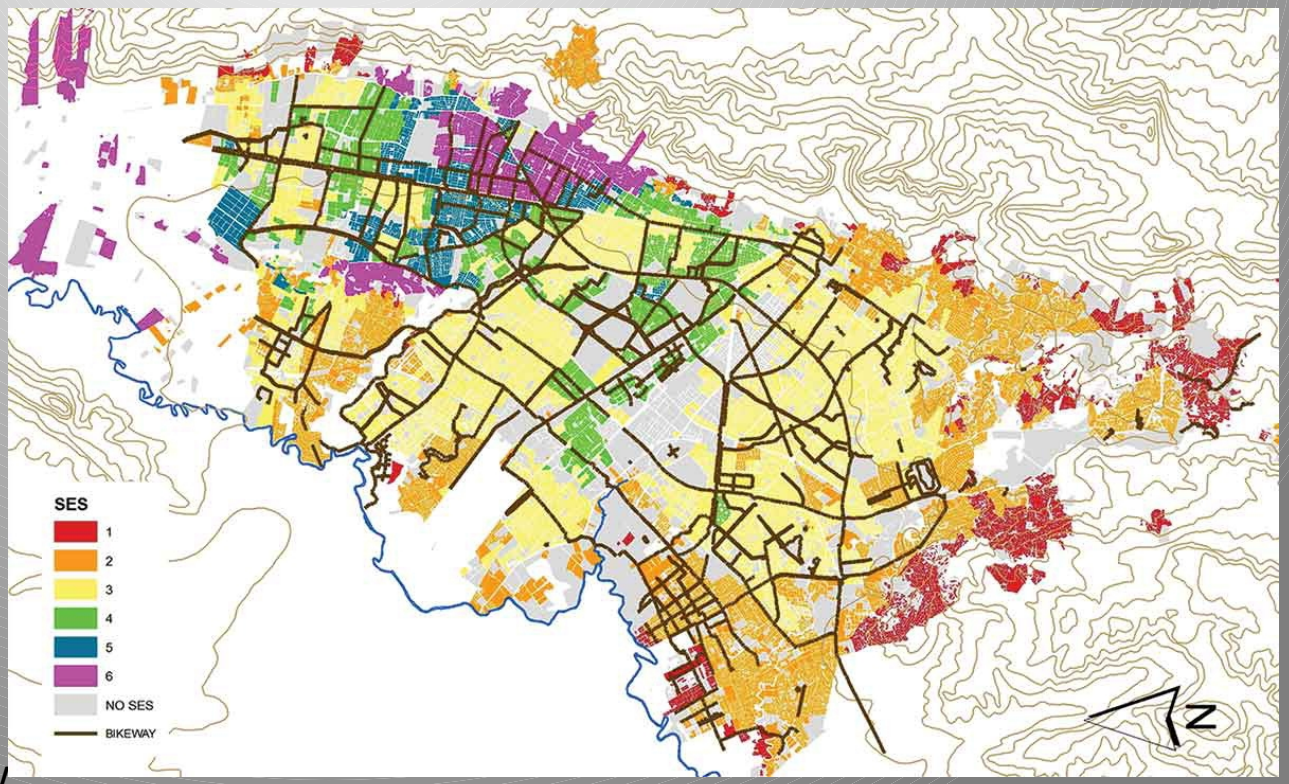
Neighbourhoods' role in planetary health

Globally local built environment decisions will have worldwide influence on health through their impact of energy requirements, waste generation, efficient resource use, impacts on biodiversity and water catchment and flooding impacts.

Neighbourhoods' role in health equity

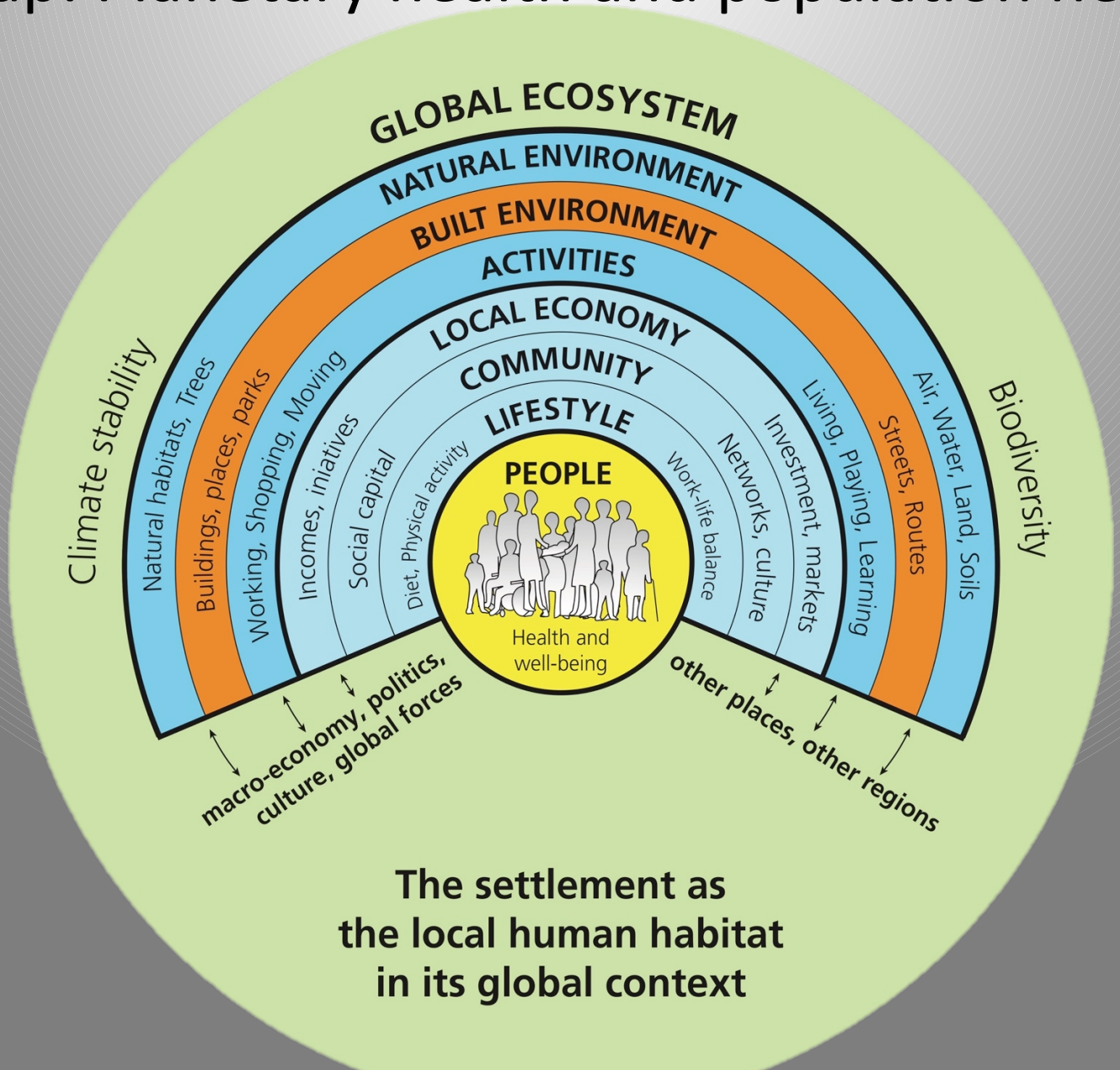
Consideration of the distribution of both benefits and negative impacts across different sub-populations.

