

# SEI Initiative on City Health and Wellbeing



**SEI brief**  
**November 2018**

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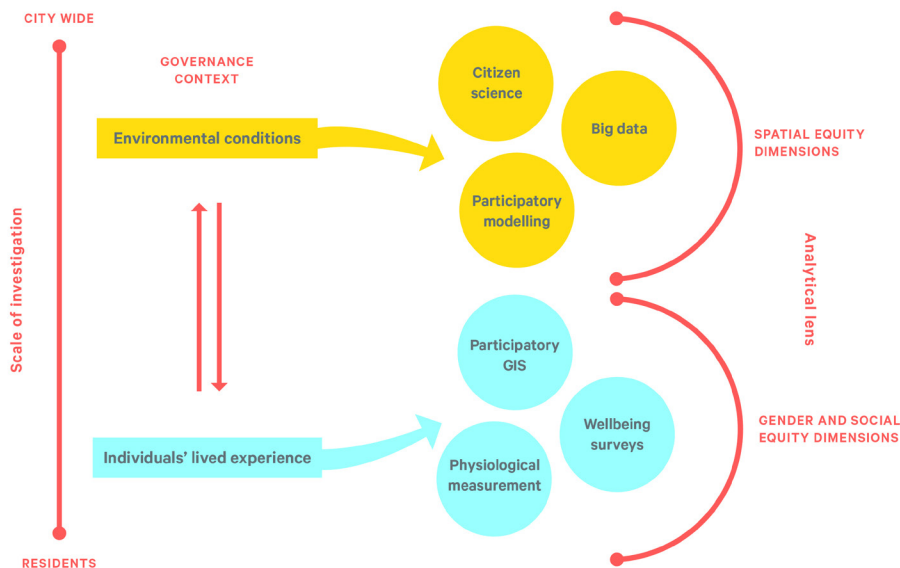
## Introduction

Rapidly growing cities represent unique challenges and opportunities. Unplanned growth often outpaces infrastructure development and occurs at the expense of a city's ecological foundations, undermining residents' wellbeing and its sustainability. The SEI City Health and Wellbeing Initiative will use novel approaches to investigate how evolving cities are affecting the wellbeing of residents and how this interacts with the overall health of city systems.

What makes a city healthy for its residents? Could citizens be actively engaged in monitoring the health of their city? These are key questions that inform our initiative case studies in Asia and Africa. The evidence we generate will help to guide policies aimed at equitably maximize the wellbeing of urban populations while minimising resource consumption and without undermining their resilience.

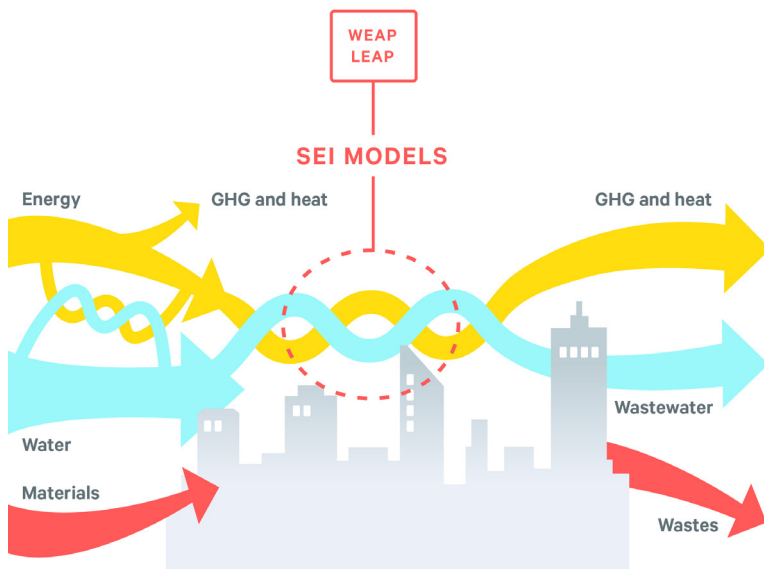
Over the upcoming decades, sustainable development will largely be a story of our transition to urban living, in which city environments will need to integrate many dynamic interacting development challenges. Climate change will affect urban environmental quality, increasing the incidence of flooding, intensity of heat islands, clean water shortages and leading to poorer air quality.<sup>1</sup>

Core activities in the initiative focus on different dimensions of health and wellbeing across scales from individual residents to city-wide environmental conditions and governance.



