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What are national academies of science and medicine doing in relation to urban health and its broad determinants?



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FINAL REPORT

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What are national academies of science and medicine doing in relation to urban health and its broad determinants?

Consultation for InterAcademy Partnership

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ABBREVIATIONS AND ACRONYMS

AASSA	Association of Academies and Societies of Sciences in Asia
DoUH	Determinants of urban health
EASAC	European Academies' Science Advisory Council
IANAS	Inter-American Network of Academies of Sciences
IAP	InterAcademy Partnership
ISC	International Science Council
ISUH	International Society for Urban Health
NASAC	Network of African Science Academies
NGO	Non-government organisation
SDG(s)	United Nations Sustainable Development Goal(s)
UH	Urban health
UN	United Nations
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHA	World Health Assembly
WHO	World Health Organization

GLOSSARY

Active academies	Academies having an active interest in urban health and its broader determinants as indicated by activities present on their website that incorporated the term 'urban' (or related terms) and one or more determinant of health and/or lifecourse and population groups and/or health risks and health and wellbeing outcomes.
Determinants of urban health	The proximal and distal factors which influence the health and wellbeing of people living and working in urban settings. These include housing, employment, economy, education, social equality, culture, natural and built environments, health services, and others.
In-scope websites	Refers to the websites of national academies that are technically accessible and can be read in English.
National academies	Refers to national academies of science and medicine that are members of InterAcademy Partnership.
Region/s	Refers to regions as defined by InterAcademy Partnership – Africa – Americas – Asia Pacific – Europe
Scholarly publications	For the purposes of this project, refers to any scientific publication that has been subject to review by peers, experts/scholars in the field. For example: – an expert consensus report produced by an expert group and then subject to peer review – an evidence-based position paper and/or statement that has been endorsed and/or signed by a national academy – a peer-reviewed journal paper. Scholarly publications may be authored or co-authored by a national academy, for example, as a working group member, author, or editor.
Search terms (or key search terms)	Refers to specific urban health-related topics used to identify and categorise project-relevant data collected from national academy websites. Refer to Section 4.2 for a full list of search terms.
Sustainable Development Goals	The goals adopted by all United Nations member states in 2015 as part of the *2030 Agenda for Sustainable Development*. The 17 goals recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – while tackling climate change and working to preserve our oceans and forests.
Urban health	Various definitions exist. In general, urban health is: A field of study and endeavour relating to how urban settlements (cities, urban neighbourhoods, or informal settlements) influence the health of urban populations, thus pointing the way to interventions that can improve health.

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The findings, interpretations and conclusions expressed in this report reflect the authors' views.

1. EXECUTIVE SUMMARY

Urbanisation continues apace in all regions of the world, producing opportunities for creative, connected societies and their constituent communities to thrive but bringing a range of potentially devastating implications for health and wellbeing – from social exclusion to air pollution to chronic diseases and novel communicable diseases. The *Sustainable Development Agenda 2030* (UN General Assembly, 2015), the *New Urban Agenda* (UN-Habitat, 2016), the *Paris Agreement* (UN, 2015) and the *Sendai Framework* (UNODRR, 2015) all recognise the challenges of urbanisation, its impacts on health, wellbeing and equity in the short and longer term, and cities' roles in global health development.

Urban health, a key concern of the UN Sustainable Development Goals (SDGs), is a grand challenge of our time. It is described by scholars as *being concerned with understanding how features of cities influence the health of urban populations, thus pointing the way to interventions that can improve health. An understanding of urban health requires a grounding in the fundamentals of causal thinking. How do cities influence the health of populations?* (Galea, Ettman & Vlahov, 2019).

Cities and urban governance are moving to the forefront of research concerning human health as well as planetary health, however "the extent to which health and its promotion will be prioritised as a basis for decision-making is an open debate" (Fudge & Fawkes, 2017). Evidence-informed decision-making will need to call on the work of our best scientists from across the world. The InterAcademy Partnership (IAP) is the global network of science, engineering and medical academies that facilitates collaborations for providing independent expert advice on scientific, technological and health issues. By commissioning this project, IAP sought to understand what national academies have been doing in the field of urban health and its broad determinants. A proposition underpinning this project was that academies have been engaged in a range of urban health-related scientific endeavours but their orientation to urban health may be under-developed or under-recognised. By strengthening this orientation, a major opportunity exists for academies to grow their relevance to societal problems, profile, effectiveness and impact.

A desktop review of academy websites and interviews with several academy leaders offered insights into the diverse types and topics of activities in which the academies in Africa, the Americas, Asia Pacific and Europe were engaged between 2017 and 2021. Partnerships featuring in these activities were also reviewed. Importantly, this timeframe spanned the first two years of the COVID-19 pandemic, which triggered severe disruptions across all facets of life that were unimaginable for most governments, businesses and communities. Many scientific activities around the world were slowed, delayed or ceased during this period.

Key findings were as follows.

1. Desktop review

Method. A systematic process was used to identify, examine and capture data on national academies' activities from their websites. Websites of 130 of the 141 IAP member academies around the world were accessible for this review. A key search terms list allowed detection on websites of relevant activities in four domains. Detailed Excel spreadsheets captured data and enabled analysis. The domains were identified with reference to four conceptual frameworks. In different ways, these frameworks represented the multi-level, multi-sector determinants of urban health and the concept

of Health in All Policies. The project had several limitations. These pertained to the sources of information (websites and interviews), data collection methods and data analysis.

Types of activities. Four categories of activities were defined at the start of the project as ways that national academies undertook urban health-related work. These were: publications, events, projects and grants, and committees (and other organisational arrangements enabling urban health work).

- During the study period, national academies had engaged most frequently in the production of publications. A total of 229 publications were identified as the main focus of activities. These included those of high scientific quality such as expert consensus reviews, evidence-based position papers and peer-reviewed journal papers.
- Events were the next most common type of activity. A total of 165 events were identified as the main focus of activities and included conferences, symposia, workshops and seminars (in person and online), information/education sessions, competitions, and open days.
- Committees and a range of other organisational arrangements supporting urban health work were noted in all regions. A total of 34 such arrangements were identified including ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies, and others.
- Finally, there were a small number of projects and grants (27) identified on academies' websites. However, this is likely to be an underestimate as activities of projects (including their progress and outcomes) might have been separately reported as publications or events.

Topics for activities. The main topics for national academies' activities related to broad determinants of urban health, and often had an equity focus. Determinants that were strongly represented in activities were natural environment, economic development, built environment and food. Digital determinants were less often a focus of activities. Stages of the lifecourse and particular population groups were seldom an explicit focus of activities, many of which were intended to benefit broader populations. Specific health issues and diseases were represented in the rationale for activities (for example, increasing rates of noncommunicable diseases globally) but were infrequently the major focus.

Partnerships. Partnerships were common and featured: other national academies within the country, in other countries and outside the region; regional networks of academies in Africa, Americas, Asia Pacific and Europe; IAP; a diverse range of national ministries and departments in national governments (eg. related to climate, science and technology, environment, agriculture, water and others); non-government organisations (eg. International Society for Urban Health, International Science Council); not-for-profit organisations (eg. Bill and Melinda Gates Foundation, Novartis Foundation); private sector entities (eg. national companies, multinational corporations), and UN agencies and associated entities (eg. UNESCO National Commissions, UN Network for Sustainable Development Solutions). World Health Organization did not feature prominently as a partner. Functions of partnerships included resource mobilisation, communicating evidence to policy makers and others through presentations, publications and briefings, engaging in scientific discussions about research studies, and producing expert consensus reports and statements.

2. Interviews with leaders

Eight academy leaders were interviewed or documented their responses to interview questions, and for one academy, in lieu of an interview, its website was examined to understand the Academy's

leadership role in and approach to engaging in urban health-related work. Interviews determined that national academies see UN Habitat's *New Urban Agenda*, the UN SDGs and national-level issues as important drivers of scientific leadership, research, and other activities. The SDGs were viewed as an important platform for defining and legitimising academies' work and partnerships for urban health-related research and complementary activities. Academies were reported to have well-established programs of work that pertain in some way to urban health, and these ranged across climate change and sustainable development, air pollution, social inequalities and urban infrastructure (such as transportation, water, built environment). Exploration of facilitators and obstacles highlighted the importance of visionary leadership, strategic organisational development and international partnerships, as organisational arrangements have not in all cases been sufficient to support, or conducive to, interdisciplinary activities. All leaders were committed to further consolidating their activities around the urban context and urban health and its broad determinants.

3. Ten insights into national academies' activities in urban health and its broad determinants

1. The missions of national academies are compatible with leadership roles in urban health.
2. The concepts of 'health' and 'urban health' warrant clearer definition on national academies' websites and in publications.
3. Adopting systems thinking approaches and the concept of Health in All Policies will enhance national academies' impact on urban health.
4. Tailoring organisational arrangements and augmenting capacity to support interdisciplinary, multi-sectoral and systems-based approaches will help national academies to strengthen their focus on health and urban health.
5. Continually enhancing their websites' functionality, comprehensiveness and quality will help national academies to optimise their scientific knowledge exchange and communication roles in urban health-related areas.
6. Publications, events and multi-component projects in urban health-related areas are all important activities and have complementary roles to play in scientific knowledge production and communication.
7. Topics addressed by national academies' activities concerned broad determinants of urban health, reflected national contexts and challenges and aligned with SDG priorities.
8. Partnerships of various types, across sectors and levels, are fundamental to resourcing national academies' urban health-related activities and catalysing action.
9. National academies value InterAcademy Partnership's role in urban health and want it to continue and expand.
10. Strategic opportunities exist for national academies to take the lead on scientific efforts in urban health-related areas.

4. Twelve strategic opportunities for national academies to lead on scientific efforts in urban health-related areas

1. Establish 'health' and 'equity' as core concerns of all national academies' activities, and strengthen explicit consideration of 'health' and 'equity' in work on drivers of societal

change (eg. urbanisation), broad determinants of urban health (eg. transport, housing, water infrastructure, air quality) and the urban context.

2. Position academies for a leadership role in 'urban health'. As a key element of national academies' societal role of bringing evidence to governments (city, regional, national), connect academies' existing leadership role in authoritative research to the production and communication of evidence to advance urban health. The SDGs and the 'one UN' approach to urbanisation of the *New Urban Agenda* have opened the door to national academies being an essential partner to other actors in urban health work.
3. Build national academies' capacity in strategic areas relevant to urban health. Recruit expertise in areas that are not currently represented, for example, social science, or create links with other national academies that have this expertise (such as a national academy of social science and humanities). Build on existing academy models, or innovate new ones, to expand capacity within academies to work on priority areas of urban health. For example, consider establishing an interest group, division or unit, policy advocacy group, research program and so on. These could promote and encourage strategic initiatives and projects across the wider organisation and in collaboration with other actors. Develop futures literacy among academy members and utilise foresight tools or undertake foresight projects to distinguish leadership roles for national academies in this field.
4. Optimise use of digital communications to strengthen urban health-related activities. Adopt 'next practice' approaches to using digital communications for research in urban health, as well as to announce and showcase urban health-related activities and amplify engagement.
5. Build national academies' interest in health and urban health by leveraging their existing interest in sustainable development and climate change. Optimise the potential for the growing interest in these complex ecological and societal challenges among national academies to build deeper involvement in urban health and its broad determinants.
6. Create incentives for urban health innovation. Encourage work on urban health and its broad determinants via awards. A number of academies already have prestigious award programs for specific areas of science and medicine (eg. chemistry, physics, biology, engineering). These could be augmented with awards for activities that nudge academies' members to orient their efforts to urban health.
7. Convene urban health-focused groups. Host national multidisciplinary scientific societies and clusters focused on urban health to undertake research and other activities. These can also provide advisory roles to other societies and clusters in relation to how to strengthen their contribution to health and urban health research and knowledge exchange.
8. Expand national academies' membership in order to expand and grow disciplinary expertise. Urban health work requires a wide range of disciplinary expertise. One way to grow the base of expertise that can stimulate cross-disciplinary activities with an urban health goal is to expand the range of professions that are eligible to be academy members.
9. Review national academy mission statements and strategic goals to ensure they support work in urban health. Given the significance of urban health for inter-generational health, wellbeing and prosperity, and the relevance of urban health to many national academies' current mission statements (eg. to 'advance medical and social goals'), review mission statements to incorporate health, wellbeing and urban health concepts. Consider the

development of priorities, goals, targets and deliverables for work related to urban health and its broader determinants, and embed in them in academies' strategic plans.

10. Instigate or expand academy-academy partnerships. Create twinning arrangements between national academies around the theme of urban health and its broad determinants. Leverage opportunities to pair academies with a strong body of work in this area with academies with less experience.
11. Multiply connections between basic science/engineering-focused academies and academies which emphasise urban health. Encourage more systematic applications of work by engineering-focused academies to ecological health in urban contexts, to transform social and economic conditions including reducing poverty.
12. Forge strategic partnerships for urban health-related activities. Partnerships are essential for mobilising and accessing diverse types of resources and power, constructing new forms of knowledge, tapping into lived experience of population groups and taking action. National academies could seek out appropriate partnerships with relevant local, national and international actors including those operating in public, private, and civil society sectors. SDG 17 advocates for partnerships to be formed to advance action on the SDGs such as SDG 11.

2. BACKGROUND

2.1 The urban health agenda is growing in significance

Drivers of change in societies – demographic, social, cultural, technological, digital, economic, environmental and political – continue to stimulate transformative changes in urban settings. These changes are shaping access to all determinants of health, creating patterns of disease and health in communities and widening health inequalities within and between countries and communities across the world. It is from this context that the urban health agenda has emerged over the past four decades and gained relevance in research, advocacy, governance and policy, capacity building, civil society engagement and programmatic interventions.

Galea, Ettman and Vlahov (2019) define urban health as *concerned with understanding how features of cities influence the health of urban populations, thus pointing the way to interventions that can improve health. An understanding of urban health requires a grounding in the fundamentals of causal thinking. How do cities influence the health of populations?* Various conceptual frameworks help to sharpen what we understand from multidisciplinary and transdisciplinary research to be the major systems and factors associated with urban health, how they interrelate and the outcomes for the health and wellbeing of the whole population and its communities.

Urban health represents a 'grand challenge' of our time. Kitaw (2020, p.1) summarises what has been well established by international scientific bodies:

> *Globally, for the first time in history, more people (54% in 2011) live in urban areas compared to only about 20% … a century ago. The global urban population ratio is predicted to reach over two-thirds by 2050, with cities destined to define the future of global health.*

Pioneering initiatives related to cities and health have been giving strong strategic and technical direction to various actors since the 1980s – including how they can contribute to urban health through a science-led, systems thinking approach and policy development. Crucially, health is a common concern, if not primary focus, for each of them.

- The WHO Healthy Cities project was initiated in the late 1980s to implement the settings approach of the *Ottawa Charter for Health Promotion* (WHO, 1986) and engage actors at the local level in health and equity-focused efforts. It has since catalysed a movement across continents and countries, and innovates on matters of governance, health and equity in all policies, community engagement and interventions (Tsouros, 2019).
- Launched in 2015, the *United Nations Global Sustainable Development Agenda 2030* (UN General Assembly, 2015), including the Sustainable Development Goals (SDGs), integrates the social, environmental and economic domains of sustainable development and the systems of governance needed to implement all 17 goals. SDG 3, *Good health and wellbeing*, is concerned with ensuring health and wellbeing for all, at every stage of life. SDG 11, *Sustainable cities and communities,* aims to make cities and human settlements inclusive, safe, resilient and sustainable. Key concerns of SDG 11 are broad determinants of health: housing, transport, urbanisation, cultural and natural heritage, disasters, environmental impact of cities, green and public places, development planning, disaster risk reduction, and sustainable and resilient buildings. Crucially, urban health is relevant across multiple SDGs, demanding that a systems thinking approach to urban health policy development and action is adopted. UN Member States are expected to take ownership of coordinated, aligned

efforts to establish national frameworks for achieving the SDGs. Actions must be based on robust science and will only be achievable through collaboration.

- The *New Urban Agenda* (UN-Habitat, 2016), adopted at Habitat III – the UN Conference on Housing and Sustainable Urban Development in 2016 – aims to shift thinking about sustainable urban development, and how cities are planned, managed and lived in. The Agenda also provides guidance for achieving the SDGs, including actions to address climate change. It asks all countries to develop a National Urban Plan and submit it for review to the high-level World Urban Forum. UN-Habitat is the designated lead agency for the *New Urban Agenda.* Drawing on its capability in interdisciplinary/interagency analysis and multi-sector action on sustainable cities and communities, the United Nations Development Program (UNDP) supports this 'one UN' approach to urbanisation and SDG 11 implementation at country level.

- The international treaty on climate change, the *Paris Agreement* (UN, 2015), reflects increasing recognition that taking action to ensure cities are more capable of being 'inclusive, safe and resilient' and are a sustained, positive source of health and wellbeing for their populations is urgent. A pillar of action is that UN Member States are obliged to submit their plans for climate action ('nationally determined contributions') and invest in economic and social transformations enabling greenhouse gas emission reductions.

- The *Sendai Framework for Disaster Risk Reduction 2015–2030* (UNODRR, 2015) endorsed by the UN General Assembly in 2015, has a goal to: "Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience" (UNODRR, 2015). It recognises that risks to ecological systems and people have changed in nature and scale, and approaches to risk avoidance and detection and disaster responses need to be transformed as a matter of urgency. Promoting conditions for health and health resilience are central concerns of the Framework, as are the drivers of risk such as urbanisation. With respect to disaster risk assessment, mitigation and responses, cities are recognised in the Framework as vital settings, local-level actors and partners. Furthermore, bodies of local governments such as the United Cities and Local Government organisation (a global network of cities and local, regional, and metropolitan governments and their associations) are called on to become active in reducing disaster risk and implementing the Framework.

- Amplifying the call for an urban focus to action on disaster risks (including pandemics), the World Health Assembly (WHA) adopted a resolution proposed by Singapore in June 2022: "Strengthening health emergency preparedness and response in cities and urban settings" (WHA, 2022). The importance of multi-sector, multi-level and multi-stakeholder engagement was emphasised.

Each of these initiatives provides national academies with a strong rationale and outstanding opportunities to connect to and become active in key global, inter-regional and national processes that deliberate and act on priority challenges for urban health.

Kitaw (2020) notes:

> *… measures that address the challenges of the urban health agenda – competition with the dominant rural health development agenda; limited data and measurement tools; lack of*

evidence base for effective intervention; ineffective governance; limited grasp of the problem and solutions; and inadequate communications with the public – are required.

Keys to addressing these challenges include the production of robust evidence and its application in reforming urban systems, policy, investments and practice. Since this assessment, considerable progress has been made on a number of fronts – including scientific and policy research related to urban health, international, national and local level policy innovations, and on the ground initiatives.

2.2 National academies have vital roles to fulfil in advancing urban health

Action to achieve SDG 11, *Sustainable cities and communities*, requires diverse scientific disciplines to collaborate in identifying and generating evidence and new perspectives to understand the complex problems that need to be tackled, and in developing solutions. With their missions to serve society through science, national academies of science and medicine around the globe are at the forefront of actors that have a pivotal and as yet unfulfilled role in urban health knowledge creation, policy development and action.

With some national academies of science and medicine recognising that "(U)rbanization research is a hot spot of global concern" (Zhang, 2021), there are signals that more attention may be being given to research in the field of urban health by the world's most reputable scientific bodies and experts. National academies and their members enjoy high levels of trust, and play crucial roles in producing scientific knowledge and technical innovations, advising governments on the science and options for evidence-based action, communicating urgency, and cultivating connections between disciplines. As such, they have a strategic role to play in enhancing urban health that is as distinctive as it is important.

Central propositions in this project are that national academies are already undertaking work that is concerned with urban health, but they have considerably more opportunity to align their current work with the urban health agenda and to expand their contribution to the scientific endeavours needed to foster urban health.

In recent years, InterAcademy Partnership (IAP) has been catalysing interest and activities associated with the field of urban health among its members (InterAcademy Partnership, 2022) and international partners, especially through its Urban Health Working Group. A global network, IAP has over 140 national and four regional member academies of science, engineering, and medicine.[1] Through this project IAP seeks to understand national and regional academies' activities that concern urban health and its broad determinants. This work will help IAP assess how to advance a health- and health equity-in-all-policies approach to urban health governance and deeper involvement by academies in work to achieve SDG targets, particularly those under SDG 11 *Sustainable Cities and Communities* – to *Make cities and human settlements inclusive, safe, resilient and sustainable* (United Nations Department of Economic and Social Affairs, 2022).

[1] The four Regional Networks are: Association of Academies and Societies of Sciences in Asia (AASSA), European Academies' Science Advisory Council (EASAC), Inter-American Network of Academies of Sciences (IANAS), and Network of African Science Academies (NASAC).

2.3 This report reviews national academies' activities in urban health and its broad determinants

This report examines and provides insights into national academies' recent activities (2017–2021) in the area of urban health and its broad determinants, and the types of partnerships academies' have engaged in to undertake this work. Through a desktop view of academies' websites and interviews with leaders of academies, the report scopes the types of urban health-related activities undertaken by national academies, the span of topics they covered and academies' aspirations in this field of scientific endeavour. Outcomes of this project will inform the directions for IAP's strategic work with national academies in the field of urban health, and the roles IAP might play in the global conversation and collaborations with UN agencies and other bodies on healthy urbanisation and urban health.

3. PROJECT AIM

The aim of the project was to review recent activities by national academies of science and medicine around the world in urban health and its broad determinants.

4. PROJECT DESIGN

This section outlines key features of the overall project design and methods used to collect and analyse data. It highlights several salient limitations to the tools and processes for carrying out the project, and discusses these in terms of how project findings may be interpreted.

4.1 Overview

Two methods were used to gain insights into national academies' recent activities in the area of urban health and its broad determinants:

- a desktop review of the websites of national academies that are members of the InterAcademy Partnership and the four Regional Networks, and
- key informant interviews with leaders of a diverse range of national academies.

Figure 4.1 presents a schematic overview of the overall project design.