It can be that most benefits accrue to one group of people, whilst dis-benefits are concentrated in other groups (often those on low incomes, older people, children or those facing other disadvantages).



Bogota distribution of bicycle lanes by Socio Economic Status category.
1 – most disadvantaged, 2 – disadvantaged, 3 – middle, 4 – middle-high, 5 high, 6 – wealthiest.

Recap: Planetary health and population health

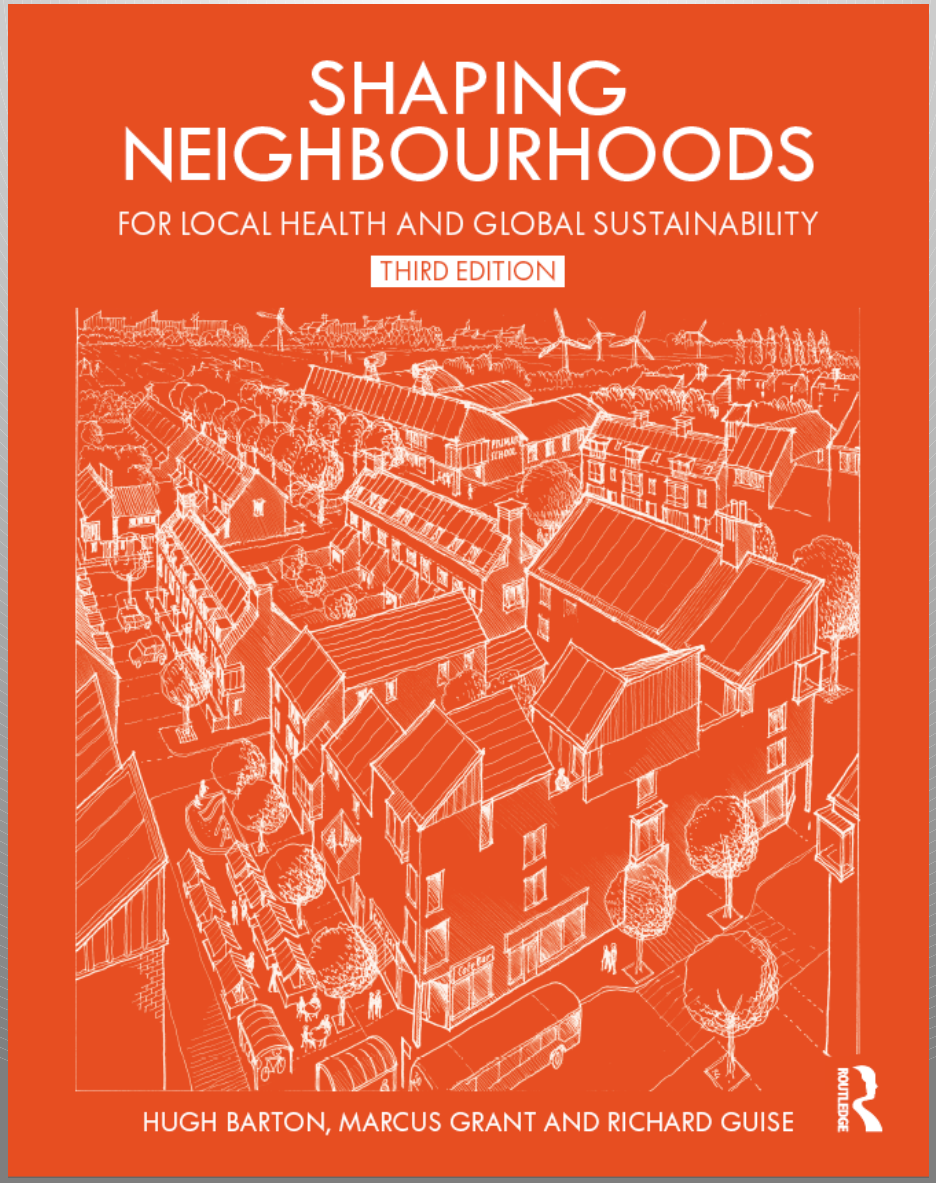


- Tools and resources

The ‘health map’ as a tool

Integrating health in urban and territorial planning: a sourcebook Geneva: UN-HABITAT and World Health Organization, 2020.