While rapidly growing cities present some of the most pressing and “wicked” development challenges, they also offer significant opportunities for improving the lives of large numbers of people through access to employment, education, healthcare and improved livelihoods. The concentration of urban populations, resource demands, pollution emissions and impacts (environmental, social and economic) means we need to identify how to maximize the potential cities offer to promote wellbeing, alongside the economic and business opportunities conurbations can bring, by making them people-centred, liveable, equitable, sociable, and enjoyable.

SEI models can help quantify “metabolic flows” in cities.



Source: Figure based on Kenway, S.J. (2013). *The Water-Energy-Nexus and Urban Metabolism: Connections in Cities. Technical Report 100. Urban Water Security Alliance. Brisbane.*

## Opportunities for sustainable cities

The Sustainable Development Goals (SDGs) emphasize the need to create inclusive cities and localize development agendas to ensure maximum benefits for a cross-section of urban residents. While cities concentrate development challenges, they also offer unique opportunities, which means they are central to delivering on the 2030 Agenda for Sustainable Development. These elements are also core to the commitments made in the New Urban Agenda.<sup>2</sup> The form of built environments defines how cities function. A better understanding of how existing urban forms benefit or undermine residents’ wellbeing can help decision-makers identify options to make cities more liveable. Making sure that grey, green and blue infrastructure and the layout of rapidly growing cities become more productive, efficient and resilient is as important for urban development as institutional or governance change.

Because of the current pace of urban growth – 68% of the world’s population will live in cities by 2050, according to the UN – decisions taken now by governments and investors will shape the development of cities for decades to come. This means there are big opportunities

to influence current decision-making at local, metropolitan, regional and national levels so that developments favour liveability and sustainability. Cities are complex, dynamic systems, however, and decision-makers need relevant knowledge and flexible options and pathways. Providing robust research evidence on how to make urban areas more liveable for a cross section of residents gives us an opportunity to address urban inequality and help shape well-functioning sustainable and resilient cities.

## Our approach

Researchers can help to develop sustainable cities by co-generating knowledge with urban stakeholders, capturing and translating learning for decision-makers in a more effective and systematic way, and by supporting innovation. This initiative takes a multi- and interdisciplinary approach, connecting geographers, social scientists, environmental modellers, neuroscientists, urbanists and biologists. In the first phase we will translate, test and expand methods and approaches between SEI centres – particularly from Europe and the US to Asia and Africa.

## Aims

The overall aim of the initiative is to promote equitable urban development capable of delivering healthier and happier living in our increasingly urban societies. We will generate new knowledge on the impacts of urban environments on the health and wellbeing of residents, with a core focus on low- and middle-income countries, although findings are likely to be relevant globally. Our research will integrate knowledge across policy silos to contribute to more holistic decision-making. Activities in the first phase of the initiative will be used to leverage new funding to expand the reach and impact of our work. A health and wellbeing approach will complement and connect with other areas of SEI’s research, including climate change mitigation, resilience and environmental sustainability.

## Case studies and activities

The initiative will investigate city health and wellbeing in detail at two case study sites – Nakuru in Kenya, and Udon Thani in Thailand. Both are rapidly growing cities with emerging environmental challenges. Four interconnected core activities will be our starting point in the case studies:

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1. The impact of urban forms' impact on health and wellbeing
  2. Co-designing urban citizen science monitoring
  3. Urban metabolism and participatory modelling
  4. Governance for greater urban equity and inclusion

### **Impact of urban forms on health and wellbeing**

This activity looks at city residents' health and wellbeing in relation to urban forms – particularly public spaces and green-blue infrastructure. This will include understanding the cities' cultural ecosystem services alongside surveying and measuring the interaction of these services with people's wellbeing and stress. In developing more sustainable cities all aspects of life satisfaction need to be considered. Good mental health is a state of wellbeing in which individuals can realize their own abilities, cope with normal life stresses, work productively, and contribute to their community. A health and wellbeing lens on urban development will complement and counterpoint other framings, such as climate change mitigation or urban resilience, and will lead to analysis of the dynamic interactions between environmental quality, governance, the form of urban spaces, and health outcomes.

Questions we will address in the case studies include:

- What do Nakuru and Udon Thani look like when their public spaces – including green space and their ecosystem services – are mapped? How do residents use and feel about these spaces and what health benefits do they think they are providing?
- What is the status of residents' current wellbeing? What types of urban environments undermine or promote their wellbeing, and what does this imply for sustainable urban development?
- How do data gathered from the cities compare with other major cities, both within the same country and around the world?