The project design sought to minimise the impact of technical issues and variability across academies globally (eg. relating to the purpose and/or uses of their websites, lack of available data or use of terms and concepts), and to ensure consistent decision making by the Consultant Team. Limitations of the study design are outlined below.

4.2 Data collection and analysis

4.2.1 IDENTIFYING IN-SCOPE WEBSITES

The desktop review involved identifying which national academies' websites listed on the IAP website were in scope for this project, then systematically scanning each of these websites with reference to key search terms in order to identify in-scope activities and related partnerships.

The IAP website was used to locate academies' websites. A small number of website links were inaccurate, and in these cases, a web search was undertaken in an effort to locate the functional websites.

Among the 141 IAP member national academies, most hosted a website. The websites of 130 (92%) academies were deemed in scope for this review: that is, at the time of data collection they had websites that were:

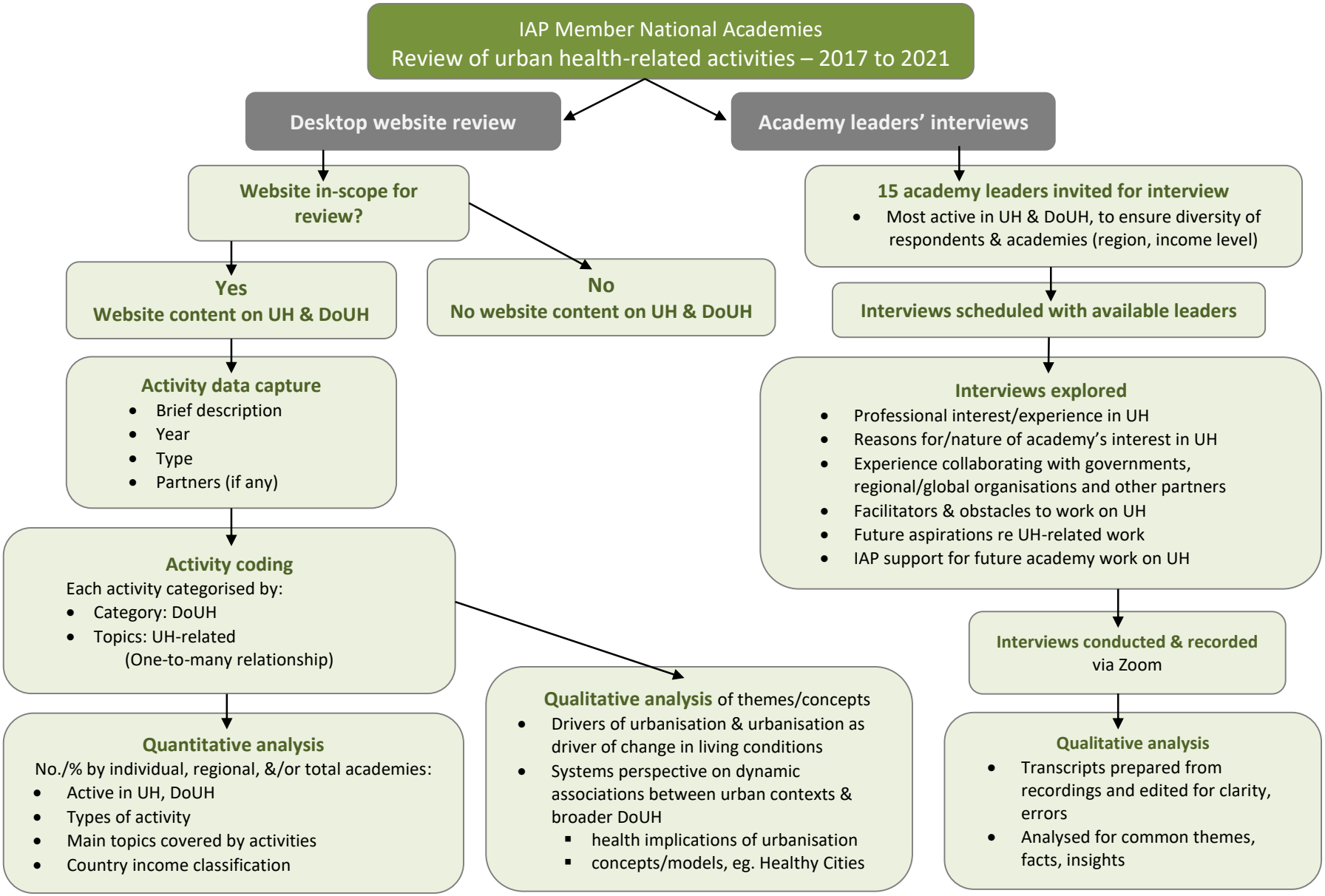
- technically accessible, and
- able to be read in English, or translated using an online tool. The English version of sites in another language could be accessed by clicking on a flag icon or via a Google Translate

prompt that automatically popped up. Translation of websites was made possible using this technique. While translation quality was undetermined, it was deemed sufficient to enable judgements to be made about the nature and relevance of content.

Eleven websites were deemed out of scope at the time the review was undertaken (Appendix 1).

The four Regional Networks were in scope for review and also included.

Figure 4.1. Project design



4.2.2 IDENTIFYING IN-SCOPE ACTIVITIES AND RELATED PARTNERSHIPS

Key search terms related to urban health and its broad determinants were used to locate in-scope activities on national academies' websites. Terms were identified with the assistance of the IAP Urban Health Working Group. (See Section 4.2.4 *Urban health key search terms*.)

Following a rapid scan of several websites, four types of activities were defined under four categories (Table 4.1).

Table 4.1. Types of activities undertaken by national academies

Type of activity and definition	Examples
Publications may be scholarly (including peer reviewed) or non-scholarly. They present new knowledge and evidence, synthesise existing knowledge and evidence, highlight knowledge gaps, and might present challenges, options and recommendations.	– Scholarly publications include scientific research studies, expert consensus studies and journal articles and books. – Non-scholarly publications include conference proceedings, magazine-type publications, information for lay audiences, and regular or occasional news items.
Events bring actors together to present and exchange knowledge or perspectives, and deliberate. They may be regular (eg. annual) or occasional. Events may be in person, virtual or hybrid.	– Conferences – Symposia – Workshops – Seminars (in person and online) – Meetings
Projects and grants Projects are initiatives that are generally carried out collaboratively and achieve a particular aim. They may focus on research or action. Grants refer to funds provided by government or another institution or organisation to an academy for a project or similar purpose.	– Time-limited projects that address particular topics or issues. – Multi-year projects involving a range of activities designed to achieve a defined aim. – Grants programs designed to encourage research or action in particular areas.
Committees This category includes organisational arrangements which enable urban health-related work on an ongoing basis, such as ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies, and others.	– Committees of national academies' boards or councils – Committees involving national academies along with representatives of other organisations such as government, non-government organisation and civil society bodies. – Departments of urban health and wellbeing – Research divisions on urbanisation and health.

Documents on websites that described these activities were in scope if they were:

- in English, or
- able to be translated using an online tool, and
- relevant to the period 2017–2021.

The majority of documents on academies' websites were in the language/s of their country and many were also in English. Of the documents in languages other than English, most (especially Spanish, French, German, Arabic) could be translated using Google Translate sufficiently well to

determine if they were relevant to count in the review and with which types of activities they were concerned. Some were scanned documents in other languages (eg. reports, minutes of meetings) that could not be translated. The numbers of these on academy websites varied.

For reasons of feasibility and consistency, only the material on national academies' websites was reviewed. Links on national academies' websites to external websites, or documents on external websites, were not generally examined. In some cases, these links were opened to check information on the national academies' websites.

As well as activities, partnerships associated with activities were identified and categorised. These spanned global, international, national, sub-national and local organisations and entities.

4.2.3 DATA CAPTURE

Excel spreadsheets were used to record data for the review and enable data analysis. Data included the specific types of activities, that is, 'Events', 'Publications', 'Projects and grants' and 'Committees'.

A pilot website review was undertaken to assess the comprehensiveness of search terms and how best to use them. The Australian Academy of Science site (website in English; documents in English) was used for the pilot, due to AAS' known involvement in urban health, and familiarity by the research team with this national context. The pilot showed the following.

- In general, activities needed to include a key search term from *Domain 1* (eg. 'urban') *plus* one or more from *Domains 2–4* (see Table 4.2).
- Judgements needed to be made about the relevance of particular activities identified using key search terms. For example, while an academy might have done work on air pollution, this work may have focused on a technical aspect of chemical analysis and not explicitly considered or related to health in urban contexts. Such an activity would not be included. On the other hand, work on air pollution that expressly concerned the impact on humans living in urban contexts (including on their health) or impacts on other determinants of urban health (eg. housing) would be included.
- It was common that multiple search terms were represented in any one activity. In order to classify the activity, decisions were made about which were most relevant and prominent.
- In a number of cases, several activities were undertaken that were closely related to each other, rather than representing stand-alone activities. For example, separate entries were identified about a conference that was held, a publication from the conference (set of proceedings), and news items about the conference. To aid in producing a meaningful set of data, judgements were made about which was the *main* activity (eg. the conference) and this was counted in the datasheets on which the figures and tables in the report are based. This approach was adopted for two reasons. Firstly, the pilot review suggested that counting each aspect of a program of work separately (such as in the example above) might artificially inflate the volume of activities undertaken by national academies. It also became clear in the early stages of data collection that academy approaches to publicising activities on their websites differed markedly. For example, once a conference had taken place, some academies appeared to routinely remove associated materials, leaving only the report/conference proceedings online. In contrast, all such materials remained on other academies' websites.

- In view of these methodological issues, to enable more meaningful comparisons between academies the Consultant Team decided to count related activities as one activity, based on the 'main' activity. The main activity was determined to be the most substantial aspect of a set of related activities – for example, the conference itself, rather than advance notice of the conference; or a scientific report, rather than a brief news item about it.
- Nevertheless, for completeness, information on all supporting/supplementary activities (eg. conference notice, news item) was both recorded in the datasheets and taken into account in the analysis. The only implication of this approach to data capture was that supporting or supplementary activities (such as those described) were not counted as separate activities.
- Based on this pilot, some adjustments were made to the search terms list (Table 4.2), approach to scanning, and data collection tool.

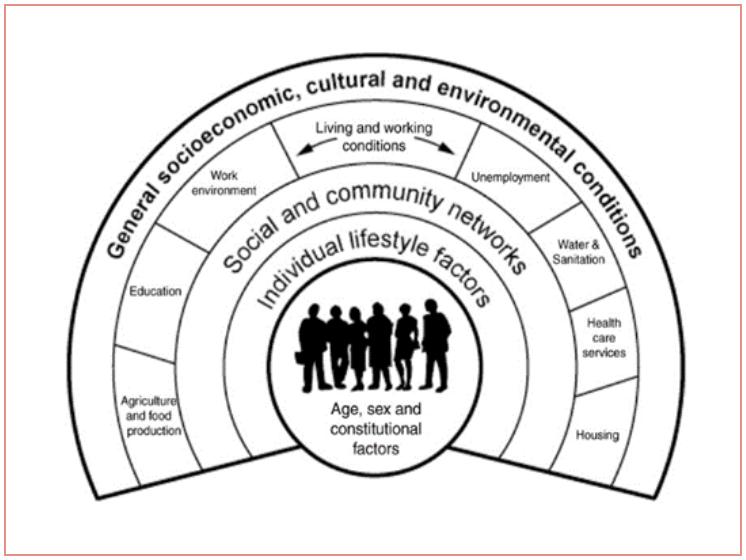
4.2.4 URBAN HEALTH KEY SEARCH TERMS

To undertake the desktop review, a set of key search terms needed to be developed as a tool for scanning national academies' websites for urban health-related activity. An initial set of terms was identified. Four main conceptual frameworks were then drawn on to develop this tool (Resources 1–4 below).

Resource 1. Dahlgren and Whitehead (1991)

IAP recommended the well-known Dahlgren and Whitehead (1991) 'main determinants of health' framework, which organises determinants of health into four categories relating to levels of intervention for health policy making: general socioeconomic, cultural and environmental conditions; social and community networks; individual lifestyle factors; and age, sex and constitutional factors (Dahlgren & Whitehead, 1991, p. 11) (Figure 4.2).

Figure 4.2. Conceptual framework: Main determinants of health (Dahlgren & Whitehead, 1991)

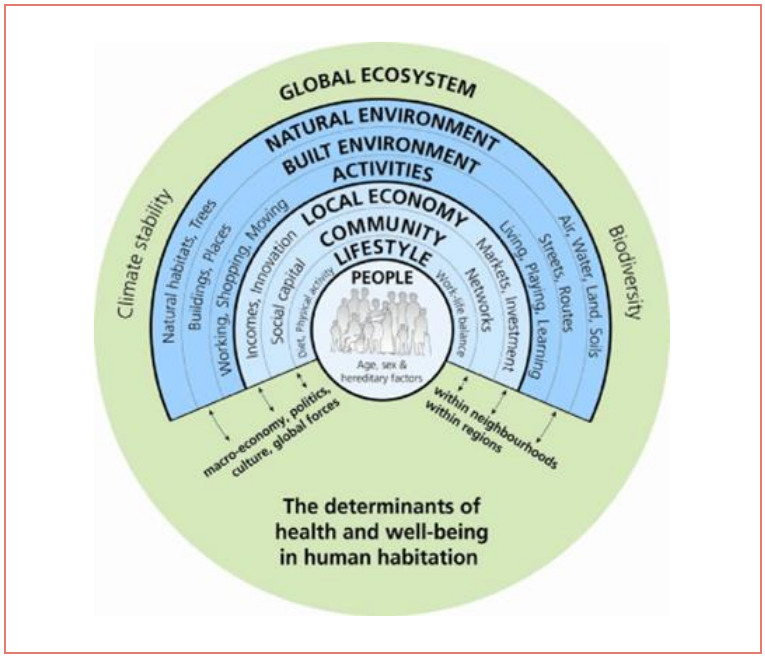


Resource 2. Barton and Grant (2006)

Given the emphasis on urban health, the Settlement Health Map (adapted from Barton & Grant, 2006) was also referred to in identifying key search terms (Figure 4.3). It elaborated on factors

outlined in the Dahlgren and Whitehead framework and usefully introduced the additional category of global ecosystem (climate stability, biodiversity), differentiated natural and built environments, and applied a community/population ('people') focus rather than individual focus.

Figure 4.3. Conceptual framework: The Settlement Health Map (Adapted from Barton & Grant, 2006)



Resource 3. Ramirez-Rubio O, Daher C, Fanjul G, Gascon M, Mueller N, Pajín L, Plasencia A, Rojas-Rueda D, Thondoo M, & Nieuwenhuijsen MJ (2019)

The conceptual framework of Ramirez-Rubio et al. (2019) is a mapping of factors that have been identified as important for urban health (including social determinants of health, environmental factors, health behaviour and urban policies) against the 17 SDGs (Figure 4.4). The utility of the framework is that it supports an approach to governance and urban planning – Health in All Policies – that can be applied at the national and local level to implement the SDG agenda. The main characteristic of this approach is that public policy across all sectors, not only the health sector, is designed or adapted to consider the "health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity" (Ramirez-Rubio et al., 2019).

Figure 4.5 is a simple representation of the Health in All Policies approach.

By referring to this conceptual framework, key search terms already identified were confirmed as relevant and several additional terms were identified.

Categories of determinants of urban health represented in Figure 4.4 were used as a basis to structure *Domain 2* in the key search terms list: Determinants of Urban Health.

Figure 4.4. Conceptual framework: Urban Health-related SDGs within a Health in All Policies approach



Figure 4.5. Conceptual framework: Health in All Policies approach to Urban Health



Source: Adapted from International Society of Urban Health, 2021

Resource 4. World Health Organization (2021)

Finally, reference was made to a list of terms developed by International Society for Urban Health for a concurrent project with World Health Organization on urban health capability.

In summary, the original search terms list developed at the start of the project was added to as additional terms were identified through reference to the four conceptual frameworks. Table 4.2 presents this augmented version of the search terms list. It is extensive but not exhaustive; its major utility was in leading the Consultant Team to in-scope activities on academies' websites, and helping them to classify, organise and observe patterns in data.

Table 4.2. Key search term list for identifying national academies' activities related to urban health

Domain 1: Urban Contexts	Domain 2: Determinants of Urban Health	Domain 3: Lifecourse and Population Groups	Domain 4: Health Risks and Health and Wellbeing Outcomes
city	**Natural environment**	pre-birth, in-utero, epigenetics	health, wellbeing
district, suburb	air, air quality, air pollution	infant, infancy	mental wellbeing, mental health, resilience
metropolis, metropolitan	climate change, climate stability	child, children, childhood	**Health risks**
	environmental health		alcohol use, substance abuse, drug use
neighbourhood	natural environment, wilderness, ecosystem, biodiversity, wildlife, species	adolescent, teenage, adolescence	diet, nutrition, malnutrition
town, downtown	natural disaster, flood, earthquake	young adult, adult	physical inactivity, sedentary
slum, informal settlement	soil, land	elderly, older adult, geriatric, ageing	sleep
urban, urban centre, urban core, urban sprawl, peri-urban	**Built environment**		smoking
community	built environment, urban form, urban infrastructure		violence, family violence, gender-based violence, violence against women, domestic violence
	land use, green space, open space, public space, park, trees, streets, routes		**Health and wellbeing outcomes**
	light, light pollution		asthma
	noise, noise pollution		cancer
	public amenities		chronic disease, chronic illness, non-communicable disease, NCDs, obesity
	public utilities, gas, electricity, energy infrastructure		COVID-19, coronavirus
	water, sanitation, water infrastructure		diabetes, metabolic syndrome
	Housing		diarrheal disease
	housing, home, homeless, living conditions		disability, disabled
	Transportation		heart disease, cardiovascular disease, coronary heart disease, stroke
	active transport, exercise, physical activity		infectious disease, communicable disease
	transport, car, vehicle, bicycle, train, bus		injury
	traffic, traffic management, traffic congestion		HIV-AIDS
	Education		malaria
	education, kindergarten, early childhood, school, university		mental illness, psychiatric illness
	Food		musculoskeletal disorders
	agriculture, food systems		reproductive health
	food security		respiratory disease, chronic obstructive pulmonary disease
	Digital environment		safety
	communication infrastructure, internet, information technology, information systems		SARS-CoV-2
	digital information, digital media, digitisation, digital technology		tuberculosis
	social media		
	Economic development		
	economy		
	sustainability, sustainable development		
	poverty, income equality		
	commercial determinants of health, tobacco, alcohol, gambling		
	employment, work		
	Social development		
	social determinants of health, social factors		
	social capital, social networks, social settings		
	racism, prejudice, discrimination		
	loneliness, social isolation		
	work environment, workplace		
	leisure, recreation, play		
	Health and social care		
	health care, primary health care, health care services, health services, hospitals, health care system, universal health coverage/UHC		
	disease prevention, health promotion		
	Urban planning		
	urbanisation, healthy urbanisation, urban renewal		
	community participation, community engagement		
	smart city		
	Governance		
	equity, gender equality, social equality		
	ethics, accountability		
	health impact assessment		
	health in all policies		
	risk management		

4.2.5 LEADERS' INTERVIEWS

Invitations to participate in semi-structured interviews via Zoom were emailed to Presidents, Executive Officers and/or designees of 15 national academies identified from the desktop review to be most active in urban health and its broad determinants or in countries that are known to be active in this area.

Invitations included a participant information documentation package comprising a Project Information Sheet and Interview Schedule (Appendix 6). The Schedule outlined the questions used to guide the interview, so that participants could prepare information or check facts in advance.

Interviews aimed to explore: information gathered in the desktop review about their academy's activities; the reasons for and nature of their own professional interest in urban health; their academy's experiences collaborating with city and national governments, the UN or other relevant regional and global organisations on urban health-related topics; the major facilitators of and obstacles to their academy engaging in work on urban health; insights about the academy's aspirations in this area of work and how IAP could support future work in this area.

Seven leaders were available for interview by Zoom, the leadership of one academy completed the questions in the Word version of the interview schedule and information enabling questions to be completed relevant to one academy was derived from its website and associated materials.

All Zoom interviews were recorded with the permission of the leaders. Transcripts were prepared from recordings using the Microsoft Edge transcription application and edited for clarity.

4.2.6 DATA ANALYSIS

Data from websites captured on Excel spreadsheets were cleaned to remove, as far as possible, inconsistencies, duplication, errors and miscategorisations in data. Data were analysed to develop quantitative and qualitative perspectives on activities of individual academies and regional academies, such as patterns within and between regions. The foci of this analysis were the topics of activities, types of activities, and partnerships associated with activities.

Transcripts from leaders interviews and the two completed interview schedules were analysed using Microsoft Word features to identify contextual factors for the urban health-related work of the academies; themes related to interview questions; factual information, and other insights.

4.3 Limitations

This project had several limitations, as outlined below. Findings reported in Sections 5 and 6 , as well as Insights and Opportunities and the Conclusion, should be read with these limitations in mind.

4.3.1 ACCESSING WEBSITES AND DOCUMENTS

- In a small number of cases (11), websites for national academies were not accessible (Appendix 1). At the time of data collection some links were not functional or were incorrect (although some were located via Google). Academy weblinks were tried three times over the data collection period for each region (beginning in early 2021). This was to allow for temporary inaccessibility due to issues such as scheduled web maintenance, unplanned outages and firewall blocks. Websites that could not be accessed after three attempts on different occasions were deemed to be out of scope.

- A small number of websites were in languages other than English or were not able to be translated. A number of documents on websites were not able to be accessed in English, for example, if they were scanned documents or documents uploaded as uneditable pdfs.