Link: https://www.who.int/publications/i/item/9789240003170



Shaping Neighbourhoods for local health and global sustainability 3rd Ed.
New York & Oxford: Routledge, 2021.
Publication link bit.ly/ShapingNeighbourhoods

ORIENTATION AND PRINCIPLES

A NEIGHBOURHOOD PLANNING PROCESS

PROVIDING FOR LOCAL NEED

WORKING WITH NATURAL SYSTEMS

NEIGHBOURHOOD STRATEGY

NEIGHBOURHOOD DESIGN AND PLACEMAKING

Case studies

Three neighbourhoods in Algiers, Algeria
Sweet Home Farm, Cape Town, South AfricaThe Spectrum approach, Houndwood, Street, England
Stroud Neighbourhood Plan, Gloucestershire, England
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Vauban, Freiburg, Germany Mandela Gateway and Market Place, Oakland, USA
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Polimipara project, Rocinha, Rio de Janeiro, Brazil
Hammarby Sjöstad, Stockholm, Sweden
Utrecht, The Netherlands GWL Terrein, Amsterdam, The Netherlands Vesterbro, Copenhagen, Denmark
Honkasuo residential extension, Helsinki, Finland
Freiburg, Germany
Nesselande, Rotterdam, the Netherlands
The Pearl District, Portland, Oregon USA

HEALTHY PLACES, HEALTHY LIVES

There are various ways of expressing the idea of healthy environments (see figure 1.2). As noted in the side column, WHO expressly states that health is not simply the absence of disease. It is about the positive concept of wellbeing. The Ottawa Charter for Health Promotion states that:

> 'Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love. Health is created... by ensuring that the society one lives in creates conditions that allow the attainment of health by all its members.'
>
> (WHO 1986, p.1)

Understanding the health-environment link

The relationship between personal health and the environment is multifaceted. Figure 1.3 gives a fair impression of this, linking characteristics of the urban environment to a very wide range of physical and mental illnesses. At a simpler level the relationship is also a matter of quite intuitive understanding.

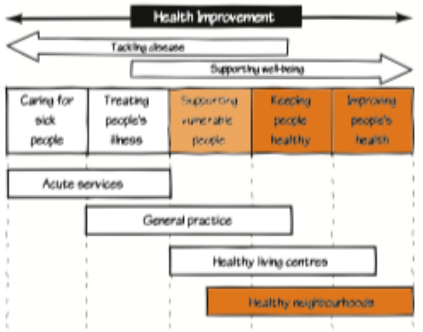


Figure 1.2
The neighbourhood's role in health

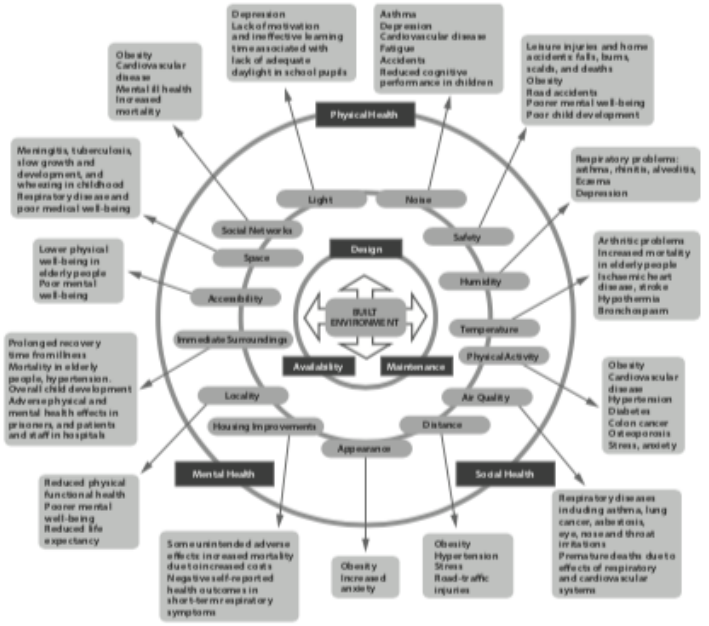


Figure 1.3
The impact of aspects of the urban environment on health problems
SOURCE: Rao et al., 2007

- Scale

patchwork of the neighbourhood. They are critically important in residents' feelings of security or insecurity, and often have a particular social character. Increasingly, this scale is seen as a useful unit for urban design – offering the potential for Dutch-style 'Woonerfs' or British play streets, where safety for play and social exchange is paramount, and traffic is either excluded or calmed to 10kph (5 or 10mph).

NESTED SCALES, GRADED FUNCTIONS

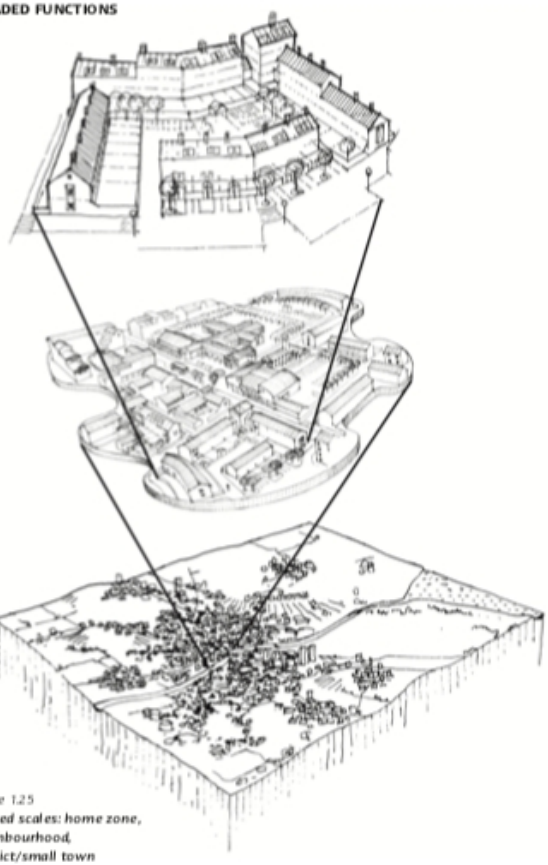


Figure 1.25
Nested scales: home zone, neighbourhood, district/small town

DEFINING TERMS

From small scale to large scale

Building

The single dwelling, school, shop, block of flats or offices occupying a plot. May be renewed or rebuilt on the same plot.

Home zone

A cluster of dwellings, often built at the same time and with similar character, grouped along a street or around a square or block.