An SEI toolkit of approaches will be used to assess how urban form and its management affect health, wellbeing and equity for relevant target groups (including the most vulnerable in informal settlements). By linking qualitative and quantitative health and wellbeing assessments, including gathering physiological data using wearable technologies, we will pioneer these approaches in developing world urban contexts. This will place SEI at the forefront of this emerging research area.

### **Co-designing urban citizen science monitoring**

The second activity will look at the health of cities through participatory, co-designed citizen science approaches, and collect data on environmental conditions that affect health and wellbeing. Areas of investigation could include air pollution, water resources, waste streams or energy systems. But to ensure local relevance, ultimately the focus will be decided on and co-designed along with city authorities and residents.

We will build on previous projects to test how effective citizen science methods are for assessing the impacts of dynamic urban environmental conditions on resident's health and wellbeing in developing country cities. We will focus on citizen collected data that may allow interaction with existing SEI tools (e.g. WEAP on water quality and quantity, LEAP on energy planning and LEAP-IBC on energy, climate and health) and other decision-making processes at the city scale. The aim is to build a toolbox of tested methods that can be applied in other low- and middle-income countries (LMICs).

Specific questions we will address in our activities include:

- What are the existing citizen science approaches emerging in LMIC cities?
- What can we learn from these in terms of their drivers of success and failure?
- Can a co-created citizen science approach generate data on the drivers of residents' health and wellbeing that is useful for decision-making? Who are engaged by these approaches and who is excluded, and what does this mean for the data that is collected?

In this first initiative phase we will evaluate the technical and financial feasibility of using spatial “big data”, and its usefulness for future applications.

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**Photo (front page):**

**Vertical garden**

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**Urban metabolism and participatory modelling**

The third activity will focus on how participatory data sources could be used in modelling to look at the functioning and health of the city – the so-called urban metabolism. For many secondary cities in low- and middle-income countries, the input data required to quantify metabolic flows and their associated outcomes (e.g. equity and health) is often absent, outdated or does not include information on vulnerable or excluded groups. We will explore how citizen science approaches could fill in data and knowledge gaps.

Not only is there a lack of data, it is also very challenging to gather data at the city scale, and many assumptions about scaling are made. For example, input-output modelling scales national level data to the city scale using largely untested assumptions. We aim to resolve scaling issues linked to cities' dependence on resources beyond their physical spatial boundaries. To link exposure to environmental pollutants to health outcomes requires, in many cases, intensive epidemiological studies that are typically beyond the scope of SEI. However, we will explore if there are global exposure-risk relationships that can be used instead to incorporate health outcomes to specific water and air pollution factors.

Our urban metabolism work will address these challenges by taking in findings from the first two activities – on residents' wellbeing and citizen science – to identify whether better engagement can generate data to improve modelling processes and outcomes.

**Governance for greater urban equity and inclusion**

We will examine how governance processes interact in Nakuru and Udon Thani, and how the concept of creating a healthy and liveable urban environment could help guide city development. The focus will be on how urban knowledge and perspectives can enhance governance of low-carbon cities in Asia and Africa. We understand governance to include both formal and informal rules and norms around how decisions are made and how money is spent, how activities are legitimized and how long-term change is sustained. We will examine how the co-production of knowledge – including the approaches explored in our other activities – can help those who govern and manage urban spaces and infrastructure to take advantage of co-benefits related to improved health and wellbeing for all urban residents, especially those who have previously been excluded.

**Outcomes**

In cities, infrastructure, environmental conditions and behavioural factors interconnect with and influence health and wellbeing. To create urban environments that promote health and wellbeing over the long term, it is not enough for research to focus only on the links between specific environmental factors and health; decision-making needs to be informed by an understanding of cities as broader dynamic contexts, where structures, flows and processes interact to affect residents' life quality.

The research will contribute to a rethink of urban development practices. Knowledge generated through action research and boundary partner engagement will inform sustainable and participatory planning for urban environments.

From the outset, project activities will influence urban planning processes at the county and national level through integrated urban development plans and national urban policies. We will target our national findings to existing partners, such as Slum Dwellers International, Town and County Planners Association of Kenya and Chulalongkorn University, and also engage with core regional partners such as UN Habitat, ASEAN (the Association of Southeast Asian Nations) and ICLEI (Local Governments for Sustainability) to ensure our findings deliver wider impact.

1. Jabareen, Y. Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk. *Cities* 31, 220–229 (2013).
2. United Nations. New Urban Agenda. [habitat3.org/the-new-urban-agenda](http://habitat3.org/the-new-urban-agenda)