4.3.2 LOCATING, CATEGORISING AND ANALYSING DATA

- Every effort was made to produce a comprehensive dataset for analysis. A systematic approach to scanning the websites was used to detect relevant activities and check the title of activities, website descriptors and, for documents, the table of contents and abstract, where needed. However, it is possible that some activities and partnerships were inadvertently missed.
- Identification of the topics covered by activities relied on the material actually being on webpages. While it was not feasible to read embedded documents/files in full (eg. detailed reports, studies, journal articles, books), where necessary, these were scanned to determine whether an activity was in scope or not, and/or to determine search terms applicable to the activity.
- Many academies' websites were challenging to analyse. The architecture and design of many websites made browsing the menus and finding information relevant to this review a complex task. Some lacked search engines or when they existed, some were not optimised. Some websites had linking strategies for related materials that were to some extent complex, confusing or unreliable. Many websites were incomplete as information about particular activities had not been uploaded, for example, some activities involving a particular national academy were identified on other academies' websites but were missing from its own site. Academies' websites varied with respect to the type, amount and comprehensiveness of information featured, and also whether information from earlier years remained on the sites. This may reflect academies' differing communication strategies, such as the use of social media platforms which, compared with 'static' websites, offer speed and ease of information distribution, reach, ability to target, and interactivity.
- The reliability of including or excluding an activity from the review was influenced by judgements made when applying the key search terms. In general, an inclusive approach was taken, meaning that activities were included if topics were relevant to the urban context or urban health even if these specific terms were not prominent on the websites. For example, national academies' activities in relation to climate change were systematically included because of the significance of urbanisation and urban activity for climate change.
- In some instances, it was difficult to discern the *main* topic or topics for an activity. Topics like climate change cover so many interdependent topics. The Consultant Team aimed to minimise reliability errors by comparing and contrasting their respective approaches from time to time, and aligning how they made judgements. However, some inconsistencies in decisions about the *main* topic or topics for an activity may have occurred, leading to omissions.
- It was not possible to assess the significance, scale or priority of particular activities for a national academy. Activities spanned a wide range – from a brief article on an important report/issue, to a simple notice of an upcoming event, to a public seminar, to a multi-year program of work involving commitment of substantial resources over a period of years. It was important to not make assumptions about significance, as even single events could have

significant impacts in the short to long term depending on, for example, the actors involved (such as politicians) or how the outcomes were used by other actors for policy advocacy.

- For feasibility reasons, leaders from between three and four academies from each region were invited to be key informants. Leaders from a total of 15 countries were invited. Eight leaders were able to respond to interview questions (via Zoom or written responses) and the activities and approach of one academy were discerned (by agreement with the Academy) through its website. Interview data reflected this number of national academies and their national contexts.

4.3.3 IMPLICATIONS OF PROJECT LIMITATIONS

Some of the implications of these limitations are as follows.

- Levels of urban health-related activity in countries and regions are likely to have been underestimated. For example:
    - Resources that pertained to some overarching themes (eg. 'sustainable development', 'energy') but did not explicitly mention urban contexts or urban health might not in all cases have been included in the dataset at the early stage of the project.
    - Of the 11 national academies whose websites were out of scope for the review, 9 (82%) were in Africa. This represented 38 per cent of all national academies situated in Africa.
- A more stringent interpretation of activities relevant to urban health was likely in the early stages of the review, leading to exclusion of some publications, events or projects as well as partners.
- Comparisons of national academies' activities might have been skewed by variations in websites' uses, emphases and architecture. Many websites were more or less oriented to:
    - corporate information such as history, structure, mission statement, services
    - news / events information for members and visitors about past and current news, events and members' activities
    - educational information on specialised topics for academy members, stakeholders and/or the public
    - repository/database functions, with large numbers of pages on specialised topics acting as a reference guide.

5. FINDINGS FROM DESKTOP REVIEW OF NATIONAL ACADEMIES' WEBSITES: ALL REGIONS AND REGIONAL NETWORKS

This section reports on findings from the desktop review of national academies' websites in each region and for Regional Networks. Findings relate to the types of activities, topics addressed in activities, and partnerships.

5.1 Summary: All regions

The main findings in relation to all four regions (Africa, Americas, Asia Pacific and Europe) were as follows:

- Of the 141 national academies that are members of IAP, 130 academies' websites (92%) were accessible and in scope for the review. A total of 86 of the 130 accessible websites (66%) contained material on urban health-related activities between 2017–2021.
- There was considerable variation between national academies in terms of the number, types and topics of their urban health-related activities reported in the period 2017–2021. There was also marked variation between the four regions.
- The main categories of types of activities were publications and events.
    - Publications were the most common activity type: 229 publications were identified, representing 50 per cent of all national academy urban health-related activities identified in this review. Of these 91 (40%) were scholarly publications, as defined in the Glossary.
    - Events were the second most common activity type: 165 events were identified (36% of all activities). Events were targeted to a diverse range of scientific and other audiences (eg. academic, government, industry, general public, including students), varied widely in format, and took place at local, regional, state/province, national and international levels.
- The major topics of reported activities for national academies across all regions were broad determinants of urban health (as represented in the key search terms list under *Domain 2: Determinants of Urban Health.* See Table 4.2). There was most activity in the categories of natural environment, economic development, built environment and food. Notably, these topics align with the SDGs and in some cases, academies explicitly defined their work in terms of efforts to implement particular SDGs.
- Most academies reported partnering with a variety of entities. Most prominent were partnerships with: national academies in their region and in other regions; international and national scientific bodies, national governments; universities and research institutes; non-government organisations and UN agencies including UNICEF, UNESCO and UN National Commissions. Other partnerships included local/city governments and not-for-profit organisations. Some private sector partnerships were identified. World Health Organization did not feature prominently as a partner.

- Partnerships had a range of functions. Prominent among them were resource mobilisation; access to essential expertise and experience as well as influence; elevating the authority of activities such as conferences and meetings; communicating evidence to policy makers through presentations, publications and briefings; engaging in scientific discussions about research studies, and producing research publications, expert consensus reports and statements.

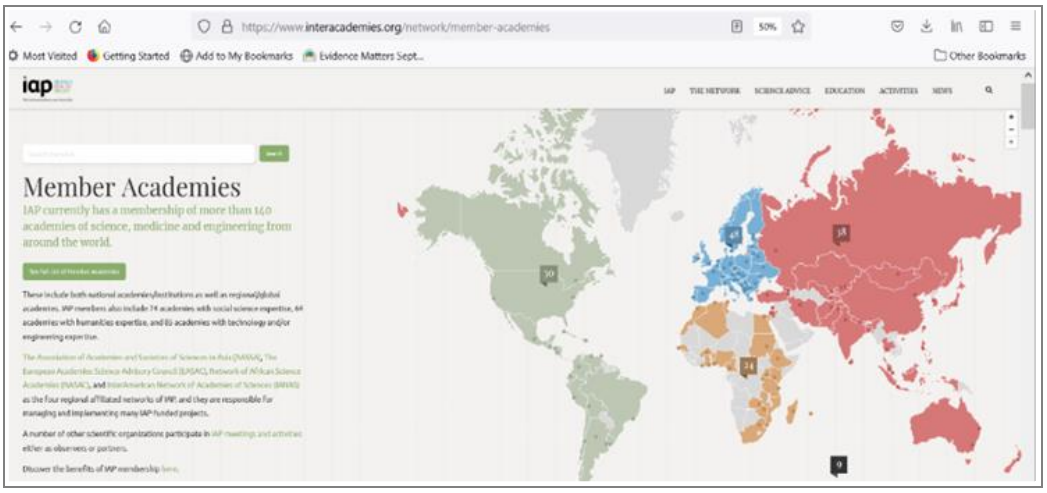
5.2 Snapshot: All regions

5.2.1 DESKTOP REVIEW OF WEBSITES

Not all national academies of science and medicine around the world are members of IAP. Some countries host more than one national academy that may, or may not, be IAP members. These academies may separately focus on science, medicine or humanities/arts.

For the desktop review, the websites of 141 national academies that were members of IAP and listed on the IAP website (Figure 5.1) were checked for accessibility. This process identified those that were in scope for review, that is, they were technically accessible and able to be read in English.

Figure 5.1. Image of IAP website



Source: https://www.interacademies.org/network/member-academies

Based on the material on national academies' websites, the desktop review found that:

- Of the 141 national academies of science and medicine around the world, the websites of 130 (92%) academies were accessible and able to be reviewed while 11 were not (Appendix 1).
- The websites of 130 academies revealed that 86 (66%) engaged in urban health-related activities that is, their websites carried information about urban health-related activities.
- The websites of the remaining 44 academies (34%) that were in scope for review did not feature activities in this area.

Table 5.1 summarises these findings.

Table 5.1. In-scope websites of national academies that reported urban health-related activities, all regions, 2017–2021

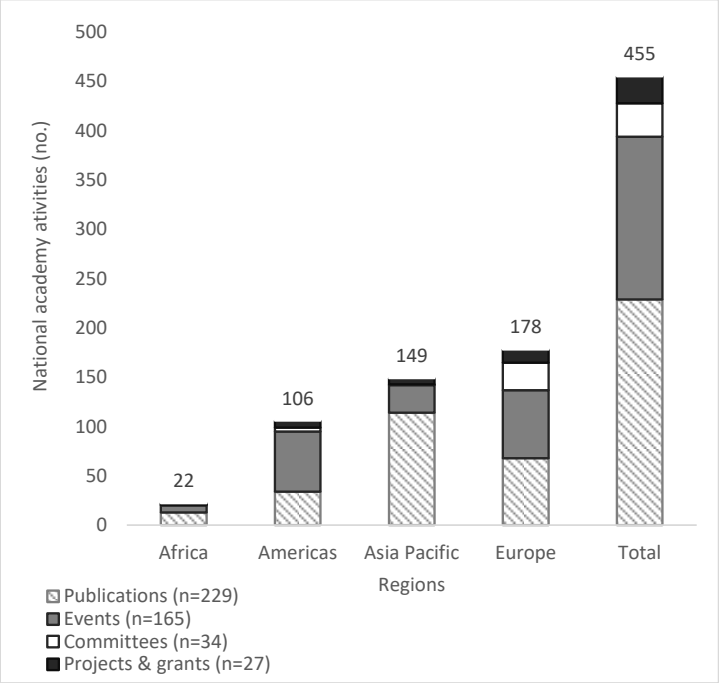
Region	Countries No.	National academies in region No.	National academies		
			In-scope[1] No.	Website contains material on urban health-related activities 2017–2021 No. (%)	
				Yes	No
Africa	23	24	15	9 60%	6 40%
Americas	18	30	29	18 62%	11 38%
Asia Pacific	30	38	37	24 65%	13 35%
Europe[2]	38	49	49	35 71%	14 29%
Total	109	141	130 92%	86 66%	44 34%

1. National academies' websites that were in scope for this review were those that were technically accessible, and in English (or able to be translated using an online tool).
2. The Académie des Technologies, France was included as in scope for this review during the data collection period, but no longer appears among the 48 European member academies listed on the IAP website.

5.2.2 TYPES OF NATIONAL ACADEMIES' ACTIVITIES

The review of national academies' websites across all four regions identified 455 activities relating to urban health and its broad determinants. Figure 5.2 shows the types of activities for each region and overall, while Table 5.2 provides a breakdown of data on types of activities for each region. The corresponding figures for each academy are reported at Appendices 2–5.

Figure 5.2. National academies' urban health-related activities by type, all regions, 2017–2021



Note: One committee and one project are included in these data for the Africa region but these values are too small to discern in this figure.

Table 5.2. National academies' urban health-related activities, all regions, 2017–2021

Regions	Countries	National academies				Type of activities[1] No. (%)				
		In region	In scope	Activity in urban health & its determinants						
	No.	No.	No.	Active No. (%)	Inactive No. (%)	Publications	Events [2]	Projects & Grants	Committees [3]	Total
						No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Africa[4]	23	24	15	9 60%	6 40%	13 59%	7 32%	1 5%	1 5%	22 100%
Americas[5]	17	30	29	18 62%	11 38%	34 32%	61 58%	7 7%	4 4%	106 100%
Asia Pacific[6]	30	38	37	24 65%	13 35%	114 77%	28 19%	6 4%	1 1%	149 100%
Europe	38	49	49	35 71%	14 29%	68 38%	69 39%	13 7%	28 16%	178 100%
Total	108	141	130 92%	86 66%	44 34%	229 50%	165 36%	27 6%	34 7%	455 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies, and others.
4. There are 24 IAP member national academies in Africa, however, websites for 9 academies were either: non- existent or not populated; had webpages and/or contents that were not accessible in English; and/or were not technically accessible. See Appendix 1 for details.
5. There are 30 IAP member national academies in the Americas region, however, the National Academy of Medicine of Mexico is excluded from this analysis as it did not appear to have a website during the data collection period.

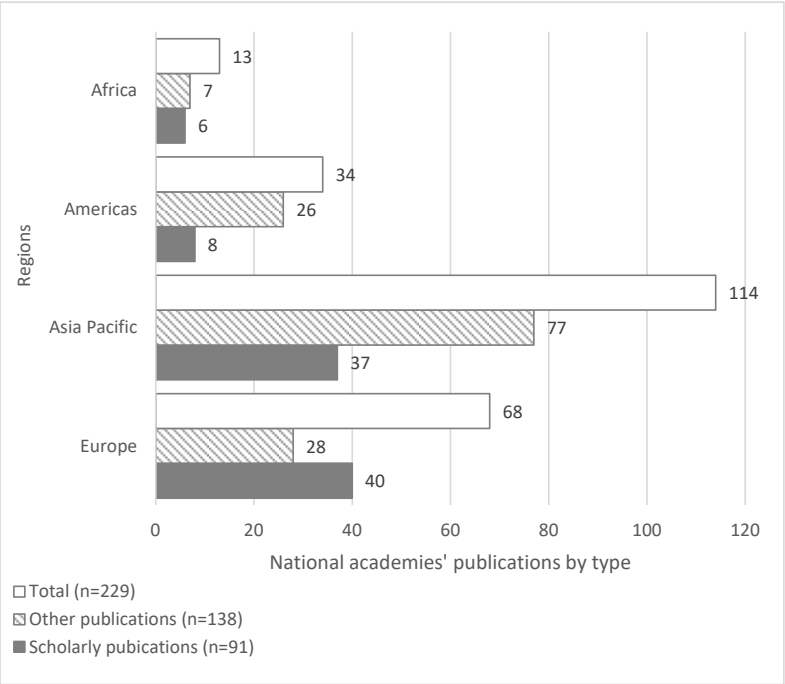
6 There are 38 IAP member national academies in the Asia Pacific region, however, the Academy of Medical Sciences of Armenia is excluded from this analysis as it does not appear to have a website.

Publications

Publications relating to urban health and its broad determinants were the most common activity type: 229 publications were identified (50% of all relevant national academy activities identified by this review).

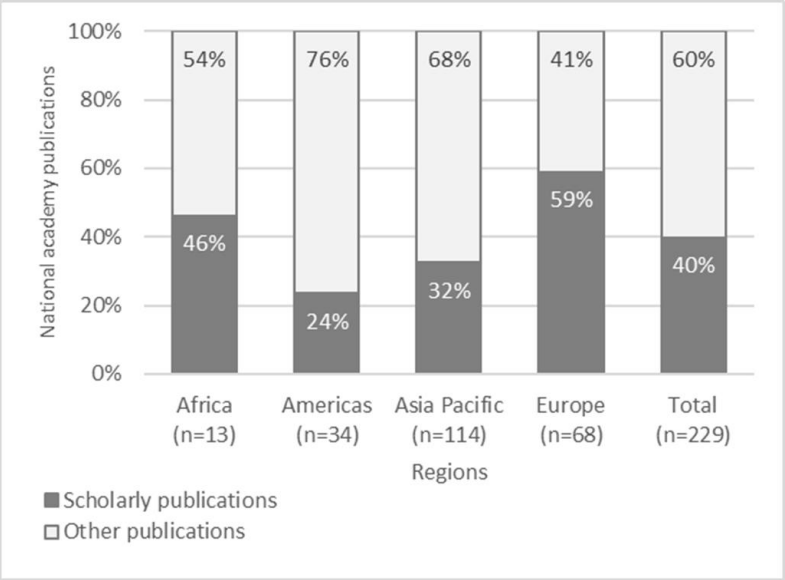
Ninety-one of the publications identified were scholarly publications (as defined in the Glossary). Non-scholarly publications (138) included a wide variety of other publication types such as non-refereed conference proceedings, notices, news reports, opinion pieces, magazine articles (both popular and discipline/industry based) and blog posts. The numbers of scholarly versus other publications for each region are shown in Figure 5.3.

Figure 5.3. Number of urban health-related publications on national academies' websites by type, scholarly and other, all regions, 2017–2021



Across the four regions, non-scholarly publications ranged from 41 per cent for Europe to 76 per cent for the Americas (Figure 5.4). The proportion of scholarly to other publications varied across regions, with a range of 24 per cent for the Americas to 59 per cent for Europe. Scholarly publications represent the highest-quality publications produced by academies. They are both resource and time-intensive, demanding a high level of engagement with scientific actors for their production and the follow-up review process by peers.

Figure 5.4. Proportion of urban health-related publications on national academies' websites by type, scholarly & other, all regions, 2017–2021



Events

Events on urban health-related topics (conferences, symposia, workshops, seminars/webinars, meetings) ranked second among the main types of activities in which national academies engaged during the study period (165 events, 36% of relevant national academy activities).

Events pertained to local, regional, state/province, national and international levels, with national and international level events more common. They comprised face-to-face and (especially from 2020) online meetings, and spanned a very broad range of formats. Scientific meetings included conferences, colloquia, round tables, lectures, seminars, webinars and workshops. Events targeted to wider audiences included meetings, lectures, launches (book and project), debates, Q&A sessions, webinars, exhibitions, information/education sessions, workshops, competitions, and open days.

Notably, many activities were not discrete, one-off or stand-alone. In many cases, they were associated with other activities that had the possibility of extending and even amplifying their impact. For example, some events such as conferences were supported by publications (a conference notice and proceedings of a conference, for example) or an event was staged as a component of a project.

5.2.3 MAIN TOPICS ADDRESSED BY NATIONAL ACADEMIES' ACTIVITIES

Findings were made about the contexts of activities, the domains they covered and specific topics.

***Contexts*.** In many cases, an activity's context was not specified but the topic was clearly related to urban contexts (eg. climate change). Where a context was defined, these mainly related to 'urban' or 'city', with a small number concerned with 'community', 'slum', 'settlement', 'neighbourhood' or 'peri-urban' contexts.

***Domains*.** Locating activities related to the urban context and health on national academies' websites using key search terms revealed that, across regions, the majority of urban health-related activities reported by national academies related to one or more categories in *Domain 2: Determinants of Urban Health*. All regions had some level of activity related to each of the broad determinants of urban health represented in *Domain 2*. Table 5.3 reiterates this finding.

Table 5.3. National academies' urban health-related activities by topic area, all regions, 2017–2021

Domain 2 Determinant of urban health	Region			
	Africa	*Americas*	*Asia Pacific*	*Europe*
Natural environment	●	●	●	●
Built environment	●	●	●	●
Housing	●	●	●	●
Transportation	●	●	●	●
Education	●	●	●	●
Food	●	●	●	●
Digital environment	●	●	●	●
Economic environment	●	●	●	●
Social development	●	●	●	●
Health & social care	●	●	●	●
Urban planning	●	●	●	●
Governance	●	●	●	●

Academies appeared to be much less engaged in activities that had a primary focus on topics in *Domain 3: Lifecourse and Population Groups.* Where there were activities, these concerned children, youth, women and vulnerable populations, pointing to concern for early life and equity.

Academies also appeared to be much less engaged in activities that had a focus on *Domain 4: Health risks and Health and wellbeing outcomes*, although reference to these was common. Activities that were in this domain concerned a range of health risks and conditions that are well established as being contributors to the main burdens of disease globally (Institute for Health Metrics and Evaluation, 2022): namely, non-communicable diseases including specific diseases and conditions (eg. cancers, cardiovascular disease, respiratory diseases, mental health, obesity/overweight, malnutrition), and infectious diseases including specific diseases (eg. COVID-19, malaria).

***Topics*.** Across all regions, only the natural environment and economic development ranked among the top four determinants of urban health in terms of the proportion of academies whose activities addressed these. With the exception of the European academies, the built environment also ranked in the top four for academies.

A higher proportion of African academies engaged in activities concerning food and/or food security (78% compared with 54% in Asia Pacific; 31% in Europe, and 28% in the Americas). Similarly, a higher proportion of African academies were involved in activities relating to housing than academies in other regions (67% compared with 38% of Asia Pacific academies; 22% in the Americas, and 17% in Europe).

Urban planning ranked highly for a greater proportion of academies in Africa and the Americas compared with other regions. Sixty-seven per cent of African academies reported relevant activities addressing this determinant. The corresponding figure for the Americas was 56 per cent. While urban planning did not rank in the top four for academies in other regions, it was still important for academies in Asia Pacific (54%), but was less commonly a focus for European academies, where only 17 per cent of academies engaged in activities that had a main focus on this determinant.

Compared with other regions, a markedly higher proportion of academies in Asia Pacific were involved in urban health-related activities concerning governance (79% compared with Africa 56%, the Americas 44%, and Europe 14%).

Only among the European academies did transportation and education rank in the top four determinants (77% and 49% of academies, respectively, engaged in urban health-related activities in these areas). For transportation, the corresponding figures for other regions were Africa 56%, Asia Pacific 33% and the Americas 22%. For education, the figures were Asia Pacific 13%, and 11% for both Africa and the Americas.

These patterns of activity across regions are presented below. Figure 5.5 provides visual perspectives on the more and the less dominant determinants of urban health within and between regions. Figure 5.6 shows the ranking of more to less dominant determinants of health for each region. The black bar shows the regional average for each determinant, and regions can be compared to these averages.