Perimeter block

Dwellings, often in terraces, facing out to the surrounding streets, sometimes with semi-private shared facilities in the centre. See the home-zone drawing.

Neighbourhood

A mainly residential area as identified by residents, and often with a distinctive identity and name. Other related terms are 'urban village' (often historic, with a bustling centre) and 'urban quarter' (often defined by a common activity, as in Birmingham's jewellery quarter).

Urban district

An area/sector of town or city large enough to have a wide range of facilities and jobs, often centred on a 'district' shopping and social centre.

Catchment area

The accessible urban or rural hinterland to a facility (school, shopping centre, etc.). In this guide we refer in the main to the pedestrian catchment area, as defined by walkability.

City region

This includes the city and its hinterland(s), an area which is likely to include many settlements, and is an appropriate scale to plan transport and urban form. The term sub-region may be used when there is no one dominant settlement.

- Process

2.2

Figure 2.1
The seven-stage process
The seven stages in this circular process give structure to the rest of this chapter.

2.4 Taking the initiative

When is a plan needed?

Only if significant change is expected:

- *due to commercial or political pressure for new housing or industry*
- *due to local need for better facilities and healthier environment*
- *due to the requirement to plan regeneration in a coherent way*
- *and when there are mechanisms available which can put the plan into practice*

2.5 Defining a shared vision

The Spectrum approach

Whoever initiates the process, it is important to ensure consistency of approach at all stages, and in an inclusive, collaborative way. Spectrum is just such an approach. It offers an open and holistic way of tying together all the strings of appraisal and evaluation. For an overview of Spectrum see the Houndwood case study at the end of this chapter.

2.2 THE SEVEN-STAGE PROCESS

BASIC PRINCIPLES

Any process of spatial policy-making or major development affecting a locality needs to be RITE: Rational, Inclusive, Transparent and Effective.

- Rational: in the sense that there is a real attempt to understand the nature of the problems, to analyse the merits of different solutions, and learn from the process of implementation.
- Inclusive: in the sense that important stakeholders – whether they are local people, voluntary associations, private/public sector agencies – are actively involved.
- Transparent: in that information is readily available and verifiable and the sources of power and influence are visible and open to challenge.
- Effective: in that decisions, once taken, are capable of being acted on; that responsibilities are clear, the programme is realistic and co-ordinated.

THE SEVEN STAGES IN OUTLINE

1. Taking the initiative

The initiative for a neighbourhood-wide project may come from the local authority, an investing organisation or the local community. Effective and sustained leadership by the initiator is vital, but equivalently it is vital to recognise fully the other interests involved. Early and open consultation may well reveal problems or opportunities that lead to redefinition of the project. Initial scoping of the project should aim to answer these questions:

- What is the purpose and scope of the project?
- Is the initiating organisation capable of pursuing it?
- Which stakeholders should be involved?
- Is the project consistent with broader goals and strategies?

2. Defining a shared vision

The first milestone for collaborative neighbourhood planning is the development of a shared vision. Techniques of visioning can help. The vision must be both highly motivating and practical, so that potential partners want to 'buy into' it. As a start, making a healthy place is a goal most will endorse. The vision should then be reflected in a collective statement which sets out:

- the aims, scope and intended outcome
- the way the project will be managed
- the collaborative and consultative process
- the process of appraisal and policy-making.

Placemaking with communities

- Engaging with surroundings
- Looking, noting, discussing, appraising
- Finding a language
- Case studies:
  - UN Rapid Planning , Kenya
  - Spectrum process, UK
  - Vauban, Freiburg, Germany
  - Mandela, Oakland, USA
  - Stroud Neighbourhood, UK
  - Sweet Home Farm, Cape Town, South Africa





- Providing for local need

Access to local facilities

3.10

ILLUSTRATIVE CRITERIA FOR A TOWN

Accessibility criteria need to reflect:

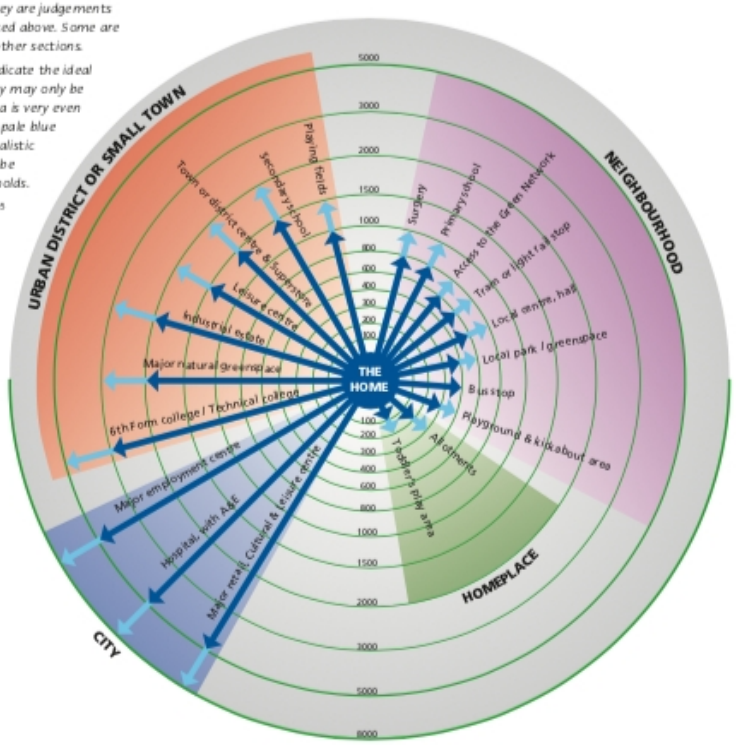
- gross density – current or planned
- catchment populations needed to support different facilities
- siting requirements (scale, vehicle access, etc.)
- morphology and general shape of the settlement
- street network, its directness, safety and permeability
- behavioural characteristics of users
- need for a transparent, easily understood system

Figure 3.20
Illustrative accessibility criteria (in metres)

These criteria are suggested as starting points for discussion. They are judgements based on the factors listed above. Some are explained more fully in other sections.