Figure 5.5. Major determinants of urban health addressed by national academies' activities, all regions, 2017–2021 (%)

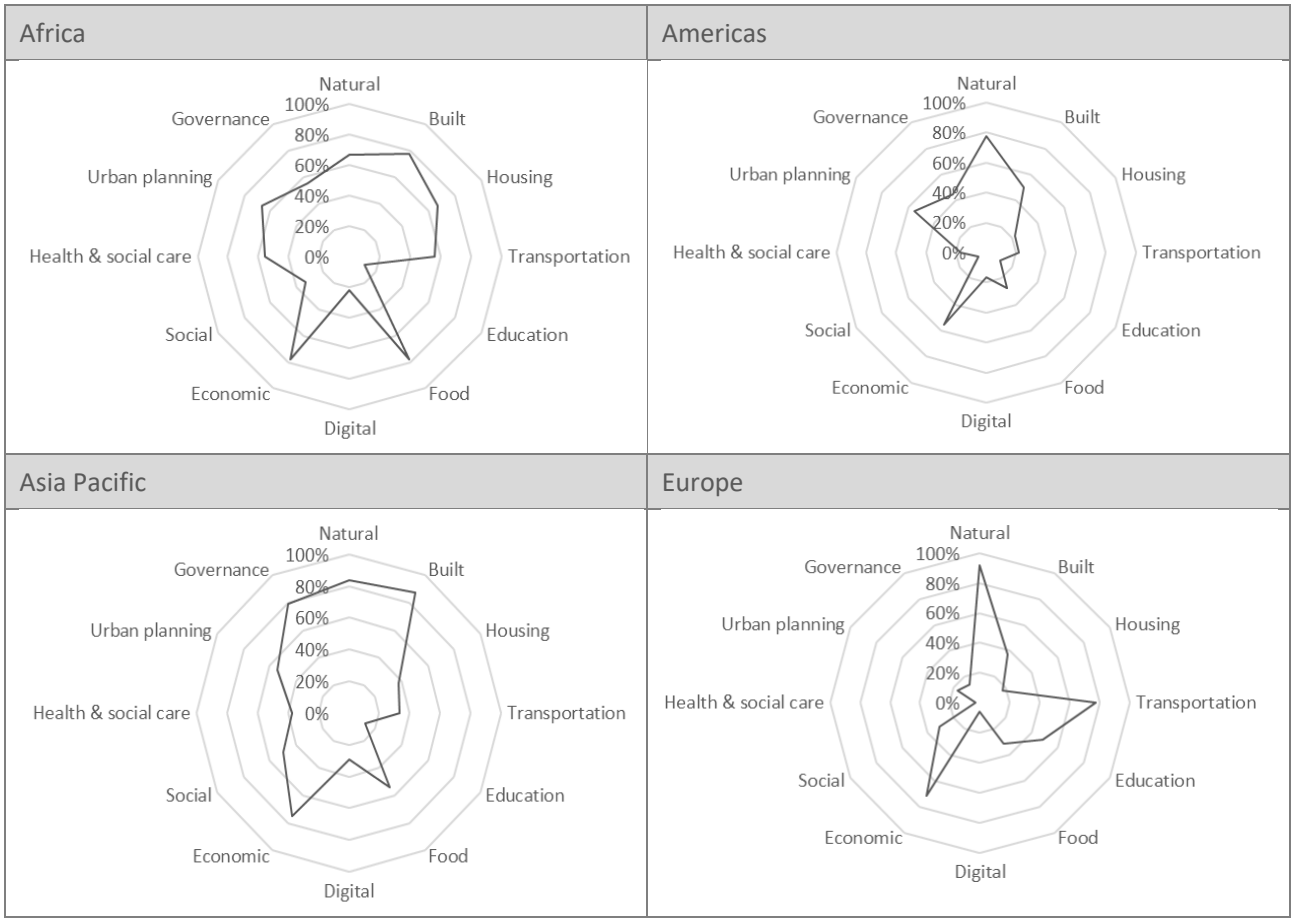
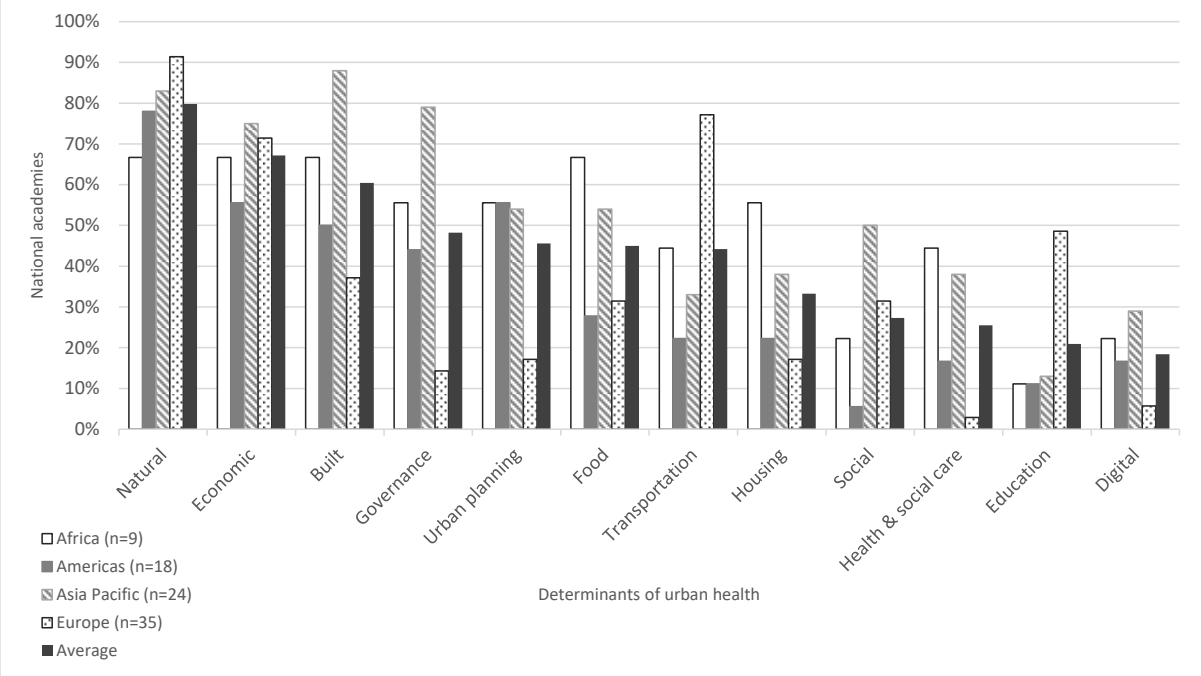


Figure 5.6. Proportion of national academies whose activities addressed determinants of urban health by topic area, all regions, 2017–2021



5.2.4 INTERSECTING URBAN HEALTH-RELATED TOPICS

A pattern of significance that stood out in the desktop review was that activities commonly focused on *intersecting* rather than single issue topics. Examples were the implications of climate change for sustainable development and food security in cities, or governance challenges in developing evidence-based policy responses to social inclusion in urban contexts.

This is not only a normal characteristic of work in urban health but an essential one, because urban health is an inherently multi-faceted, systems-oriented field of research, policy and action dealing with dynamic and complex social, environmental and technical systems. This finding suggests that many academies are moving beyond traditional single discipline patterns of scholarship and scientific engagement, towards leading-edge work that is interdisciplinary and potentially transdisciplinary, drawing on the bodies of knowledge and techniques of social sciences and natural sciences.

Indeed, a contemporary appreciation is evident in the work of many academies of the systemic, interdependent nature of issues such as human health and ecological systems. Moreover, it signals that there is a need for research and other activities to be informed by systems thinking in order to deeply and adequately understand problems and design, and implement plausible solutions.

Good governance is fundamental to effective action by cities across all domains. It is potentially an enabler of activities at the intersection of various topics where multiple stakeholders need to collaborate. Figure 5.6 indicates that governance was the fourth highest most common topic of national academies' activities, on average. It was more commonly a focus for work in Africa and Asia, less commonly a focus in the Americas and much less a focus in Europe. Reasons for this pattern are unclear.

Particular governance issues addressed included:

- governance of sustainable development and climate change responses, including in urban contexts
- institutional arrangements for decarbonisation
- navigating the science/politics interface to advance action on SDGs
- evolution of difficulties of governance in cities in the third millennium
- partnerships between cities and universities for a sustainable future
- developing health-focused public-private partnerships in the urban context
- anticipating systems (eg. water, energy, transport) of the future.

This apparent evolving approach within national academies to work on intersecting urban health-related topics is compatible with the types of research and scholarship that are essential to advance the science to inform action on the SDGs and the implementation of the *New Urban Agenda* (UN, 2016). It potentially positions national academies to lead partnerships and initiatives in order to generate valuable evidence for solving real policy questions associated with the 17 SDGs.

5.2.5 PARTNERSHIPS

Partnerships between national academies and other actors were a common feature of the urban health-related activities identified in the review. Partners of national academies varied in terms of their organisational type, level at which they operated (local through to global), areas of focus and expertise and resource capacity. Partnerships between national academies and other actors varied in terms of their purpose and strategic focus.

Further data analysis would enable the frequency of types of partnerships in recent years to be assessed, noting that the SDG agenda is expected to have strengthened the impetus to develop new and even novel partnerships, while the COVID-19 pandemic will have affected academies' potential to initiate, implement and/or sustain partnerships in 2020 and 2021.

Common purposes around which partnerships functioned related to academies' core mission:

- undertaking academic activities, particularly research, including systematic reviews of evidence for policy makers
- producing expert consensus reports and expert statements
- hosting scientific meetings and other events to present the findings of research studies and exchange knowledge
- providing scientific evidence and advice to national governments for policy development.

Activities in which academies partnered with other actors from within the same country or region, or across different countries or regions, highlighted the value that can come from different scientific roles and diverse disciplinary expertise, influence and resources, and mobilising collective knowledge to inform policy processes. Partnerships are vital for countries' SDG planning and implementation as new ways of thinking and working are challenging for governments as are new problems to solve. Their recent activities highlight the scope for national academies to forge strategic partnerships with many different types of actors operating at different levels.

Examples of partnerships

To shed light on national academies' partners and characteristics of partnerships evident in urban health-related activities, examples from the African region are summarised in Table 5.4 and then

explained in more detail. Notably, these examples of activities in the African region all relate in some way to one or more SDGs and several targets.

Table 5.4. Five examples of partnership-based activities in African region, 2017–2021

Activity	Partners
1. Virtual meeting; Proceedings: Understanding the context of health coverage in Nigeria and progress towards universal health coverage. Virtual meeting (2020)	– **National academy:** Nigerian Academy of Science; UK Academy of Medical Sciences – **University:** University of Benin – Nigeria – **Statutory research institute:** KEMRI-Wellcome Trust Research Programme – UK/Kenya
2. Consensus study: Owning our urban future: Enabling healthy cities in Eastern Africa (2018)	– **National academy:** Ethiopian Young Academy of Sciences, Kenya National Academy of Sciences, Tanzania Academy of Sciences, Uganda National Academy of Sciences, Uganda National Young Academy, Nigerian Academy of Science – **NGO:** International Society for Urban Health – **Not-for-profit organisation:** African Centre for Global Health and Social Transformation, Novartis Foundation – **University:** New York University School of Medicine, USA, University of Cambridge, UK, Nairobi School of the Arts and Design – **Research institution**: African Population and Health Research Center – **UN agency:** UNICEF Ethiopia
3. Forum: International forum on women and sustainable development in Africa (2018)	– **Regional academy:** Network of African Science Academies – **National academy:** Tanzania Academy of Sciences, Institute of France Académie des Sciences – **NGO**: InterAcademy Partnership – **Not-for-profit organisation:** Bill and Melinda Gates Foundation, SanofiEspor Foundation – **Public institution**: Agence Française de Développement – **Private company:** Acacia Africa
4. Workshop: National workshop on the problems of urbanisation in Cameroon: Strategies for solutions (2017)	– **National academy:** Cameroon Academy of Sciences – **National government:** Cameroon Ministry of Scientific Research and Innovation
5. Conference: Urban health in Africa dialogue: Advancing multidisciplinary approaches (2017)	– **National academy:** Academy of Science of South Africa – **NGO**: International Society for Urban Health, InterAcademy Partnership, International Council for Science – **Not-for-profit organisation:** Novartis Foundation (associated with multinational corporation, Novartis) – **University:** University of Basel, Switzerland

1. ***Virtual meeting*:** In association with a UK national academy, Nigeria's national academy co-hosted a virtual meeting on an issue of vital importance globally; universal health coverage (SDG target 3.8). National institutions in Nigeria – a university and a national research institute – chaired the scientific program committee. Partners brought together technical expertise,

evidence, deep contextual knowledge of the country, and insights from another context where there is a universal health care system.

2. ***Consensus study*:** Six African national academies collaborated with a range of other partners to carry out an expert consensus study on expanding the Healthy Cities model. Among the academies represented were Young Professional academies, enabling the next generation of researchers to benefit from mentoring and capacity building, while at the same time contributing the skills, experiences and worldviews of younger professionals. The study also involved academies from outside the region, an international NGO, national and international not-for-profit organisations, two universities from outside Africa and one local one, a national research institution and a national office of a UN agency. This combination of partners appears to have concentrated the necessary expertise and resources for the study, and may have helped to build commitment by national organisations to implementing the study's findings.

3. ***Forum*:** Tanzania's national academy hosted an international forum on women and sustainable development. Partners were global NGOs (International Society for Urban Health, International Science Council) and a not-for-profit entity (Bill and Melinda Gates Foundation) – organisations that were well placed to bring strategic international perspectives on urban health, expertise, experience, additional resources, technical support and knowledge to the partnership.

4. ***Workshop***: For an initiative on problems of urbanisation in Cameroon, the national academy worked with the National Ministry of Scientific Research and Innovation. This collaboration involved the Academy directly communicating evidence and advice to policymakers.

5. ***Conference*:** South Africa's national academy hosted a scientific exchange on the need for multidisciplinary approaches in efforts to develop urban health. Three global NGOs that operate in urban health and a Swiss university shared evidence, expertise and experience. The conference sponsor was a not-for-profit organisation also based out of Switzerland.

Partnerships with private sector entities

Private sector entities represent one type of partner with which national academies in all regions have collaborated on urban health-related activities. Within this partnership category are diverse types of organisations and entities. Examples are outlined below that indicate the scope of potential partners in urban health-related activities.

- *Palestine Academy for Science and Technology: News: Palestinian Startups involved in the WaterMedYin Project (2021).* Ten Palestinian start-ups were involved in training aimed at strengthening their businesses, building their offerings, and preparing them to enter the marketplace.
- *National Academy of Medicine (US): Grants program: Climate Change and Health Opportunity Grants (2019).* NAM partnered with Burroughs Wellcome Fund (BWF) to provide 'opportunity grants' to teams across the National Academies to explore ideas at the intersection of climate change and human health. BWF was founded as the corporate foundation of the pharmaceutical firm Burroughs Wellcome Co. In 1993, a gift from the Wellcome Trust in the UK enabled it to become fully independent from the company; WhyToyz, an educational business that specialises in raising future geniuses, was also involved.
- *National Academies of Sciences, Engineering, and Medicine (US): Workshop: Health-focused public–private partnerships in the urban context (13–14 June 2019).* Business or business-

linked individuals participated on the planning committee for the workshop. These were: Novartis Foundation and an "Independent Consultant, ExxonMobil".

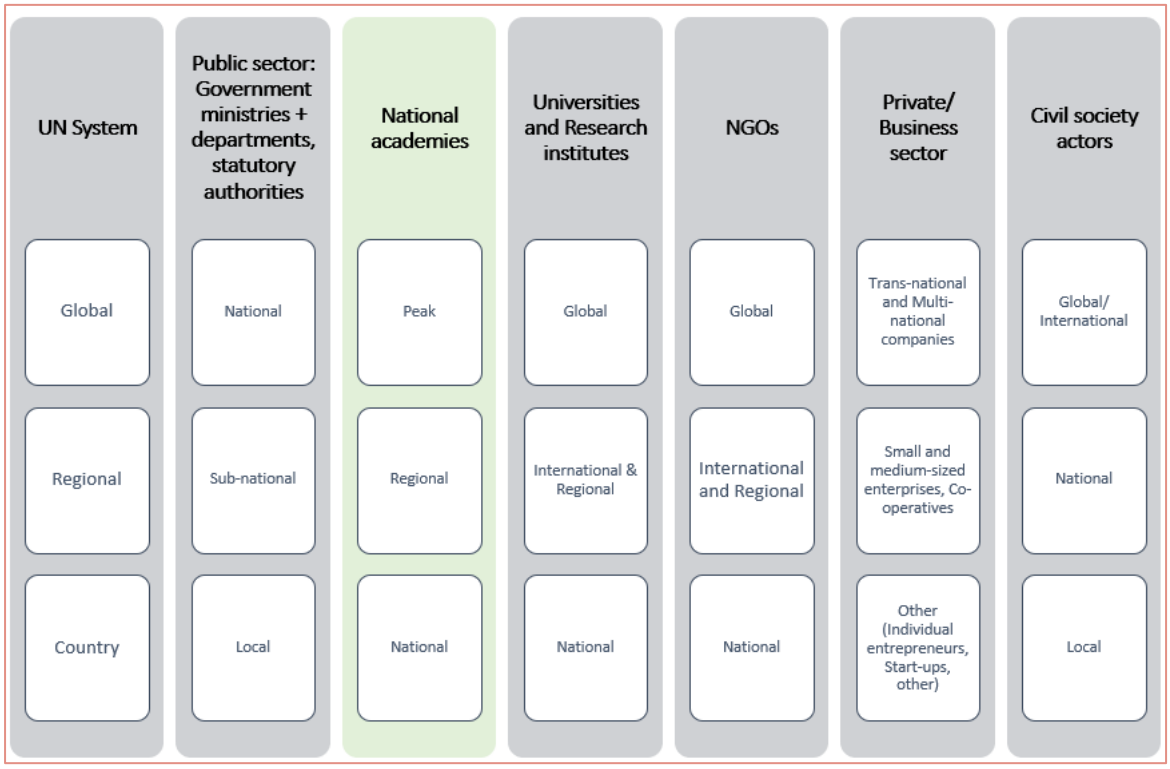
- *National Academies of Sciences, Engineering, and Medicine (US): Workshop series (and publication). Partnerships and cross-sector collaboration to support climate science and policy (2021)*. This was convened by a "Government-University-Industry Research Roundtable (GUIRR)" to consider the importance of advancing research solutions and partnerships to address climate equity, and how federal government can work with universities and industry to protect human well-being in the face of climate change. Participants included many representatives from the business sector, for example, Dell Technologies, Du Pont, ExxonMobil, Pfizer.
- *Australian Academy of Science. Project: Future Earth Australia.* Initiative based at AAS that convenes leaders across diverse expertise, sectors, and the country to advance the sustainability agenda. Funders are 10 Australian universities and the Commonwealth Scientific and Industrial Research Organisation (CSIRO, an Australian Government agency). Partners in activities included Geoscience Australia (Australian Government agencies), Young Persons' Plan for the Planet Program (high/senior schools program supported by several universities), Lord Mayor's Charitable Foundation (charity), 3M and BHP (multinational corporations).

Given that an emphasis of SDG 17 (*Partnerships for the Goals*) is on recognising the value of mobilising private capital, capacities and scientific know-how to achieve all SDGs, partnerships between national academies and private sector entities might be expected to grow.

Partnership typology

The typology below is proposed to indicate the types of partners with which national academies form partnerships to undertake work in urban health-related areas (Figure 5.7).

Figure 5.7. Typology of national academies' partners



5.3 Snapshot: Regional Networks

The four Regional Networks are:

- AASSA: Association of Academies and Societies of Sciences in Asia
- EASAC: European Academies' Science Advisory Council
- IANAS: Inter-American Network of Academies of Sciences
- NASAC: Network of African Science Academies.

For these four Regional Networks, 72 urban health-related activities were identified via the website reviews (Table 5.5).

While some activities featured on Regional Networks' websites were focused solely on the urban context, this context was more often not specified. (More information about the nature of individual Network's activities is included in the 'Snapshot' sections for individual regions.)

***Types of activities*.** Across all Regional Networks, publications and events were the most common type of activities – 32 (44%) and 31 (43%) of all urban health-related activities, respectively. This pattern was reasonably consistent for each Network. Projects and grants featured in the activities of EASAC and NASAC (both 12% of all activities) but not the other two Networks.

Among the 32 urban-health related publications identified on Regional Network sites, 12 (38%) were scholarly publications (Table 5.6 presents a breakdown for each Network). For more information about these publications, refer to the overviews for individual Regional Networks in the section titled 'Snapshot' for each region.

Table 5.5. Types of urban health-related activities, IAP Regional Networks of Academies of Sciences, 2017–2021

Region	Regional Network	Type of activities[1] No. (%)				
		Publications	Events[2]	Projects & grants	Committees[3]	Total
Africa	Network of African Science Academies (NASAC)	14 56%	7 28%	3 12%	1 4%	25 100%
Americas	InterAmerican Network of Academies of Sciences (IANAS)	3 60%	2 40%	0 0%	0 0%	5 100%
Asia Pacific	Association of Academies and Societies of Sciences in Asia (AASSA)	7 41%	8 47%	0 0%	2 12%	17 100%
Europe	European Academies' Science Advisory Council (EASAC)	8 32%	14 56%	3 12%	0 0%	25 100%
Total		32 44%	31 43%	6 8%	3 4%	72 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

Table 5.6. IAP Regional Networks of Academies of Sciences' urban health-related publications by type, scholarly & other, 2017–2021

Region	Regional Network	Publications		
		Scholarly	Other	Total
Africa	Network of African Science Academies (NASAC)	3	11	14
Americas	InterAmerican Network of Academies of Sciences (IANAS)	1	2	3
Asia Pacific	Association of Academies and Societies of Sciences in Asia (AASSA)	2	5	7
Europe	European Academies' Science Advisory Council (EASAC)	6	2	8
Total No. (%)		12 38%	20 63%	32 100%

Topics. There was some variation across the Regional Networks in relation to the broad determinants of urban health addressed by their activities (Table 5.7). All Regional Networks' activities spanned at least seven of the 12 determinants, and three of the four Networks addressed an additional four determinants. Education was the only determinant that was not found to feature among Regional Networks' activities during the study period.

Table 5.7. IAP Regional Networks of Academies of Sciences' urban health-related activities by topic areas, 2017–2021

Domain 2 Determinant of urban health	Regional Network			
	AASSA	*EASAC*	*IANAS*	*NASAC*
Natural environment	●	●	●	●
Built environment	●	●	●	●
Housing		●	●	●
Transportation		●	●	●
Education				
Food	●	●	●	●
Digital environment	●	●	●	
Economic environment	●	●	●	●
Social development	●	●	●	●
Health & social care	●	●		●
Urban planning	●	●	●	●
Governance	●	●	●	●

As was indicated in the All Regions data, Regional Networks undertook work across multiple, inter-connected determinants of urban health, consistent with a systems thinking approach and the

realities of context. For all Regional Networks, during the study period there was an emphasis on activities concerning climate change and sustainable development.

Tackling the challenges of climate change for human health was the other major focus of Regional Networks' activities during 2017–2021. These activities were mainly geared to sharing information and research, and finding solutions to the unsustainable or undesirable trajectories that are driving vulnerability to climate change and inequalities. Climate change-related events were often timed to coincide with important policy and decision-making forums such as COP26 and the World Heath Summit. Many of the publications identified on Network sites were similarly concerned with these issues.

Some Networks' activities reflected the apparent concerns of the wider regional context. For example, NASAC explored science, technology and innovation for food security and poverty alleviation in Africa and the role of academies. Working with IAP, AASSA also explored opportunities and challenges for research on food and nutrition security and agriculture in Asia. Urban water challenges and management in the Americas were an important focus for IANAS.

Work on the SDGs in general and key goals relevant to regional contexts was apparent across Networks. Examples are presented in Box 1.

Box 1. Examples of SDG-focused and SDG-related activities of Regional Networks

Africa – NASAC

Conference. Sustainable African cities. Debating current challenges and exploring future pathways, 2018.

Project. Leading integrated research for Agenda 2030 (LIRA 2030) in Africa programme – Capacity Building Grants Programme, 2016–2020.

Americas – IANAS

Report. Rethinking cities. The role of cities in meeting the Sustainable Development Goals, July 2021.

Webinar. Introduction to the future of cities, July 2021.

Asia Pacific – AASSA

Workshop. Regional workshop. Sustainable Development Goals: Communication strategies, Africa, November 2017.

Workshop. Regional workshop. Managing urbanisation in Asia, June 2019.

Europe – EASAC

Project. Decarbonisation of transport, initiated 2017.

Report. Towards a sustainable future: Transformative change and post-COVID-19 priorities, October 2020.

Regional Networks' activities included promoting relevant SDG publications and events through bulletins and news items, for example, the 2021 publication *New guide: How science academies can support the Sustainable Development Goals* from the IAP.

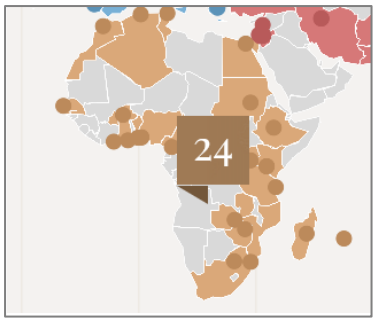
***Events*.** All Regional Networks participated in events at which current challenges were debated and future pathways explored – both broadly and in relation in particular sectors and settings; particularly sustainable cities, transportation, agriculture and food production, water and sanitation. Across the Networks, a strong current running through these events was meeting the SDGs and how science academies could support this endeavour.

***Partnerships*.** The main partners of Regional Networks were the national academies – mostly within the same region, but also including those from other regions, non-government organisations, not-for-profits (eg. organisations that work on issues of national development), national scientific research institutes, some UN bodies, and IAP.

6. FINDINGS: DESKTOP REVIEW OF NATIONAL ACADEMIES' WEBSITES: REGIONS

The main findings from the review of national academies' websites are presented in this section in four region-focused 'snapshots': Africa, Americas, Asia Pacific and Europe. For each region, the role and work of Regional Networks is also presented.

6.1 Snapshot: Africa



6.1.1 OVERVIEW OF FINDINGS FOR NATIONAL ACADEMIES IN AFRICA

For national academies in Africa, the key findings in relation to urban health-related activities were as follows:

- Of the 24 national academies in Africa, in 23 countries, 15 academies' websites (63%) were in scope for this review.
- Among these academies, 9 (60%) reported activities concerned with urban health and its broad determinants between 2017 and 2021.
- A total of 22 urban health-related activities were identified on their websites.
- Academies that were active in urban health were in a mix of low, lower-middle and upper-middle income countries, with most being in the lower-middle category.
- The main types of activities were publications and events (59% and 32% of all urban health-related activities, respectively).
- The major focus of reported activities was in *Domain 2: Determinants of Urban Health*. Among the broad determinants of urban health, more academies engaged in activities in the categories of economic development, food, built environment and natural environment.
- Most academies featured relevant activities undertaken by the Network of African Science Academies (NASAC) on their websites. Some also reported partnering with this regional network on various types of activities.

In the following sections, an analysis is presented of the websites reviewed for this region, the types of activities in which they engaged, and major topics for activities.

6.1.2 WEBSITES REVIEWED FOR NATIONAL ACADEMIES IN AFRICA

In Africa, 24 national academies of science and medicine were IAP members. A new national academy was launched in 2021 in Malawi – the Academy of Sciences in Malawi – but it did not appear to be an IAP member at the time of analysis, so was not in scope for this review.

Table 6.1 presents the full list of national academies in Africa and shading highlights those that were out of scope. Among the 24 academies in the region, 15 of their websites (63%) were determined to be in scope for analysis, as they were technically accessible and were able to be viewed in English. Websites from the remaining nine academies (38%) were either: non-existent or not populated; had webpages and/or contents that were not accessible in English; and/or were not technically accessible during the data collection period. (See details at Appendix 1).

Table 6.1. National academies whose websites were reviewed, Africa, 2017–20211

Country	No.	National academy
Algeria	1	Algerian Academy of Science and Technology
Benin	2	Benin National Academy of Sciences and Arts
Burkina Faso	3	National Academy of Sciences of Burkina Faso
Cameroon	4	Cameroon Academy of Sciences
Cote D'Ivoire	5	Ivorian Academy of Sciences, Arts, Cultures of Africa and African Diasporas
Egypt	6	Academy of Scientific Research and Technology
Ethiopia	7	Ethiopian Academy of Sciences
Ghana	8	Ghana Academy of Arts and Sciences
Kenya	9	Kenya National Academy of Sciences
Madagascar	10	National Academy of Arts, Letters and Sciences
Mauritius	11	Mauritius Academy of Science and Technology
Morocco	12	Hassan II Academy of Science and Technology
Mozambique	13	Academy of Science of Mozambique
Nigeria	14	Nigerian Academy of Science
	15	Academy of Medicine Specialties of Nigeria
Rwanda	16	Rwanda Academy of Sciences
Senegal	17	Académie des Sciences et Techniques du Sénégal
South Africa	18	Academy of Science of South Africa
Sudan	19	Sudanese National Academy of Science
Tanzania	20	Tanzania Academy of Sciences
Tunisia	21	Tunisian Academy of Sciences, Letters and Arts Beit al Hikma
Uganda	22	Uganda National Academy of Sciences
Zambia	23	Zambia Academy of Sciences
Zimbabwe	24	Zimbabwe Academy of Sciences

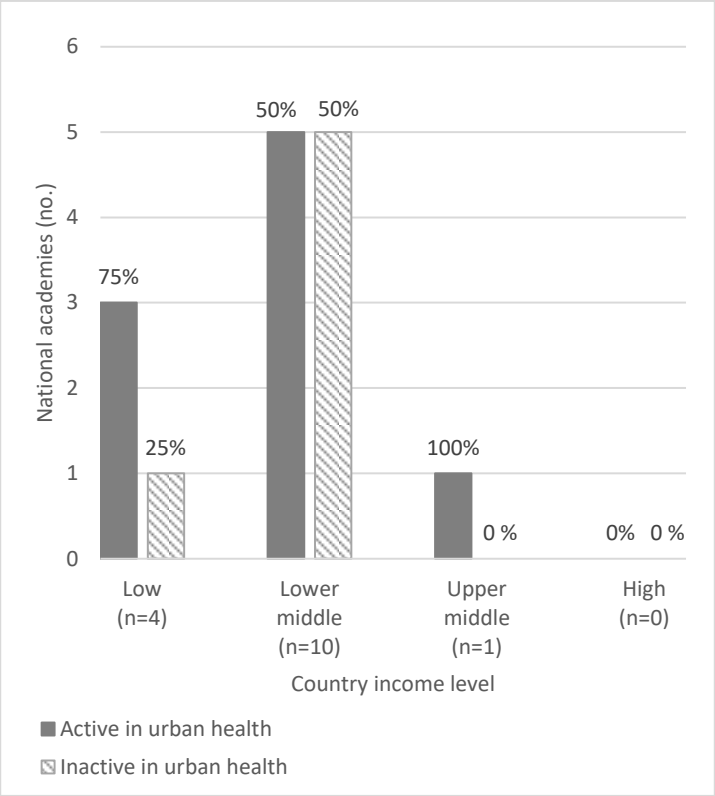
1. Shading indicates those national academies that did not have a website or whose websites were not accessible during the data collection period, and were therefore not reviewed.

6.1.3 NATIONAL ACADEMIES IN AFRICA THAT REPORTED ACTIVITIES

Of the 15 national academies in Africa whose websites were in scope for this review, nine (60%) revealed activity related to urban health and its broad determinants.

An analysis of country income level shows that the 15 academies that were in scope are situated in a mix of low, lower-middle and upper-middle income categories, with most being in the lower-middle category (10, 67%). Among those in this income category, five (50%) reported urban health-related activities between 2017–2021 (Figure 6.1). Among the four academies in-scope in low income countries, three (75%) reported urban health-related activities.

Figure 6.1. National academies[1] that reported urban health-related activities by country income level,[2] Africa, 2017–2021



1. There are 24 IAP member national academies in the Africa region, however, nine were excluded from this analysis because their websites were inaccessible or they did not appear to have websites during the data collection period.
2. Country income classification sourced from World Bank. (2022, March 26). *The world by income and region*. https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

6.1.4 TYPES OF ACTIVITIES UNDERTAKEN BY NATIONAL ACADEMIES IN AFRICA

Table 6.2 and Figure 6.2 show that publications (59%) and events (32%) were the main types of urban health-related activities undertaken by national academies in Africa. There were far fewer projects and grants (5%) and committees (5%).

Of the 13 publications, six were scholarly publications. Among these were a 2020 report *Statement on the 2020 floods in Sudan* (Sudanese National Academy of Science)*;* a 2018 report *Owning our urban future: Enabling healthy cities in Eastern Africa* involving several academies in Eastern Africa; and the *First biennial report to Cabinet on the state of climate change: Science and technology in South Africa* in 2017 (Academy of Science of South Africa).

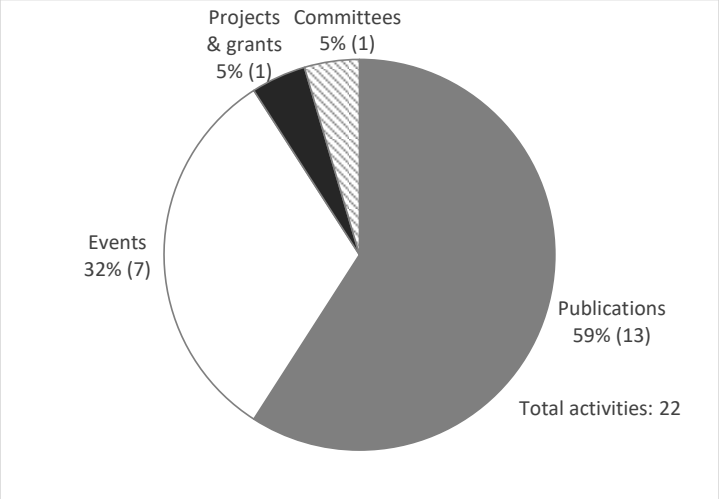
The remaining seven publications comprised news items, announcements, conference and workshop proceedings, reports, and articles.

Table 6.2. Types of urban health-related activities, Africa, 2017–2021

Countries	National academies				Type of activities[2] No. (%)				
	In region	In scope[1]	Active in urban health & its determinants No. (%)						
No.	No.	No.	Active	Inactive	Publications	Events[3]	Projects & grants	Committees[4]	Total
23	24	15 63%	9 60%	6 40%	13 59%	7 32%	1 5%	1 5%	22 100%

1. There are 24 IAP member national academies in this region, however, nine were excluded from this analysis because their websites were inaccessible or they did not appear to have websites.
2. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
3. Includes conferences, symposia, workshops, seminars/webinars and other events.
4. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

Figure 6.2. Types of urban health-related activities,[1] Africa, 2017–2021



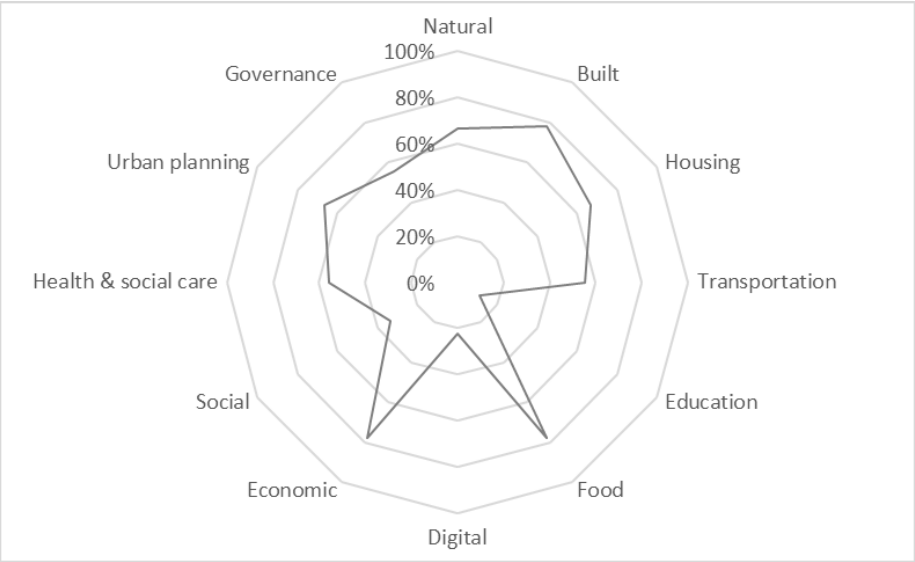
1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.

6.1.5 MAJOR TOPICS ADDRESSED BY NATIONAL ACADEMIES' ACTIVITIES IN AFRICA

Most of the 22 urban health-related activities reported by national academies in Africa focused primarily on urban contexts, that is, on cities, urban neighbourhoods or informal settlements. While urban health was an aspect of the remaining activities, it was a dimension of activities that spanned many topics – for example, climate change and sustainable development.

The major determinants of urban health addressed by national academies in Africa are presented in Figure 6.3. This shows the proportion of academies that reported activities concerned with each determinant.

Figure 6.3. Major determinants of urban health addressed by national academies' activities, Africa, 2017–2020 (%)



The median number of categories on which academies' activities focused was six. The range was 1–7; that is, only one academy reported activity focused on education (although education was incidentally referred to), while seven reported activities concerned with economic development, food and the built environment.

The activities of at least two-thirds of the nine active academies were concerned with six of the major determinants of urban health, with the highest proportion addressing economic development, food (including food security) and the built environment:

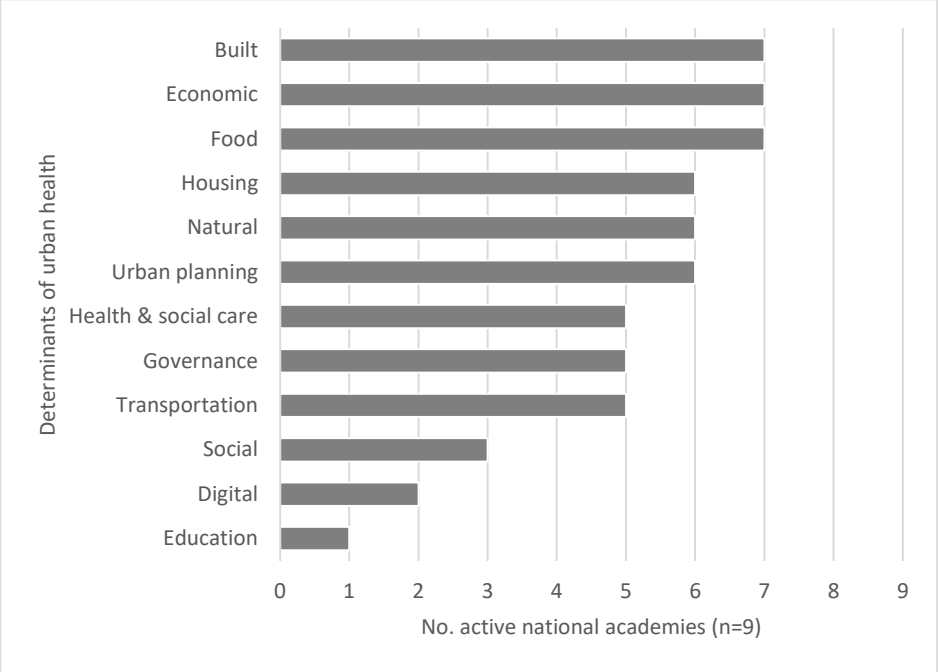
- economic development (78%)
- food (78%)
- built environment (78%)
- natural environment (67%)
- urban planning (67%)
- housing (67%).

Fewer academies addressed social development, digital environment and education:

- social development (33%)
- digital environment (22%)
- education (11%).

These findings are further examined in Figure 6.4.

Figure 6.4. National academies that reported activities by determinant of urban health, Africa, 2017–2021



An analysis of the determinants of urban health that were the main focus of each national academy's activities in Africa is presented in Table 6.3.

Table 6.3. Major determinants of urban health addressed by individual national academies, Africa, 2017–2021

Domain 2 Determinant of urban health	Academy								
	Cameroon	*Egypt*	*Ethiopia*	*Ghana*	*Nigeria*	*South Africa*	*Sudan*	*Tanzania*	*Uganda*
Natural		●	●	●	●	●	●		
Built	●	●	●			●	●	●	●
Housing	●		●	●		●		●	●
Transportation	●	●	●					●	●
Education								●	
Food	●	●	●	●		●		●	●
Digital		●				●			
Economic	●		●	●	●	●		●	●
Social	●			●				●	
Health & social care	●		●		●			●	●
Urban planning	●		●	●		●		●	●
Governance			●	●	●	●			●

Legend

Cameroon: Cameroon Academy of Sciences

Egypt: Academy of Scientific Research & Technology

Ethiopia: Ethiopian Academy of Sciences

Ghana: Ghana Academy of Arts and Sciences

Nigeria: Academy of Medicine Specialties of Nigeria

South Africa: Academy of Science of South Africa

Sudan: Sudanese National Academy of Science

Tanzania: Tanzania Academy of Sciences

Uganda: Uganda National Academy of Sciences

Academies' activities often referenced, but did not focus on, either particular stages of the lifecourse and population groups (*Domain 3*) or particular health risks or health and wellbeing outcomes *(Domain 4)*. Publications and events variously referred to NCDs and infectious diseases, including those that are associated with the consequences of rapid, uncontrolled urbanisation and climate change.

6.1.6 OVERVIEW OF FINDINGS FOR REGIONAL NETWORK FOR AFRICA (NASAC)

Several national academies in Africa featured relevant events and publications produced by the Network of African Science Academies (NASAC) on their websites. Some also reported their individual work with this Regional Network.

***Types of activities*.** The NASAC website reported 25 activities relevant to urban health and its broad determinants during the study period; 14 publications, seven events, three projects and a committee (Table 6.4).

Table 6.4. Network of African Science Academies (NASAC) urban health-related activities by type, 2017–2021

Type of activities[1] No. (%)				
Publications	Events[2]	Projects & grants	Committees[3]	Total
14 56%	7 28%	3 12%	1 4%	25 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other meetings.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

***Topics*.** Of the 12 determinants of urban health, all except education were represented in NASAC's activities between 2017 and 2021 (Table 6.5).

Three of the 14 publications were scholarly reports. These included a report on research on food and nutrition security and agriculture in Africa, and another on women and sustainable development in Africa, both in 2018. The third was a 2020 NASAC statement on the COVID-19 pandemic.

The topics for NASAC's conferences and meetings were characterised by intersecting themes that reflect the contemporary priorities for the region and the SDGs, as well as the types of wicked problems facing many parts of the world. For example:

- 'Developing and using the scientific evidence base for tackling challenges of climate change for human health' was a side event to UN United Nations Framework Convention on Climate Change Africa Climate Week in 2021 that was co-convened with the IAP. In addition to examining the status of climate change, it looked at a range of topics: major implications of climate change for health including heat-related morbidity and mortality, infectious

diseases, food and nutrition insecurity, disaster-associated injury and death, and impacts on mental health.

- The topic for the 15th Annual Meeting of African Science Academies in 2019 was 'Science, technology and innovation for food security and poverty alleviation in Africa: The role of academies'.
- The 2018 conference 'Sustainable African cities. Debating current challenges and exploring future pathways' addressed the themes of urban health, urban food security, urban economic and spatial development, disaster preparedness and management, urban ecosystems and sustainable urban housing.
- 'Sustainable development in Africa' was the topic for the 14th Annual Meeting of African Science Academies (2018).