The deep blue arrows indicate the ideal standards. However, they may only be possible if the urban area is very even in spatial character. The pale blue arrows suggest more realistic standards which should be achievable for all households.

Adapted from Barton et al. 1995



- Neighbourhood design and placemaking

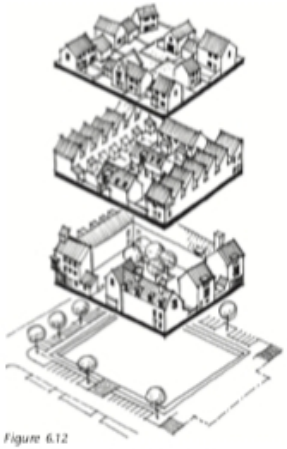


Figure 6.12
One block, three layouts at different densities

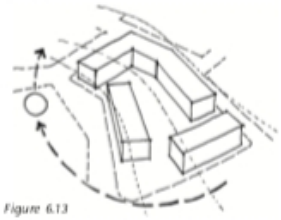


Figure 6.13
Cranked block with discontinuous frontages
This allows sun and daylight penetration, views out and improved air flow, while reducing sound levels.

to the sky, to, at the other end of the hierarchy, low-density two-storey individual houses in their own plots, with gardens front and back.

Block size

The minimum block size, exduding the streets around it, is determined by two plot depths backing onto each other (approx. 50m minimum). However, it is normally more, depending on garden size, parking arrangements and whether communal space or tree planting with rain gardens is added between plots (see Arabianranta case study). One axis can be longer, but not so much as to prevent good pedestrian connectivity and regular junctions slowing traffic. The maximum size without sub-division should be 100 x 200 m. Smaller is recommended.

Where blocks exceed 200m along the longer axis, a cross-lane should be planned (such as a homezone or 'mews' yard) so as to facilitate movement and optimise plot allocation. Such cross-ways may have the virtue of lower land values and consequently can encourage more diversity of use or housing provision.

Cranked and discontinuous frontages

Blocks layout and design can achieve more interesting streetscapes if they are not always rigidly rectangular. They might have curving or 'cranked' frontages because they follow contours or relate to existing external boundaries, or to achieve offset road junctions or small squares. Varying the number of storeys or having discontinuous frontages can be used to allow for greater daylight and sunlight penetration into the centre of the block.

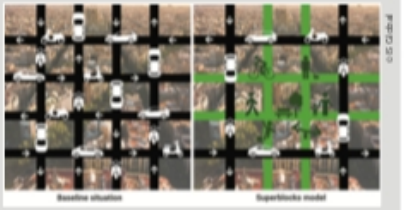
Defensible and communal space. Buildings should usually be set back to a modest degree from the back edge of the pavement or sidewalk, to allow for an element of privacy, next to communal space, defined by generous landscape, children's play provision and communal meeting space.

The degree to which the central space within the block – normally private gardens – is more open or enclosed will be influenced by the climatic and cultural context. For instance, many locations might require a high degree of shade and openings in the direction of cooler winds.

Barcelona superblocks

The Barcelona Institute for Global Health has researched the effect of returning public space to citizens by removing traffic from most Example grid roads, so that nine perimeter blocks form one environmental area. The initial plan proposed 503 superblocks.

Modelling based on that initial plan suggested that annual air pollution would be cut by 24 per cent. Together with noise reductions and reduced heat island effects, 667 premature deaths could be avoided, and average life expectancy extended by almost 200 days, generating annual savings of 1.7 billion euros. In addition there would be a significant transfer of trips from car to bus, foot and pedal, with corresponding health benefits (Mueller et al. 2020)



- Approaches to future proofing and adaptability

The concept of tactical urbanism provides an interface between informal settlements and developed urban areas. So-called modern cities can learn much from the many low-cost bottom-up approaches to change that are, of necessity, pioneered in slums and informal settlements (UN-Habitat 2012a).

FUTURE FLEXIBILITY

Flexibility for future demographic and economic change should be considered and built in from the start. Around the time of the first oil shocks in the early 1970s, a building design philosophy of 'Long Life, Low Energy, Loose Fit' was being advocated (Alex Gordon 1972). This emphasised durability, sustainability and adaptability. We need to extend this type of thinking from centering on a building to include a place-based focus. We must plan and design robustly for the long term (Long Life), ensuring that we minimise fossil fuel use in materials, their transportation, and the operation of the built environment (Low Energy) and that buildings and places are designed from the outset with adaptability in mind (Loose Fit).

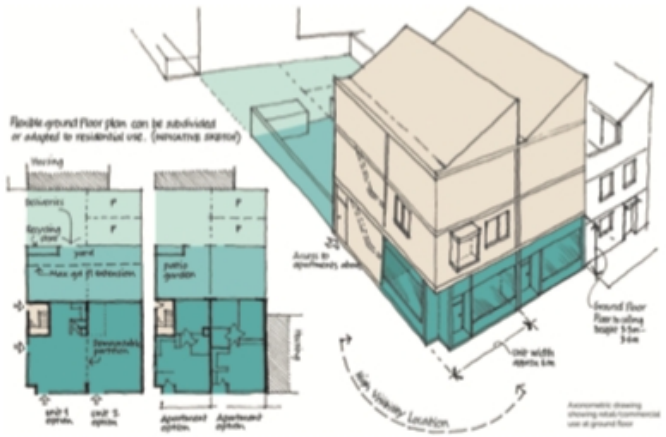
For example, buildings can be designed to facilitate change of use. This is particularly important in situations where commercial and residential uses are likely to come and go over the years, such as around local hubs and high streets. The size of ground floor rooms fronting the street, ceiling heights and building extendibility are all factors to consider.

On a bigger scale, it is important to retain some fluidity in land use, allowing for infill to respond to future needs, such as retirement homes in a new young neighbourhood, schools premises adaptable for community uses and back again as demographics fluctuate; or open land reserved for future allotments when and if demand grows. Equivalently, streets – especially local distributors – need to be designed wide enough to allow future insertion of bus priority or segregated bike lanes. While flexibility in urban space design is essential, it requires careful planning. We do not condone lazily designed layouts masquerading as flexible, when they result in 'SLOAP', Space Left Over After Planning.