Table 6.5. Network of African Science Academies (NASAC) urban health-related activities by topic areas, 2017–2021

Domain 2 Determinant of urban health	Activity
Natural environment	●
Built environment	●
Housing	●
Transportation	●
Education	
Food	●
Digital environment	●
Economic environment	●
Social development	●
Health & social care	●
Urban planning	●
Governance	●

6.2 Snapshot: Americas



6.2.1 OVERVIEW OF FINDINGS FOR NATIONAL ACADEMIES IN THE AMERICAS

For national academies in the Americas, the key findings in relation to urban health-related activities were as follows:

- Of the 30 IAP member national academies in the Americas, 29 academies' websites were in scope for this review.
- Eighteen of the 29 (62%) academies in scope were found to have undertaken activities related to urban health and its broad determinants between 2017 and 2021.
- A total of 106 urban health-related activities were identified on their websites.
- The vast majority of academies active in urban health were situated in upper-middle income and high-income countries.
- The main types of activities identified were events and publications (58% and 32% of all relevant activities, respectively), and a small number of committees and projects and grants.
- The major focus of reported activities was in *Domain 2: Determinants of Urban Health*, with a higher proportion of academies engaged in activities relating to the natural environment, economic development, urban planning and the built environment.
- Most academies featured relevant activities undertaken by the Inter-American Network of Academies of Sciences (IANAS) on their websites. Some also reported partnering with this regional network of academies on various types of activities.

In the following sections, an analysis is presented of activities reported by the 29 national academies in the Americas that were active in urban health and its broad determinants.

6.2.2 WEBSITES REVIEWED FOR NATIONAL ACADEMIES IN THE AMERICAS

In the Americas, 30 national academies were IAP members. Among these, 29 websites were determined to be in scope for analysis, as they were technically accessible and were able to be viewed in English. The one exception was the National Academy of Medicine of Mexico (shaded in Table 6.6) which was deemed to be out of scope because there appeared to be no website for this academy during the data collection period.

Table 6.6 presents the full list of national academies and highlights the out-of-scope academy.

Table 6.6. National academies whose websites were reviewed, Americas, 2017–2021

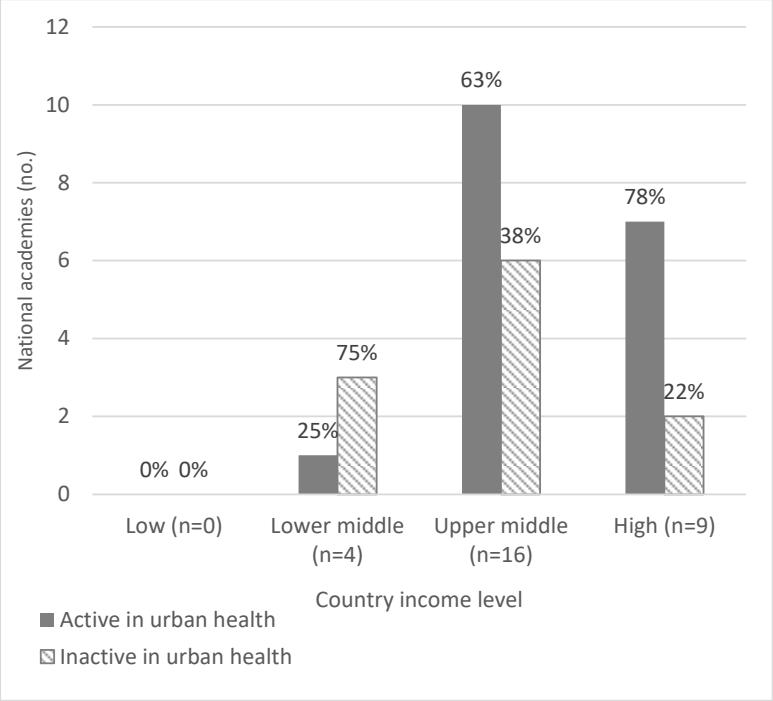
Country	No.	National academy
Argentina	1	Academia Nacional de Ciencias
	2	Academia Nacional de Medicina de Buenos Aires
	3	National Academy of Exact, Physical and Natural Sciences
Bolivia	4	Academia Boliviana de Medicina
	5	Academia Nacional de Ciencias de Bolivia
Brazil	6	Academia Nacional de Medicina, Brazil
	7	Brazilian Academy of Sciences
Canada	8	Canadian Academy of Health Sciences
	9	Royal Society of Canada
Chile	10	Academia Chilena de Ciencias
	11	Academia Chilena de Medicina
Colombia	12	Academia Nacional de Medicina de Colombia
	13	Colombian Academy of Exact, Physical and Natural Sciences
Cuba	14	Academy of Sciences of Cuba
Dominican Republic	15	Academia de Ciencias de la República Dominicana
Ecuador	16	Academy of Sciences of Ecuador
Guatemala	17	Academia de Ciencias Medicas, Físicas y Naturales de Guatemala
Honduras	18	National Academy of Sciences of Honduras
Mexico	19	Academia Mexicana de Ciencias
	20	National Academy of Medicine of Mexico[1]
Nicaragua	21	Nicaraguan Academy of Sciences
Peru	22	Academia Nacional de Ciencias Perú
	23	Academia Nacional de Medicina del Perú
United States	24	The National Academy of Medicine
	25	National Academy of Sciences
	26	National Academies of Sciences, Engineering, and Medicine
Uruguay	27	Academia Nacional de Ciencias del Uruguay
	28	National Academy of Medicine of Uruguay
Venezuela	29	Academia de Ciencias Físicas, Matemáticas y Naturales de Venezuela
	30	Academia Nacional de Medicina de Venezuela

1. National Academy of Medicine of Mexico did not appear to have a website during the data collection period, and was therefore not reviewed.

6.2.3 NATIONAL ACADEMIES IN THE AMERICAS THAT REPORTED ACTIVITIES

Among the 29 academies that were in scope, the majority were situated in upper-middle income and high income countries (55% and 31%, respectively). Among those in the upper-middle income category, 63 per cent reported urban health-related activities during the study period (Figure 6.5). The corresponding figure for academies in high income countries was 78 per cent.

Figure 6.5. National academies that reported urban health-related activities by country income level,1 Americas, 2017–2021



1. Country income classification sourced from World Bank (2022, March 26). *The world by income and region*. https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html
2. Does not add to 100 per cent for the upper-middle income category due to a rounding error.

6.2.4 TYPES OF ACTIVITIES UNDERTAKEN BY NATIONAL ACADEMIES IN THE AMERICAS

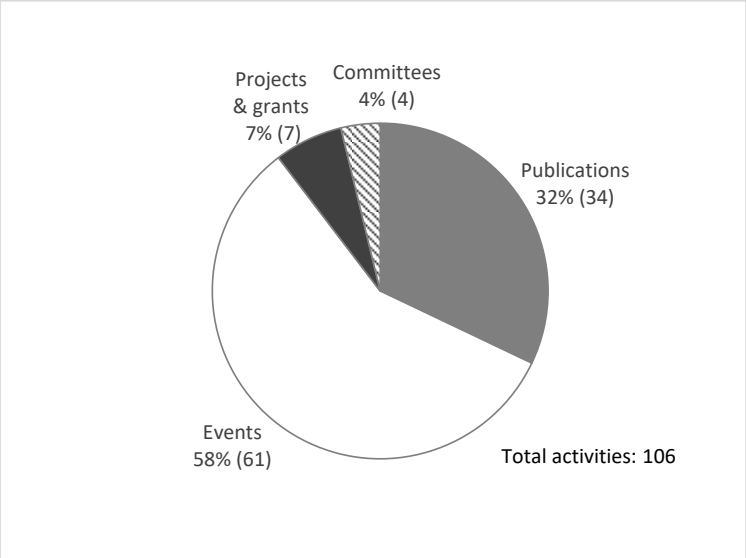
Academies had undertaken diverse activities relevant to urban health and its broad determinants from 2017–2021. The main types of activities were online or face-to-face events (58% of all relevant activities) and publications (32%) (Table 6.7 & Figure 6.6). The remaining 11 per cent of activities comprised projects and grants (7%) and committees (4%). Progress and outcomes of these latter activity types were often reported separately via publications and presentations at events.

Table 6.7. Types of urban health-related activities, Americas, 2017–2021

Countries	National academies				Type of activities[2.] No. (%)				
	In region	In scope[1.]	Active in urban health No. (%)						
No.	No.	No.	Active	Inactive	Publications	Events[3.]	Projects & grants	Committees[4]	Total
17	30	29 97%	18 62%	11 38%	34 32%	61 58%	7 7%	4 4%	106 100%

1. There are 30 IAP member national academies in this region, however, the National Academy of Medicine of Mexico is excluded from this analysis as it did not appear to have a website during the data collection period.
2. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
3. Includes conferences, symposia, workshops, seminars/webinars and other events.
4. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies, and others.

Figure 6.6. Types of urban health-related activities,[1] Americas, 2017–2021



1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.

Of the 34 urban health-related publications, eight (24%) were scholarly publications, primarily evidence-based reports and bulletins, and a book. Among these were a book *Accelerating decarbonization of the US energy system* (National Academies of Sciences, Engineering, and Medicine) and a *Special bulletin. COVID-19 and food security in Venezuela. One year report of the COVID-19 pandemic* (Academia de Ciencias Físicas, Matemáticas y Naturales de Venezuela), both in 2021.

The remaining 26 (76%) publications were non-scholarly and included a wide variety of other publication types such as workshop proceedings, articles, news reports, and informed perspectives.

6.2.5 MAJOR TOPICS ADDRESSED BY NATIONAL ACADEMIES' ACTIVITIES IN THE AMERICAS

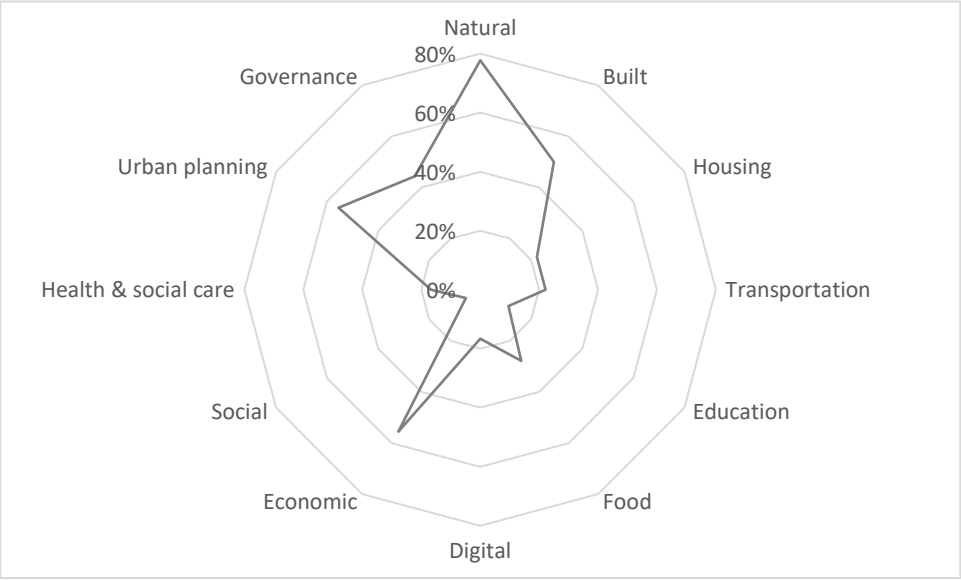
On their websites, national academies in the Americas reported 106 urban health-related activities during the study period. Of these, 31 focused solely on urban contexts, that is, urban neighbourhoods, cities or informal settlements. While urban health was an aspect of the remaining activities, it was a dimension of activities that spanned many topics – for example, climate change or sustainable development.

Academies' activities were seldom explicitly focused on *Domain 3 Lifecourse and Population Groups*, but were instead intended for the benefit of whole populations. The two exceptions were activities directed at children and the elderly in recognition of the particular vulnerabilities in relation to their health and wellbeing. The first was an educational program for school attenders on caring for the planet (Academia Nacional de Ciencias, Argentina). A 2019 news article on the Academia Mexicana de Ciencias website discussed air pollution as the biggest environmental risk to health – particularly for Mexico City's children, because they breathe more times per minute, and the elderly because of their long-term exposure to pollution and age-related health problems. Otherwise, many activities were concerned with a variety of stages of the life course or population groups.

The activities of the 18 national academies active in urban health spanned all urban health determinants, however, some determinants featured more prominently in some academies' activities than others. These data are represented in Figure 6.7.

The climate crisis and the COVID-19 pandemic (from 2020) were a major focus for many academies; both being dire societal problems that require the highest quality scientific expertise to solve.

Figure 6.7. Major determinants of urban health addressed by national academies' activities, Americas, 2017–2021 (%)



The median number of categories on which academies' activities focused was five. The range was 1–14; that is, only one academy reported activity primarily focused on social development, while 14 reported activities concerned with the natural environment.

Academies' activities focused most markedly on four of the broad determinants of urban health, with at least half of the 18 academies reporting work in these areas:

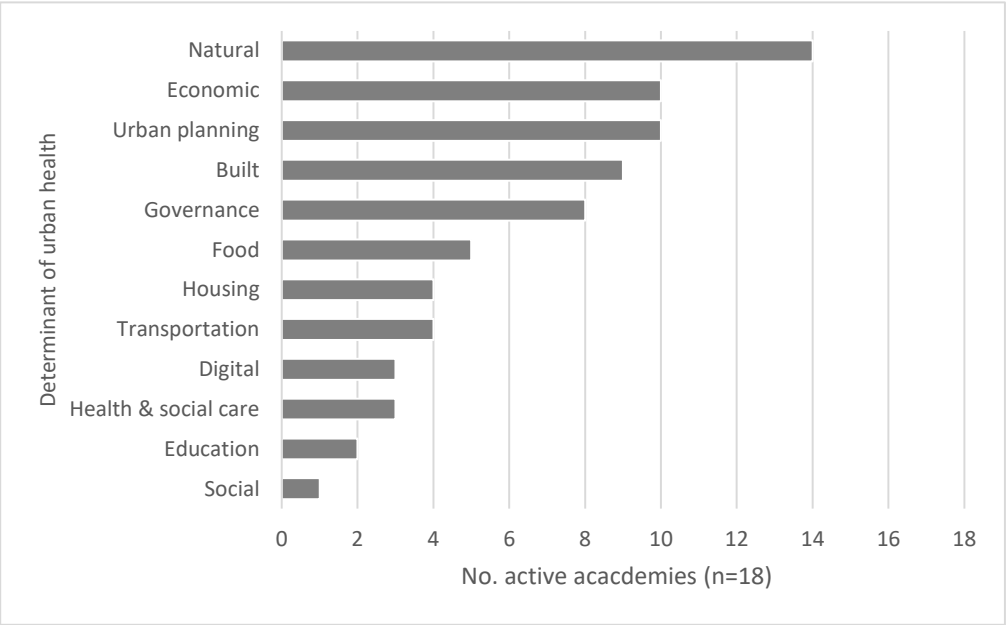
- natural environment (78%)
- economic development (56%)
- urban planning (56%)
- built environment (50%).

The determinants of urban health in which academies in the Americas were least active were:

- digital environment (17%)
- health and social care sector (17%)
- education (11%)
- social development (6%).

These findings are further examined in Figure 6.8.

Figure 6.8. National academies that reported activities by determinant of urban health, Americas, 2017–2021



An analysis of the determinants of urban health that were the main focus of each national academy's activities in the Americas is presented in Table 6.8. (Note that in some countries there is more than one academy.)

Where academies' activities referenced particular health risks or health and wellbeing outcomes (*Domain 4*), these overwhelmingly concerned the direct and indirect effects of climate change on human health and commonly focused on resilience and adaptative capacity in relation to its effects.

COVID-19 and other infectious diseases were the other main *Domain 4* focus across this region. These activities were variously concerned with issues such as the increased risks of infectious diseases arising from human impacts on the ecosystem, or the role of the urban built environment in the emergence and re-emergence of these diseases.

A small number of academies' activities addressed other *Domain 4* health risks and outcomes. Among these were the health effects of air and other pollutants and problems of safety and violence in society.

Table 6.8. Major determinants of urban health addressed by individual national academies, Americas, 2017–2021

Domain 2 Determinant of urban health	Academy																	
	Argentina		*Brazil*		*Canada*		*Chile*		*Colombia*		*Honduras*	*Mexico*	*Peru*		*United States*			*Venezuela*
	1	2	1	2	1	2	1	2	1	2			1	2	1	2	3	
Natural	●		●	●		●		●	●	●		●	●	●	●	●	●	●
Built	●			●		●	●		●			●	●			●	●	
Housing						●			●			●					●	
Transportation			●			●						●					●	
Education	●																●	
Food	●	●							●			●				●		
Digital												●				●	●	
Economic	●	●		●		●					●	●	●			●	●	●
Social												●						
Health & social care					●										●		●	
Urban planning	●		●		●	●	●				●	●	●			●	●	
Governance	●		●			●						●			●	●	●	●

Legend

Argentina
1. Academia Nacional de Ciencias
2. National Academy of Exact, Physical and Natural Sciences

Brazil
1. Academia Nacional de Medicina, Brazil
2. Brazilian Academy of Sciences

Canada
1. Canadian Academy of Health Sciences
2. Royal Society of Canada

Chile
1. Academia Chilena de Ciencias
2. Academia Chilena de Medicina

Colombia
1. Academia Nacional de Medicina de Colombia
2. Colombian Academy of Exact, Physical and Natural Sciences

Honduras: National Academy of Sciences of Honduras

Mexico: Academia Mexicana de Ciencias

Peru
1. Academia Nacional de Ciencias Perú
2. Academia Nacional de Medicina del Perú

United States
1. The National Academy of Medicine
2. National Academy of Sciences
3. National Academies of Sciences, Engineering, and Medicine

Venezuela: Academia de Ciencias Físicas, Matemáticas y Naturales de Venezuela

6.2.6 OVERVIEW OF FINDINGS FOR REGIONAL NETWORK FOR THE AMERICAS (IANAS)

Most national academies in the Americas featured relevant activities and reports produced by the Inter-American Network of Academies of Sciences (IANAS) on their websites. Some also reported on their individual work with this regional academy peak body.

***Types of activities*.** The IANAS website reported five activities relevant to urban health and its broad determinants during the study period; three publications and two events (Table 6.9). Among these,

four activities focused primarily on urban contexts. One of the three publications was a scholarly report *Rethinking cities. The role of cities in meeting the Sustainable Development Goals* in 2021.

Table 6.9. Inter-American Network of Academies of Sciences' (IANAS) urban health-related activities by type, 2017–2021

Type of activities[1] No. (%)				
Publications	Events[2]	Projects & grants	Committees[3]	Total
3 60%	2 40%	0 0%	0 0%	5 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

***Topics*.** The Regional Network partnered with IAP on two activities. The first was the report noted above, *Rethinking cities. The role of cities in meeting the Sustainable Development Goals* in 2021. This report was a product of the IANAS 'Future of Cities Project' and was produced in conjunction with IAP. It scoped trends and global risks for urban development and possible future realities for cities, including those concerned with food, transport, housing, infrastructure, health, digital economy and others.

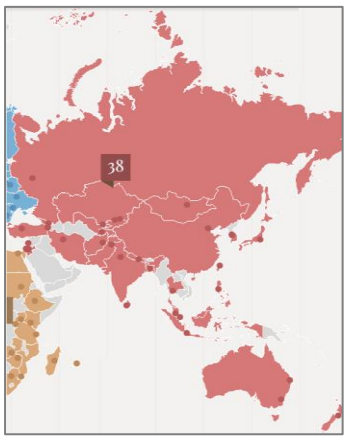
The second partnership with IAP was a webinar on the future of cities, also in July 2021. In 2018, IANAS partnered with a large number of UN-Water members and partners on a major report, *Sustainable Development Goal 6. Synthesis report on water and sanitation*. IANAS' urban health-related activities spanned all urban health determinants, except for education and health and social care (Table 6.10).

Water management, particularly urban water management, was a key area of focus for this Regional Network along with climate change and sustainable development in relation to energy, food security and transport.

Table 6.10. Inter-American Network of Academies of Sciences' (IANAS) urban health-related activities by topic areas, 2017–2021

Domain 2 Determinant of urban health	Activity
Natural environment	●
Built environment	●
Housing	●
Transportation	●
Education	
Food	●
Digital environment	●
Economic environment	●
Social development	●
Health & social care	
Urban planning	●
Governance	●

6.3 Snapshot: Asia Pacific



6.3.1 OVERVIEW OF FINDINGS FOR NATIONAL ACADEMIES IN ASIA PACIFIC

For national academies in the Asia Pacific region, the key findings in relation to urban health-related activities were as follows:

- Of the 38 IAP member national academies in 30 countries in Asia Pacific, 37 academies' websites were in scope for this review.
- Twenty-four of the 37 (65%) academies in scope were found to have undertaken activities related to urban health and its broad determinants between 2017 and 2021.
- A total of 149 relevant activities were identified on their websites.
- Academies active in urban health were relatively evenly distributed across three country income levels: lower-middle, upper-middle and high.
- The main types of activities identified were publications and events (77% and 19%, of all relevant activities, respectively).
- The major foci of reported activities were in *Domain 2: Determinants of Urban Health*, with a higher proportion of academies engaged in activities relating to the built environment, natural environment, governance and economic environment.
- Several academies featured urban health-related activities undertaken by Association of Academies and Societies of Sciences in Asia (AASSA) on their websites. Some also reported partnering with this regional network on various types of activities.

In the following sections, an analysis is presented of activities reported by the 24 national academies active in urban health and its broad determinants in Asia Pacific.

6.3.2 WEBSITES REVIEWED FOR NATIONAL ACADEMIES IN ASIA PACIFIC

There are 38 IAP member national academies in the Asia Pacific region.

A total of 37 websites were determined to be in scope for analysis, as they were technically accessible and were able to be viewed in English. The one exception was the Academy of Medical Sciences of Armenia (shaded in Table 6.11) which was deemed to be out of scope because there appears to be no website for this academy.

Table 6.11 presents the full list of national academies and highlights that which was out of scope.