Residential, offices or shops, adaptable ground floors built into new development at Kop van Zuid, Rotterdam, the Netherlands.

Figure 6.36
Three- or four-storey corner building designed for adaptability and extension
The ground floor of this building can be converted from domestic use to commercial or service use. The garden plot can house a building extension, or become a yard with some parking space. The original design allowed for such change, with high ground floor ceilings and outline planning consents for change of use.

Source: SWTC 2020



Case studies

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Honkasuo residential extension, Helsinki, Finland

Freiburg, Germany

Nesselande, Rotterdam, the Netherlands

The Pearl District, Portland, Oregon USA

Point Chevalier, New Zealand

4.b Vesterbro
Copenhagen, Denmark

Retrofit of environmental systems

The eco-renovation approach covered:

- low temperature district heating
- passive solar heating
- water, electricity and waste minimisation
- urban ecology; green areas, green walls, climbing plants, inventory of local birds and vegetation
- traffic and active transport
- social management and resident engagement

Piloting the approach

Early block renovation both employed best practice and piloted new approaches. In Tendergade /Sundevsgade block, preliminary feasibility studies showed the potential for significant improvements in all resource areas. For example 50 per cent energy reductions in room heating and domestic hot water. Façade insulation incorporated photo-voltaic capture with the addition of ventilation counter-flow heat recovery behind the panels, making use of the heat captured by the dark panels. This system became an integral building component on re-dad façades and solar balconies, which also brought more light into internal spaces. A solar collector on the roof heats up a communal water-based heat store in the basement which, together with a connection to the district heating scheme, delivers both hot water and space heating through the same pipework to all dwellings. In the communal inner courtyard a SUDs system allows rainwater from the roofs to run around the garden in channels feeding both wildlife and water play areas before being collected for secondary use in WC flushing. The communal courtyard also houses bike parking shelters, attractive compost and recycling facilities and an earth-sheltered community building with crèche, meeting and function rooms.

The soft infrastructure

It was acknowledged that success in eco-renovation depended on commitment from the residents. The Urban Renewal Centre was the focus for resident involvement. An Urban Renewal School was set up offering educational activities connected to the many renewal projects in the area.

Funding

Funding streams have been various through different stages of the programme. It has been estimated that investment in this type of ecological neighbourhood has been 30 per cent higher that in a traditional district. This can be partly offset by a return from the running costs (resource savings made and higher rent). Much of the pilot work was funded by EU programmes such as Thermiea and Energy, Environment and Sustainable Development (HQE2R project).

Thinking about design function and quality extends even to the recycling compounds. These are prominently placed in the gardens and not tucked away in service yards. The large wooden drums contain compost and are designed to obtain the necessary mixing by kids regularly spinning them.

Novel use of a solar mirror to direct skylight down into the communal stairwell.

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The Pearl District, Portland, Oregon USA

Point Chevalier, New Zealand

6.c

Point Chevalier
Auckland, New Zealand

Low-density plot intensification

Lessons

Low-density suburban housing, typical of 'pioneer' societies and highly car-dependent, can be doubled in density by building on back gardens where demand is high, without apparent loss of property values.

Background

In common with inter-war and post-WWII suburban development in Australia and the United States, the suburban areas of New Zealand were laid out with standard plots of a quarter acre (about 0.1 hectare), equating to plots 12–15m wide and 60–70m deep, often within blocks in a grid street plan. Plots were developed overwhelmingly with large-footprint single-storey 'bungalow' house types, with low-pitched hipped roofs and overhanging eaves. This type of house is designed for spacious plots, with an outlook on all sides (compared with houses designed for smaller, higher-density plots, where windows to all but ancillary rooms look either to the front or rear). The original net density of this form of development is very low, about 10 dwellings per hectare.

Radical change of density; adapting to intensification

One of these suburban neighbourhoods, Point Chevalier, a peninsula jutting into Waitemata Harbour, about six kilometres west of Auckland city centre, has proved very popular, due to its attractive setting. Subsequently, new designs dispensed with overhanging eaves and other conventional forms to gain more space and still comply with regulations stipulating distances from boundaries and set backs for daylighting. This has resulted in much smaller garden space, increased driveway and garaging, lack of visual privacy and a change in the appearance of the buildings with more two-storey stuctures and greatly reduced sense of spaciousness.

Adjacent residential plots, showing typical tandem development.

Back garden infill housing

A typical portion of the layout of the tandem plots; (a single plot shown shaded). The original house is usually at the front of each plot, facing the street. Access to the rear sub-plot is via a narrow driveway along the side of the plot. Streets are in a regular grid layout, lined with trees and wide verges.

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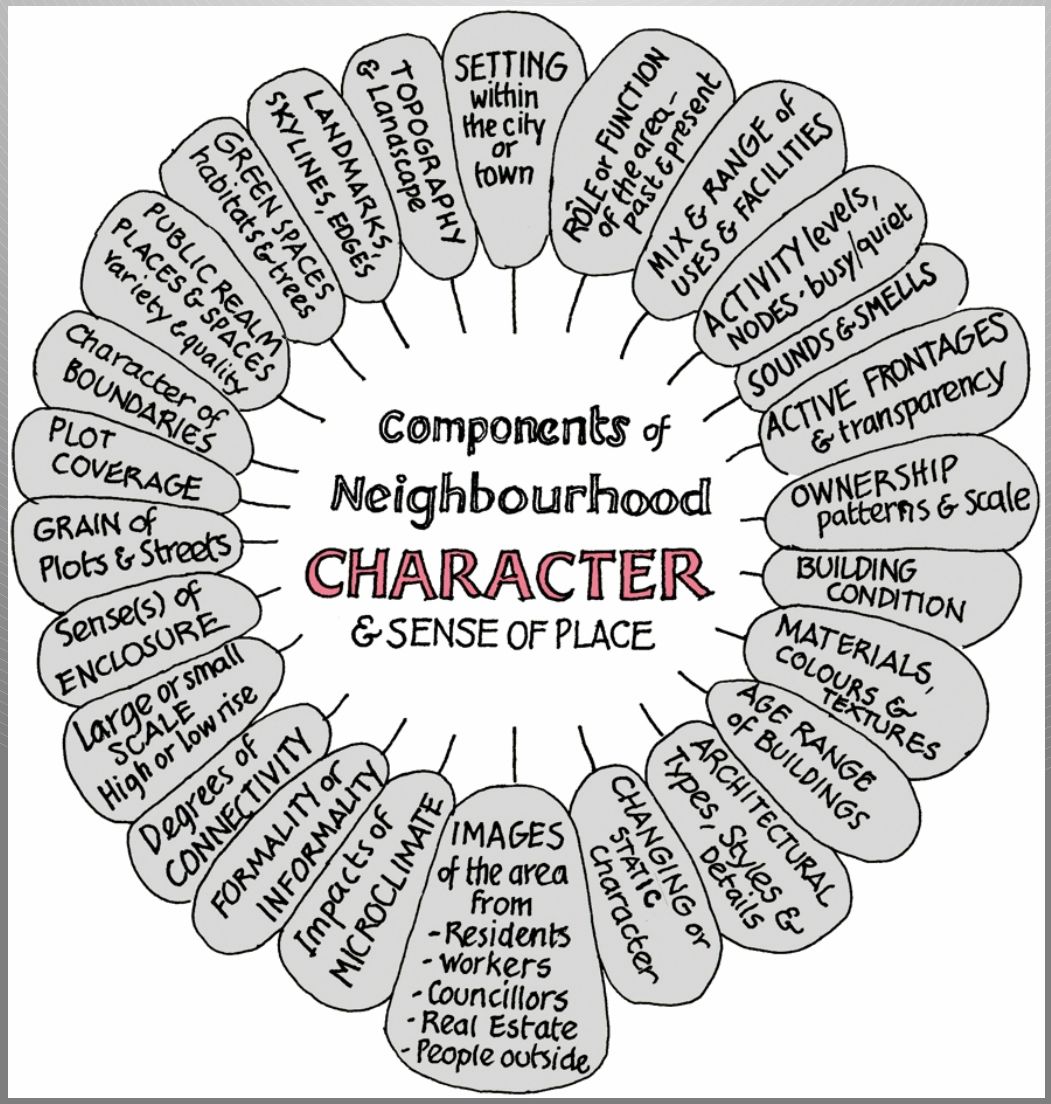
Healthy place-making: Putting it all together

Density, connectivity, mixed uses, achieving critical mass, biodiversity, viability and etc. etc



Healthy place-making: Putting it all together

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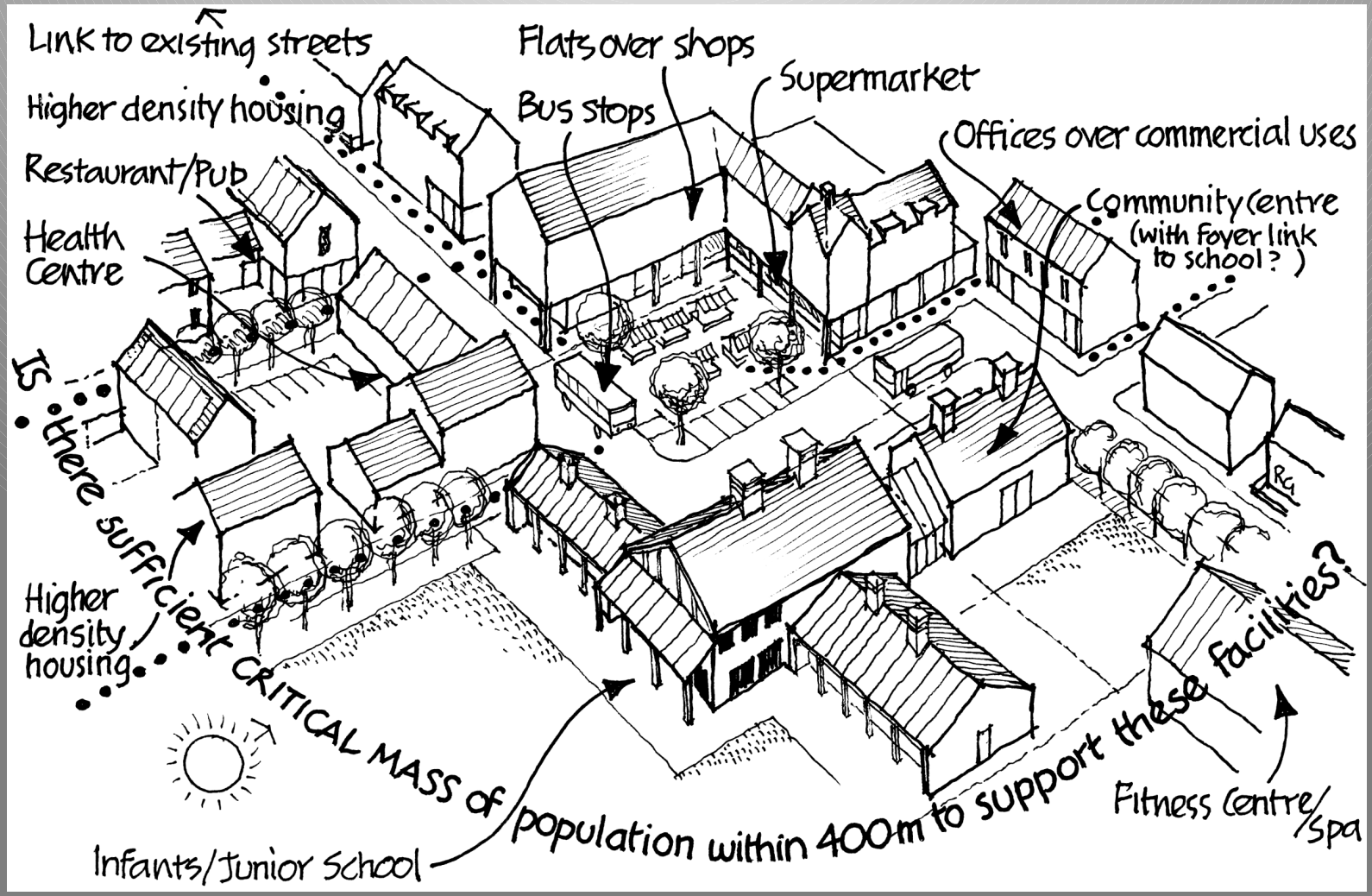