Table 6.11. National academies whose websites were reviewed, Asia Pacific, 2017–2021

Country	No.	National academy
Afghanistan	1	Academy of Sciences of Afghanistan
Armenia	2	Academy of Medical Sciences of Armenia[1]
	3	National Academy of Sciences of Armenia
Australia	4	Australian Academy of Health and Medical Sciences
	5	Australian Academy of Science
Bangladesh	6	Bangladesh Academy of Sciences
China	7	Chinese Academy of Engineering
	8	Chinese Academy of Sciences
Georgia	9	Georgian Academy of Medical Sciences
	10	Georgian National Academy of Sciences
India	11	Indian National Science Academy
	12	National Academy of Medical Sciences, India
Indonesia	13	Indonesian Academy of Sciences
Iran	14	Academy of Sciences of the Islamic Republic of Iran
	15	The Iranian Academy of Medical Sciences
Israel	16	Israel Academy of Sciences and Humanities
Israel	17	Israeli National Academy of Science in Medicine
Japan	18	Science Council of Japan
Jordan	19	Royal Scientific Society of Jordan
Kazakhstan	20	National Academy of Sciences of the Republic of Kazakhstan
Republic of Korea	21	The Korean Academy of Science and Technology
	22	The National Academy of Sciences
Kyrgyzstan	23	National Academy of Sciences of the Kyrgyz Republic
Lebanon	24	Lebanese Academy of Sciences
Malaysia	25	Academy of Sciences Malaysia
Mongolia	26	Mongolian Academy of Sciences
Nepal	27	Nepal Academy of Science and Technology
New Zealand	28	Royal Society Te Apārangi
Pakistan	29	Pakistan Academy of Sciences
Palestine	30	Palestine Academy for Science and Technology
Philippines	31	National Academy of Science and Technology, Philippines
Russia	32	Russian Academy of Sciences
Singapore	33	Singapore National Academy of Science
Sri Lanka	34	National Academy of Sciences of Sri Lanka
Taiwan, China	35	Academia Sinica
Tajikistan	36	Academy of Sciences of the Republic of Tajikistan
Thailand	37	Thai Academy of Science and Technology Foundation
Uzbekistan	38	Uzbekistan Academy of Sciences

1. The Academy of Medical Sciences of Armenia does not appear to have a website.

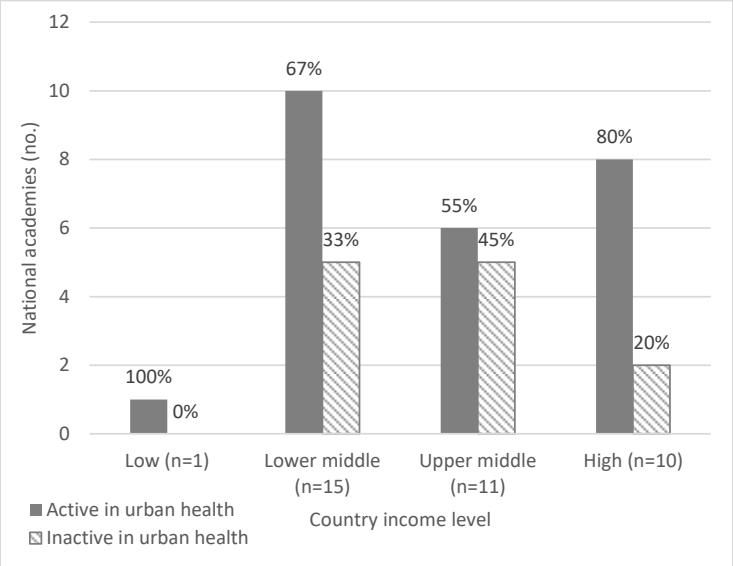
6.3.3 NATIONAL ACADEMIES IN ASIA PACIFIC THAT REPORTED ACTIVITIES

Among the 37 academies that were in scope, the majority were situated in lower-middle income countries (41%). The corresponding figures for upper-middle income and high income countries were 30 and 27 per cent, respectively.

Among academies in the lower-middle income category, ten (67%) reported urban health-related activities during the study period. The corresponding figure for academies in the upper-middle income category was 6 (55%), and for high income countries was 8 (80%) (Figure 6.9).

The sole academy in this region situated in a low-income level country reported urban health-related activity.

Figure 6.9. National academies that reported urban health-related activities by country income level,[1] Asia Pacific, 2017–2021



1. Country income classification sourced from World Bank (2022, March 26). *The world by income and region*. https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

6.3.4 TYPES OF ACTIVITIES UNDERTAKEN BY NATIONAL ACADEMIES IN ASIA PACIFIC

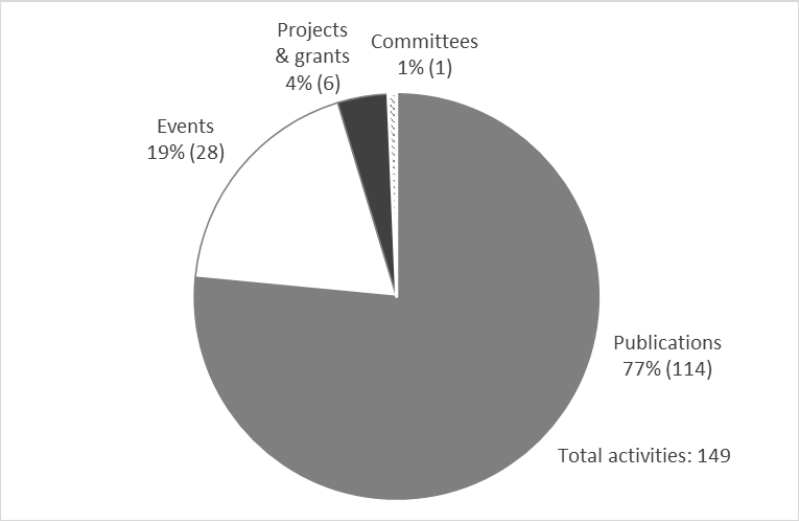
Table 6.12 and Figure 6.10 show that the dominant type of urban health-related activity in Asia Pacific was publications (77% of all relevant activity), followed by events (19%). Far fewer projects and grants (4%) and committees (1%) were identified.

Table 6.12. Types of urban health activities, Asia Pacific, 2017–2021

Countries	National academies				Type of activities[2.] No. (%)				
	In region	In scope[1.]	Active in urban health No. (%)						
No.	No.	No.	Active	Inactive	Publications	Events[3.]	Projects & grants	Committees	Total
30	38	37	24 65%	13 35%	114 77%	28 19%	6 4%	1 1%	149 100%

1. There are 38 IAP member academies in this region, however, the Medical Sciences of Armenia is excluded from this analysis as it does not appear to have a website.
2. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
3. Includes conferences, symposia, workshops, seminars/webinars and other meetings.

Figure 6.10. Types of urban health activities,[1] Asia Pacific, 2017–2021



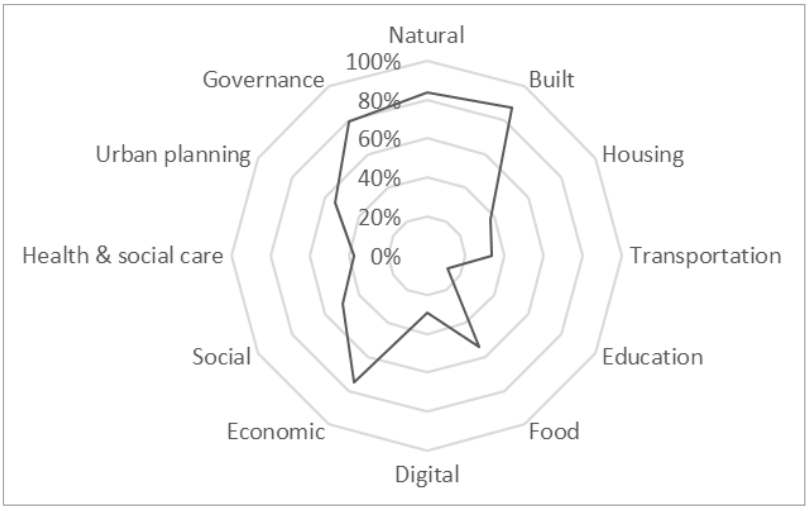
1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.

6.3.5 MAJOR TOPICS ADDRESSED BY NATIONAL ACADEMIES' ACTIVITIES IN ASIA PACIFIC

Websites of national academies in the Asia Pacific region reported 149 urban health-related activities during the study period. Around one quarter of these focused primarily on urban contexts, that is, on cities, urban neighbourhoods or informal settlements. While urban health was an aspect of the remaining activities, it was a dimension of activities that spanned many topics – for example, climate change and sustainable development.

The major determinants of urban health addressed by national academies in the Asia Pacific region are presented in Figure 6.11. This shows that a greater proportion of academies engaged in activities concerned with the natural and built environments, governance, and the economic environment.

Figure 6.11. Major determinants of urban health addressed by national academies' activities, Asia Pacific, 2017–2021 (%)



The median number of categories on which academies focused was 13. The range was 3–21; that is, only three academies reported activities focused on education (although education was incidentally referred to), while 21 reported activities concerned with the built environment.

At least 75 per cent of the 24 academies reporting urban health-related activities focused on four of the major determinants of urban health:

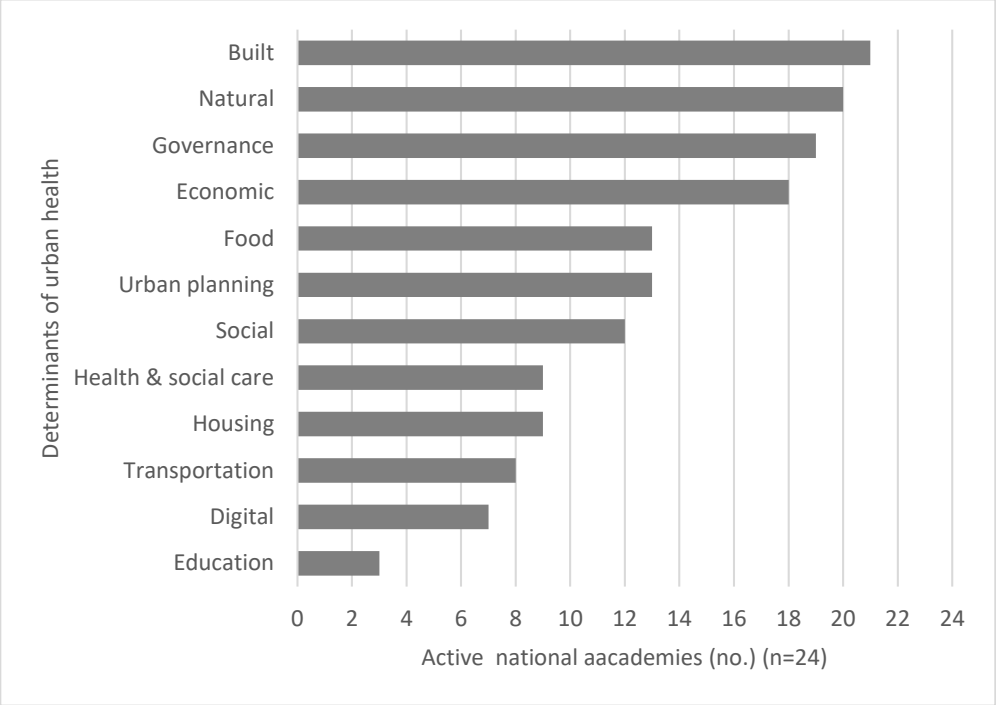
- built environment (88%)
- natural environment (83%)
- governance (79%)
- economic (75%).

Relatively few academies reported addressing:

- digital environment (29%)
- education (13%).

These findings are further examined in Figure 6.12.

Figure 6.12. National academies that reported activities by determinant of urban health, Asia Pacific, 2017–2021



An analysis of the determinants of urban health that were the main focus of each national academy's activities in Asia Pacific is presented in Table 6.13. (Note that in some countries, there is more than one academy).

Table 6.13. Major determinants of urban health addressed by individual national academies, Asia Pacific, 2017–2021

Domain 2 Determinant of urban health		Academy																							
	Afghanistan	*Australia*		*Bangladesh*	*China*		*India*	*Indonesia*	*Islamic Republic of Iran*		*Israel*		*Japan*	*Jordan*	*Kazakhstan*	*Malaysia*	*Nepal*	*New Zealand*	*Pakistan*	*Palestine*	*Philippines*	*Singapore*	*Sri Lanka*	*Thailand*
		1	2		1	2			1	2	1	2												
Natural		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●		●
Built	●	●	●	●	●	●	●		●	●	●		●	●		●	●	●	●	●	●	●	●	●	●
Housing		●	●		●	●			●		●					●		●			●				
Transportation			●		●	●							●		●	●		●			●				
Education								●					●			●									
Food			●	●		●		●	●	●			●			●		●		●	●	●		●
Digital					●	●		●								●				●	●		●		
Economic	●		●		●	●		●	●	●	●		●	●		●	●	●		●	●	●	●	●	●
Social	●	●	●			●		●	●		●		●			●		●				●	●		
Health & social care		●	●		●	●					●		●			●					●		●		
Urban planning			●		●	●	●		●				●		●	●	●	●			●	●	●		
Governance	●	●	●	●	●	●		●	●	●	●		●	●		●	●	●		●	●	●		●	●

Legend	
Afghanistan: Academy of Sciences of Afghanistan Australia 1. Australian Academy of Health & Medical Sciences 2. Australian Academy of Science Bangladesh: Bangladesh Academy of Sciences China 1. Chinese Academy of Engineering 2. Chinese Academy of Sciences India: Indian National Science Academy Indonesia: Indonesian Academy of Sciences Islamic Republic of Iran 1. Academy of Sciences of the Islamic Republic of Iran 2. The Iranian Academy of Medical Sciences Israel 1. Israel Academy of Sciences & Humanities 2. Israeli National Academy of Science in Medicine	Japan: Science Council of Japan Jordan: Royal Scientific Society of Jordan Kazakhstan: National Academy of Sciences of the Republic of Kazakhstan Malaysia: Academy of Sciences Malaysia Nepal: Nepal Academy of Science & Technology) New Zealand: Royal Society Te Apārangi Pakistan: Pakistan Academy of Sciences Palestine: Palestine Academy for Science & Technology Philippines: National Academy of Science & Technology, Philippines Singapore: Singapore National Academy of Science Sri Lanka: National Academy of Sciences of Sri Lanka Thailand: Thai Academy of Science & Technology Foundation

A small number of Asia Pacific academies focused explicitly on *Domain 3 Lifecourse and Population Groups*, namely maternal and neonatal health. As in other regions, activities were generally targeted to broader population groupings.

In common with academies in other regions, activities did not always have a focus on *Domain 4 Health risks or Health and wellbeing outcomes*. Where they did, a somewhat different pattern was observed to that of other regions. Concomitant with activities addressing infectious and communicable diseases (associated with urbanisation and/or the climate crisis), compared with Africa and the Americas, noncommunicable conditions (such as mental health issues and dementia), and health and wellbeing outcomes (such as social isolation, loneliness, and violence) were more prominent.

Notably, there was a relatively high number of academies active in the area of governance (19, 79% of academies) compared with other regions. The corresponding figures were: Africa 56%; the Americas 44%, and Europe 14%.

6.3.6 OVERVIEW OF FINDINGS FOR REGIONAL NETWORK FOR ASIA PACIFIC (AASSA)

The Association of Academies and Societies of Sciences in Asia (AASSA) website reported 17 activities relevant to urban health and its broad determinants during the study period – seven publications, eight events and two committees (Table 6.14).

Among these, urban health and its broad determinants was a dimension of work that spanned many topics. One activity – an IAP/AASSA regional workshop, Managing urbanisation in Asia – had an explicit focus on urban contexts.

Two of the seven publications were scholarly reports. These were a 2021 report *The imperative of climate action to promote health in Asia*, and a joint AASSA/IAP joint report *Opportunities and challenges for research on food and nutrition security and agriculture in Asia*, in 2018.

Table 6.14. Association of Academies and Societies of Sciences in Asia (AASSA) urban health-related activities by type, 2017–2021

Type of activities[1] No. (%)				
Publications	Events[2]	Projects & grants	Committees[3]	Total
7 41%	8 32%	0 0%	2 8%	17 68%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

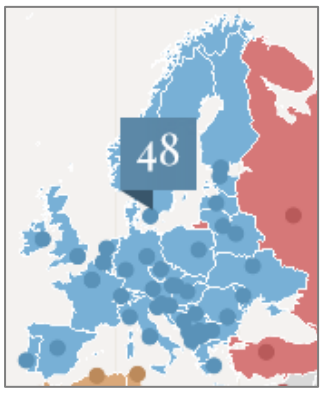
AASSA's urban health-related activities spanned nine of the 12 urban health determinants (Table 6.15). Only education, housing, and transportation-related activities did not feature on the AASSA website during the study period.

Key areas of focus were sustainability and the UN SDGs; food, nutrition security and agriculture; the environment, and infectious and communicable diseases, including COVID-19.

Table 6.15. Association of Academies and Societies of Sciences in Asia (AASSA) urban health-related activities by topic areas, 2017–2021

Domain 2 Determinant of urban health	Activity
Natural environment	
Built environment	
Housing	
Transportation	
Education	
Food	
Digital environment	
Economic environment	
Social development	
Health & social care	
Urban planning	
Governance	

6.4 Snapshot: Europe



6.4.1 OVERVIEW OF FINDINGS FOR NATIONAL ACADEMIES IN EUROPE

For national academies in Europe, the key findings in relation urban health-related activities were as follows:

- Of the 49 IAP member national academies in Europe, all were in scope for this review.
- Thirty-five of the 49 academies in scope (71%) were found to have undertaken activities related to urban health and its broader determinants between 2017 and 2021.
- A total of 178 urban health-related activities were identified on their websites.
- The vast majority of academies active in urban health were situated in countries with economies at the upper-middle income or high income levels.
- The main types of activities were events and publications (39% and 38% of all relevant activities, respectively), followed by committees and a small number of projects and grants.
- The major focus of activities undertaken were in *Domain 2: Determinants of Urban Health*, with a higher proportion of academies engaged in activities relating to the natural environment, transportation, economic development, and education.
- Most academies featured relevant activities undertaken by the European Academies' Science Advisory Council (EASAC) on their websites. Some also reported partnering with this regional network of academies on various types of activities.

The following sections present an analysis of activities reported by the 49 national academies active in urban health and its broad determinants in Europe.

6.4.2 WEBSITES REVIEWED FOR NATIONAL ACADEMIES IN EUROPE

In Europe, 49 national academies were IAP members. All 49 websites were determined to be in scope for analysis, as they were technically accessible and were able to be viewed in English.

Table 6.16 presents the full list of national academies whose websites were reviewed.

Table 6.16. National academies whose websites were reviewed, Europe, 2017–2021

Country	No.	National academy
Albania	1	Albanian Academy of Sciences
Austria	2	Austrian Academy of Sciences
	3	European Academy of Sciences and Arts (EASA)
Belarus	4	National Academy of Sciences of Belarus
Belgium	5	Académie Royale de Médecine de Belgique
	6	Koninklije Academie voor Geneeskunde van Belgie
	7	The Royal Academies for Science and the Arts of Belgium
Bosnia and Herzegovina	8	Academy of Sciences and Arts of Bosnia and Herzegovina
Bulgaria	9	Bulgarian Academy of Sciences
	10	The Bulgarian Academy of Sciences and Arts
Croatia	11	Croatian Academy of Medical Sciences
	12	Croatian Academy of Sciences and Arts
Czech Republic	13	Czech Academy of Sciences
Denmark	14	Royal Danish Academy of Sciences and Letters
Estonia	15	Estonian Academy of Sciences
Finland	16	Council of Finnish Academies
France	17	Académie des Sciences, Institut de France
	18	Académie des Technologies, France[1]
	19	Académie Nationale de Médecine, France
Germany	20	German National Academy of Sciences Leopoldina
	21	Union of German Academies of Sciences and Humanities
Greece	22	Academy of Athens
Holy See (Vatican City State)	23	Pontificia Academia Scientiarvm
Hungary	24	Hungarian Academy of Sciences
Ireland	25	Royal Irish Academy
Italy	26	Accademia Nazionale dei Lincei
	27	Accademia Nazionale di Medicina (AccMed), Italy
Kosovo	28	Kosova Academy of Sciences and Arts
Latvia	29	Latvian Academy of Sciences
Lithuania	30	Lithuanian Academy of Sciences
Republic of Moldova	31	Academy of Sciences of Moldova
Montenegro	32	Montenegrin Academy of Sciences and Arts
Netherlands	33	Royal Netherlands Academy of Arts and Sciences
Republic of North Macedonia	34	Macedonian Academy of Sciences and Arts
Norway	35	Norwegian Academy of Science and Letters
Poland	36	Polish Academy of Sciences

Country	No.	National academy
Portugal	37	Academy of Sciences of Lisbon, Portugal
Romania	38	Academy of Medical Sciences of Romania
	39	Romanian Academy
Serbia	40	Serbian Academy of Sciences and Arts
Slovakia	41	Slovak Academy of Sciences
Slovenia	42	Slovenian Academy of Sciences and Arts
Spain	43	Royal Academy of Exact, Physical and Natural Sciences of Spain
Sweden	44	Royal Swedish Academy of Sciences
Switzerland	45	Swiss Academies of Arts and Sciences
Turkey	46	TÜBA – Turkish Academy of Sciences
Ukraine	47	National Academy of Sciences of Ukraine
United Kingdom	48	Academy of Medical Sciences, UK
	49	The Royal Society, UK

1. The Académie des Technologies, France was included in this review during the data collection period, but no longer appears among the 48 European member academies listed on the IAP website.