Tools and resources

Directory of resources for planning healthy environments
https://www.who.int/tools/integrating-health-in-urban-and-territorial-planning--the-directory

Tools and resources

Health impact assessment (HIA tools)

Predict and assess the effects of various proposed projects and policies on health

AirQ+

Software that quantifies the health impacts of air pollution (Spanish Version)

Integrating health in urban and territorial planning: the directory

Online repository of more than 100 open access resources and tools for integrating health in urban and territorial planning to develop healthy urban environments.

WHO Urban Health Initiative

Guidance and tools

https://www.who.int/initiatives/urban-health-initiative/guidance-and-tools

Tools and resources

Ambient Air Quality Database

The WHO air quality database compiles data on ground measurements of annual mean concentrations of nitrogen dioxide and particulate matter

Health Economic Assessment Tool (HEAT)

An online tool to estimate the value of reduced mortality that results from regular walking or cycling

iSThAT: the Integrated Sustainable Transport and Health Assessment Tool

iSThAT is a simplified methodological framework and accompanying software tool for the evaluation of the health and economic benefits of carbon reduction measures in the context of urban transportation

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Guidance and tools

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Tools and resources

GreenUR

Software that quantifies the impacts of green spaces at urban scale. The tool can serve as an educational, communication and scientific support

CHEST Toolkit

contains tools and resources for countries to develop clean household energy policies and programmes

OneHealth

The OneHealth Tool is a software tool designed to inform national strategic health planning in low- and middle-income countries

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Tools and resources

Links to other open tools from multiple organizations

The following open tools enable users to calculate air pollution emissions and impacts. The calculations will allow users to assess sector policies and land use planning consequences on health. These software tools support analysis and encourage engagement among multiple stakeholders regarding the impacts of human activity on the environment and on health.

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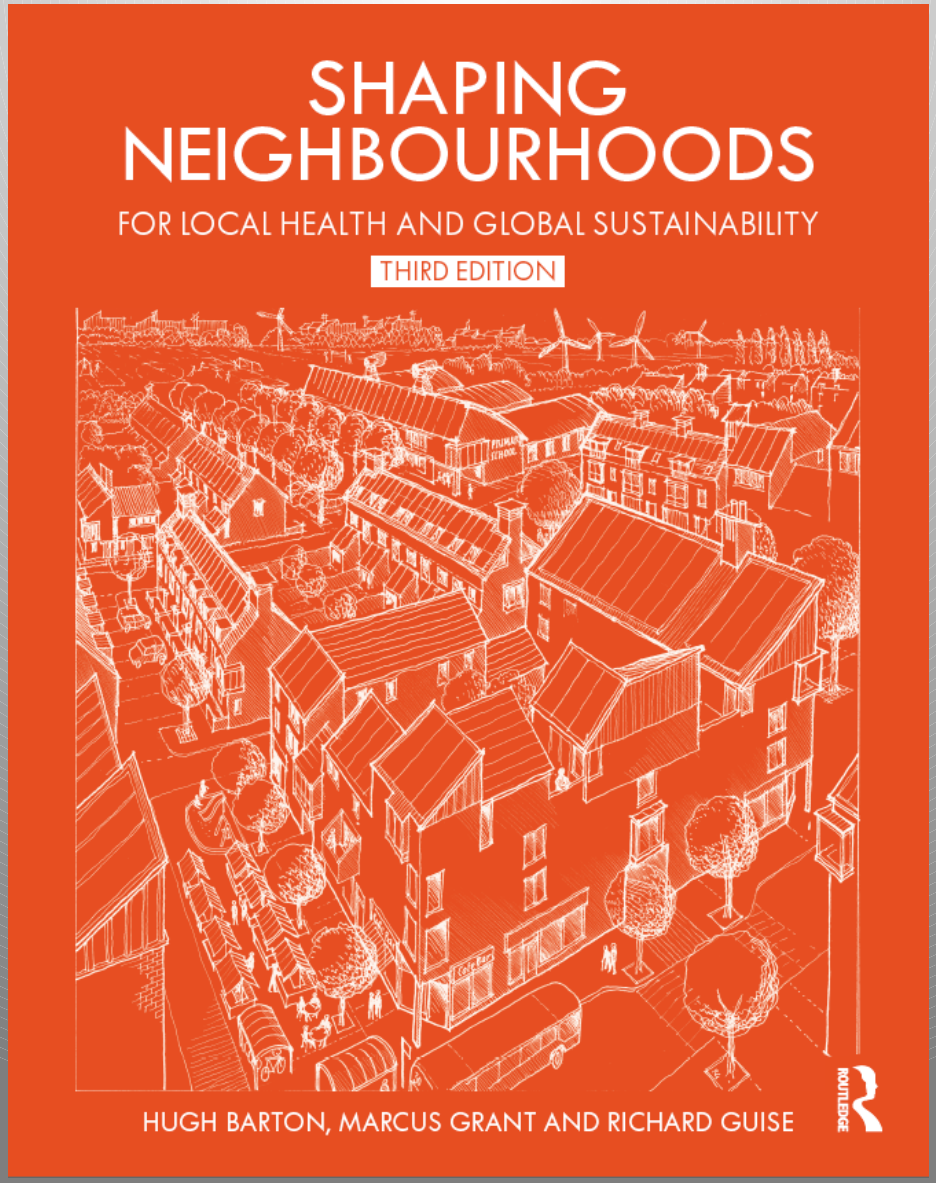

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