6.4.3 NATIONAL ACADEMIES IN EUROPE THAT REPORTED ACTIVITIES

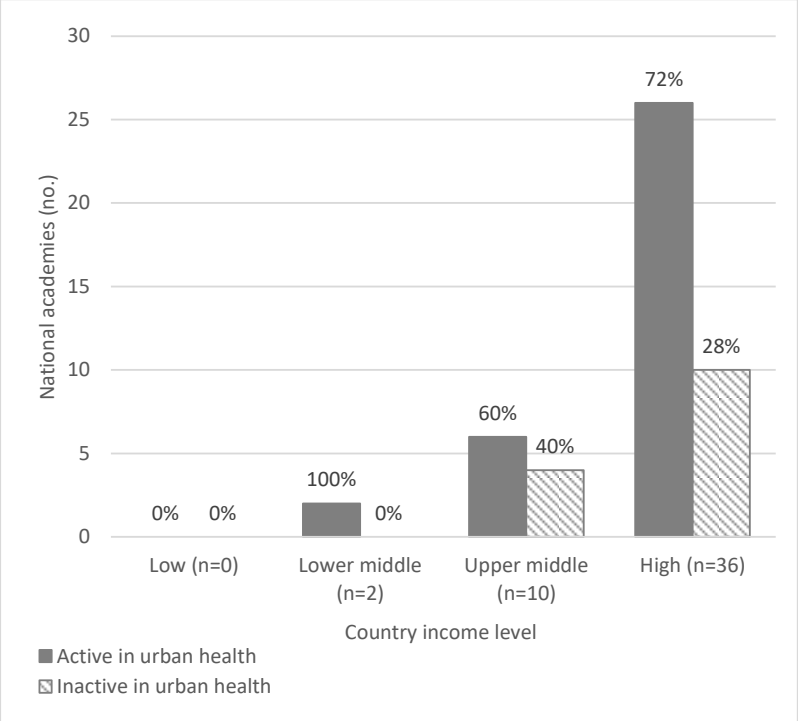
Among the 35 academies whose websites reported urban health-related activities, World Bank country income level classifications were available for 34.[2] Almost all of these academies were in countries situated in the high or upper-middle income bands (76% and 18%, respectively). Within these country income levels, the proportion of academies engaged in urban health-related activities ranged between 60 to 100 per cent (Figure 6.13).

Among the 34 active academies for which country income level is known, only two are in the lower-middle income group of countries (6%) and their websites both reported urban health-related activities.

In view of the higher-income level overall of economies of European countries, it was not surprising that among the 14 in-scope academies that did not report urban health related activities, most were from high income countries (10 academies, 71%). The remaining four academies (29%) were situated in upper-middle income countries.

[2] The Pontificia Academia Scientiarum is excluded from this income-level analysis as the World Bank does not classify the Holy See (Vatican City State) by income.

Figure 6.13. National academies[1] that reported urban health-related activities by country income level,[2] Europe, 2017–2021



1. Thirty-five IAP member national academies were active in urban health. However, the Pontificia Academia Scientiarum is excluded from this table as the World Bank does not classify the Holy See (Vatican City State) by income.
2. Country income classification was sourced from World Bank. (2022, March 26). *The world by income and region*. https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

6.4.4 TYPES OF ACTIVITIES UNDERTAKEN BY NATIONAL ACADEMIES IN EUROPE

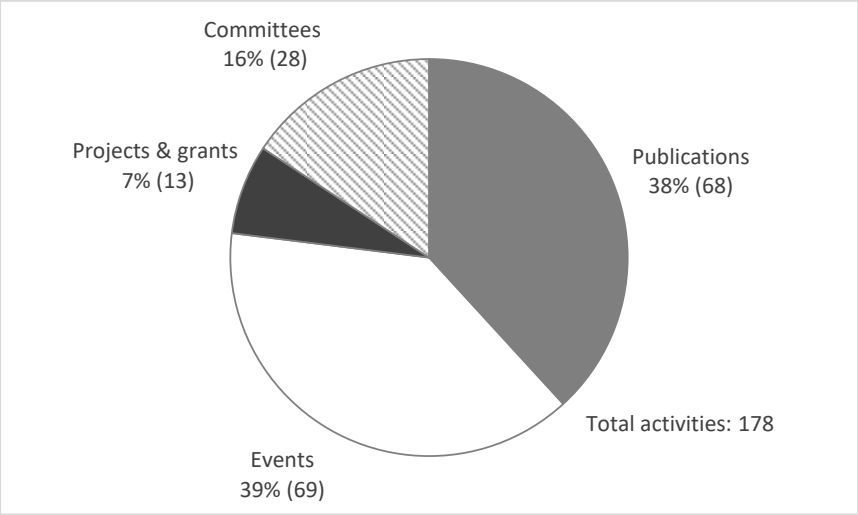
The main types of urban-health related activities undertaken by national academies in Europe (Table 6.17 & Figure 6.14) were online or face-to face events (39% of all relevant activities) and publications (38%). The remaining 23 per cent of activities comprised committees (16%) projects and grants (7%). Progress and outcomes of these latter activity types were often reported separately via publications and presentations at events.

Table 6.17. Types of urban health-related activities, Europe, 2017–2021

Countries	National academies				Type of activities[1] No. (%)				
	In region	In scope [1]	Active in urban health No. *(%)*						
No.	No.	No.	Active	Inactive	Publications	Events[2]	Projects & grants	Committees[3]	Total
38	49	49 100%	35 71%	14 29%	68 38%	69 39%	13 7%	28 16%	178 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, video of the event and an accompanying infographic is counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

Figure 6.14. Types of urban health-related activities, Europe, 2017–2021



1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.

Of the 68 urban health-related publications, 40 (59%) were scholarly publications. The scholarly publications were of various types, mostly comprising evidence-based statements, position papers, briefing papers, reports, journal articles, factsheets, as well as a book. Examples included a 2021 position statement *Light pollution and public health* (Académie Nationale de Médecine, France); a joint statement *A net zero climate-resilient future – science, technology and the solutions for change* in 2021 (Science Academies of G7), and a collective monograph *Cultural environment development, preservation of nature diversity and urbanisation processes within context of the balanced development of Latvia* in 2019 (Latvian Academy of Sciences).

The remaining 28 (41%) of publications included a wide variety of non-scholarly publication types such as conference and workshop proceedings, magazine articles, web resources and media reports.

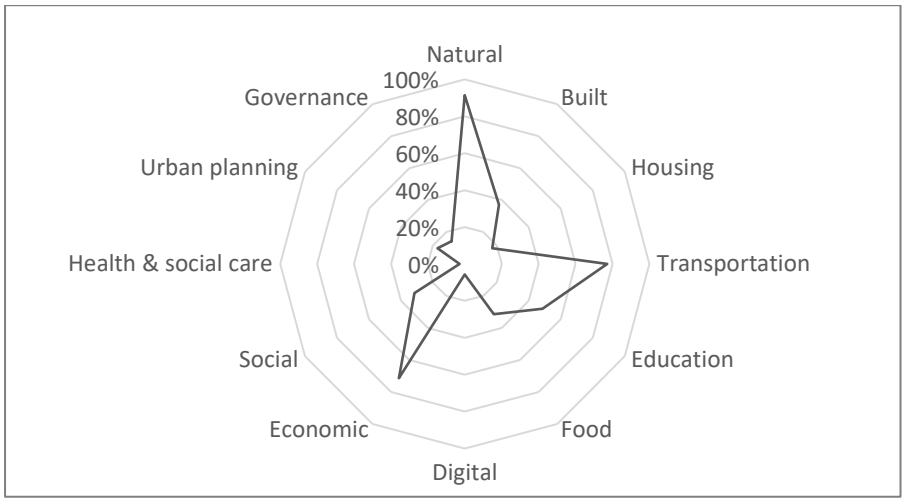
6.4.5 MAJOR TOPICS ADDRESSED BY NATIONAL ACADEMIES' ACTIVITIES IN EUROPE

National academies in Europe reported 178 urban health-related activities during the study period. Of these, 13 (7%) focused on urban contexts; principally cities, but also urban neighbourhoods, or informal settlements. While urban health was an aspect of the remaining activities, it was a dimension of activities that spanned many topics – for example, systemic failures driving unsustainable development, or climate change-related threats to human health and natural systems.

Activities were primarily concerned with whole populations rather than population groups at particular stages of the lifecourse or population groups defined by age, gender, nationality and other classifications (*Domain 3*). There were exceptions, for example, four climate-related educational activities were expressly targeted to school attenders (an online video talk, a collection of web resources, and two conferences).

The activities of the 35 national academies active in urban health spanned all categories of broad determinants of urban health (Figure 6.15), although the number of academies addressing each determinant varied markedly.

Figure 6.15. Major determinants of urban health addressed by national academies' activities, Europe, 2017–2021 (%)



The median number of categories in which academies' activities focused was 12. The range was 1–32; that is, only one academy reported activity primarily focused on health and social care, while 32 reported activities concerned with the natural environment.

Academies' activities focused most markedly on four of the major determinants of urban health, with half or more of the 35 academies reporting work in these areas:

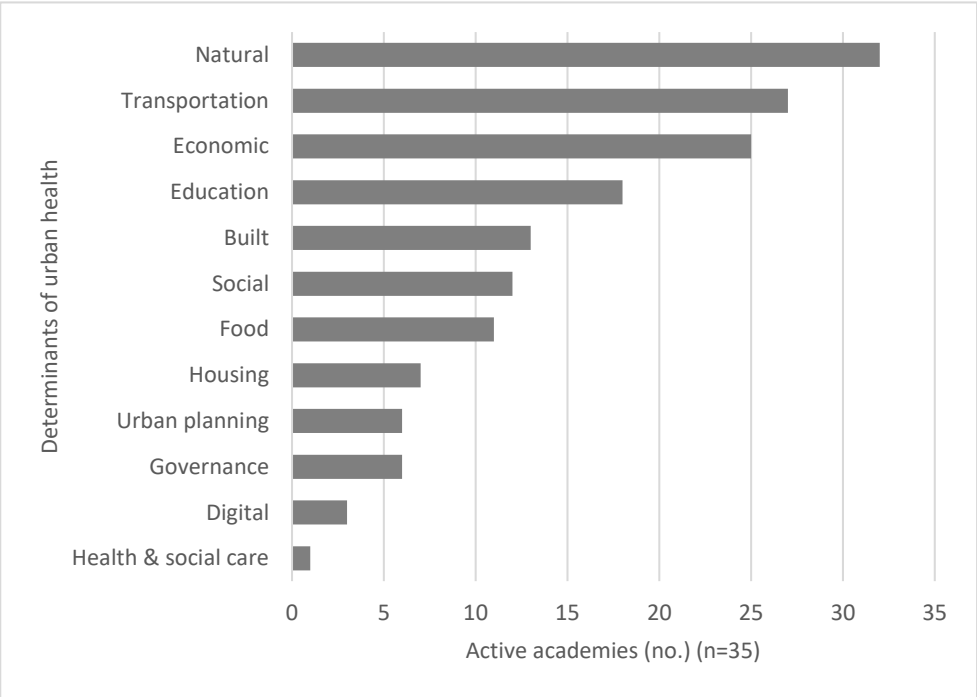
- natural environment (91%)
- transportation (77%)
- economic development (71%)
- education (49%).

The determinants of urban health in which academies in Europe were least active were:

- urban planning (17%)
- housing (17%)
- governance (14%)
- digital environment (6%)
- health and social care (3%).

These findings are further examined in Figure 6.16.

Figure 6.16. Major determinants of urban health addressed by national academies' activities, Europe, 2017–2021 (%)



An analysis of the determinants of urban health that were the main focus of each national academy's activities in Europe is presented in Table 6.18. Note that in some countries there is more than one academy.

Table 6.18. Major determinants of urban health addressed by individual national academies, Europe, 2017–2021

Domain 2 Determinant of urban health	Academy																																						
	Albania	*Austria*		*Belgium*	*Bulgaria*	*Croatia*	*Czech Republic*	*Estonia*	*France*			*Germany*	*Greece*	*Holy See*	*Ireland*	*Italy*	*Latvia*	*Lithuania*	*Moldova*	*Montenegro*	*North Macedonia*	*Norway*	*Poland*	*Portugal*	*Romania*	*Serbia*	*Slovakia*	*Slovenia*	*Spain*	*Sweden*	*Switzerland*	*Turkey*	*Ukraine*	*United Kingdom*	
		1	2						1	2	3																							1	2
Natural		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●	●	●	●	●			
Built	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●		●	●	●	●			●		●		●	●	●		●	●			
Housing					●		●			●		●	●																			●				●			
Transportation	●			●	●				●	●		●	●								●	●	●					●		●	●							
Education		●							●	●		●		●																	●							
Food		●	●							●		●			●				●			●		●				●			●				●			
Digital	●		●									●		●			●														●		●			●		
Economic	●	●	●		●	●	●	●	●	●		●	●	●	●	●	●	●			●	●	●	●		●		●	●	●	●	●		●				
Social										●		●																			●							
Health & social care																																		●				
Urban planning	●	●				●	●		●	●		●	●	●		●	●						●							●	●	●	●	●	●			
Governance		●	●				●					●	●			●	●					●					●	●			●							

Legend

Albania: Albanian Academy of Sciences

Austria

1. Austrian Academy of Sciences
2. European Academy of Sciences and Arts (EASA)

Belgium: The Royal Academies for Science and the Arts of Belgium
Bulgaria: Bulgarian Academy of Sciences
Croatia: Croatian Academy of Sciences and Arts
Czech Republic: Czech Academy of Sciences
Estonia: Estonian Academy of Sciences

France

1. Académie des Sciences, Institut de France
2. Académie des Technologies, France
3. Académie Nationale de Médecine, France

Germany: German National Academy of Sciences Leopoldina
Greece: Academy of Athens
Holy See (Vatican City State): Pontificia Academia Scientiarvm
Ireland: Royal Irish Academy
Italy: Accademia Nazionale dei Lincei
Latvia: Latvian Academy of Sciences
Lithuania: Lithuanian Academy of Sciences
Montenegro: Montenegrin Academy of Sciences and Arts
Norway: Norwegian Academy of Science and Letters
Poland: Polish Academy of Sciences
Portugal: Academy of Sciences of Lisbon, Portugal
Republic of Moldova: Academy of Sciences of Moldova
Republic of North Macedonia: Macedonian Academy of Sciences and Arts

Romania: Romanian Academy
Serbia: Serbian Academy of Sciences and Arts
Slovakia: Slovak Academy of Sciences
Slovenia: Slovenian Academy of Sciences and Arts
Spain: Royal Academy of Exact, Physical and Natural Sciences of Spain
Sweden: Royal Swedish Academy of Sciences
Switzerland: Swiss Academies of Arts and Sciences
Turkey: TÜBA – Turkish Academy of Sciences
Ukraine: National Academy of Sciences of Ukraine

United Kingdom

1. Academy of Medical Sciences, UK
2. The Royal Society, UK

The focus of academy activities concerned with particular *Domain 4 Health risks or Health and wellbeing outcomes* spanned: communicable diseases including COVID-19, infectious disease; injury (including from traffic accidents); mental health; non-communicable diseases and particular conditions such as asthma, cardiovascular disease, diabetes or respiratory disease, and adaptive capacity.

Examples included:

- mental health was the focus of a 2021 talk about complex system dynamics, artificial intelligence (AI), and its possibilities for urban mental health research (European Academy of Sciences and Arts, Austria)
- health, wellbeing and COVID-19 featured in a 2020 account of German National Academy of Sciences Leopoldina's involvement in an EASAC report *Towards a sustainable future: transformative change and post-COVID-19 priorities*, which called for 'transformative/transformational' change to redesign and redirect societies.
- wellbeing featured as a key outcome in relation to a 2020 book launched by the Accademia Nazionale dei Lincei, Italy. The focus of this multidisciplinary treatise, *The urban phenomenon and complexity,* was on achieving sustainable citizen wellbeing by counteracting emerging physical and social degradation
- adaptive capacity was the focus of a 2020 online event 'Adaptation to climate change, including social transformation', which examined accelerating Europe's transition towards resilience and preparedness for climate change (Slovak Academy of Sciences).

It was common for activities to address intersections between several topics. Key examples included:

- sustainable development, climate change and governance (eg. pertaining to urbanisation, energy systems; air quality; housing; food and water security; transport, and/or land use)
- climate change, the natural environment and health
- climate change and health/social inequity.

6.4.6 OVERVIEW OF FINDINGS FOR REGIONAL NETWORK FOR EUROPE (EASAC)

Several national academies in Europe featured relevant activities and reports produced by the European Academies' Science Advisory Council (EASAC) on their websites. Some also reported on their individual work with the Regional Network.

Twenty-five activities relevant to urban health and its broad determinants featured on the EASAC website during the study period; 14 events, eight publications, and three projects (Table 6.19). Among these, urban health was generally an aspect of activities that spanned many topics, rather than a sole focus. Six of the eight publications were scholarly publications, primarily reports. Among these the main topics addressed were challenges and options with respect to sustainable development and climate change.

Examples included:

- 2021: Journal article *Decarbonising buildings in Europe: A briefing paper.*
- 2021: Commentary *Key messages from European Science Academies for UNFCCC COP26 & CBD COP15.*

- 2020: Report *Towards a sustainable future: Transformative change and post-COVID-19 priorities.*
- 2019: Report *The imperative of climate action to protect human health in Europe.*
- 2019: Report *Decarbonisation of transport: Options and challenges.*
- 2018: Report *Negative emission technologies: What role in meeting Paris Agreement targets?*

Table 6.19. European Academies' Science Advisory Council (EASAC) urban health-related activities by type, 2017–2021

Type of activities[1] No. (%)				
Publications	Events[2]	Projects & grants	Committees[3]	Total
8 32%	14 56%	3 12%	0 0%	25 100%

1. An activity that included multiple components is counted as one activity and is categorised under the main activity. For example, a report, its launch, a video of the event and an accompanying infographic are counted as one activity and categorised under 'Publications'. A series of five lectures is counted as one activity, under 'Events'.
2. Includes conferences, symposia, workshops, seminars/webinars and other events.
3. Refers to organisational arrangements that support programs of work. Examples include ad hoc, standing or steering committees; panels; units, departments or divisions within national academies; incorporated entities established within national academies; and others.

The EASAC's urban health-related activities spanned all urban health determinants, except for education and health and social care (Table 6.20). The major focus of activities was on climate change and health, along with sustainable development in relation to decarbonisation of buildings and transport; transformative change, and post-COVID-19 priorities. Of note, in 2021 one EASAC activity addressed challenges beyond Europe. The Network presented at an IAP/NASAC workshop that brought together experts, policymakers and stakeholders to discuss urban planning and public transport considerations in decarbonisation of transport in Africa.

Table 6.20. European Academies' Science Advisory Council's (EASAC) urban health-related activities by topic areas, 2017–2021

Domain 2 Determinant of urban health	Activity
Natural environment	●
Built environment	●
Housing	●
Transportation	●
Education	
Food	●
Digital environment	●
Economic environment	●
Social development	●
Health & social care	
Urban planning	●
Governance	●

7. FINDINGS: INTERVIEWS WITH LEADERS OF NATIONAL ACADEMIES

This section reports on interviews undertaken with national academy leaders. They provided additional insights into issues including academies' interests and engagement in urban health; their partnerships on urban health-related topics; the major facilitators of and obstacles to their academies' work on urban health and its broad determinants, and academies' aspirations in this area. Interviews served to augment understanding of the scope of work and approach of individual academies.

7.1 Snapshot of national academy leaders interviewed

Nine leaders nominated by their academies agreed to be interviewed, with all regions represented (Table 7.1). For one academy (Australia), due to time constraints, material on the academy website was examined to draw out insights pertaining to interview questions.

Table 7.1. Overview of leaders of national academies interviewed

Region	Number of national academies whose leaders were invited to be interviewed	National academies whose leadership agreed to be interviewed [1]
Africa	3	South Africa, Uganda
Americas	4	Brazil, USA
Asia Pacific	4	Australia, China, India
Europe	4	Switzerland, Turkey
Total	15	9

[1] In lieu of interview, one academy's leadership completed a document with the interview questions. For one other academy, its website was examined to draw out insights pertaining to interview questions.

7.2 Themes, issues and opportunities emerging from interviews with national academy leaders

7.2.1 About the leaders

Leaders' professional qualifications and backgrounds were in diverse fields including (across the group): medicine, pathology, soil science, medical research, evolutionary genetics, molecular anthropology, immunology, public health, epidemiology, mathematics and economics. What they appeared to have in common, however, was that over time their professional activities had pulled them in the direction of work concerning populations and their health; the ecosystems, environments and settlements in which people live, and factors that shape health and wellbeing, including rapid urbanisation. Some leaders had experience in areas of work defined as 'urban health' while others were more focused on particular areas of scientific research which are determinants of urban health, such as air pollution.

A characteristic shared by the leaders was an acute appreciation of the dynamic socio-political and cultural contexts in which they work and tensions between science, politics and ethics. As well, they displayed strong commitment to, as one leader put it, the practical application of scientific knowledge to problems of national welfare. In different ways, leaders also displayed a nuanced systems thinking approach in their appreciation of the interconnectedness of phenomena affecting the health of people in cities and the wider impacts of the urban context on health.

7.2.2 Definition of concepts – health and urban health

Leaders' understandings of 'health' were not explicitly discussed in interview but were implied through their comments. There was strong alignment with the WHO definition of health as a biopsychosocial concept pertaining to populations and not just individuals. Some referred to 'wellbeing' as a complementary concept, without elaborating on a definition or scoping this concept, while others also referred to spiritual aspects.

The concept of 'urban health' was reflected on by some leaders, with some conveying the meaning and scope their academy had defined to use in its strategic work. One leader cited the definition of urban health used by their academy: *a [nation] city is one that meaningfully invests in long-term health promoting infrastructure, takes steps to ameliorate the social economic determinants of ill-health, and facilitates the flourishing of subjective meaning and personal growth*. Others demonstrated their own and their academies' stance on 'urban health' through the examples cited of work they are undertaking, and the rationale behind them. For example, one leader spoke of the connections between urbanisation as an economic driver of change; emissions from the agriculture sector as an indicator of how cities' functioning is supported by the rural sector; biological safety related to microbiome systems present in urban environments, and human health. Another leader's comments captured the situation of several academies:

> *"Although there is no specific study directly on 'urban health' in our academy, the topic is discussed in scientific meetings. There are also chapters related with urban health in the publications. In the context of sustainable living, the studies of working groups also touch on the title of 'urban health'. We care about every topic related to public health, and equality in access to health services. Most of the population lives in city centres. In this respect, the supply, establishment, and sustainability of urban health are important"* (L9).

In contrast, some other leaders were more open to various definitions or tentative about using only one. Before the main interview questions were asked, one leader had questioned *"… what would qualify as urban?"* noting that *"I mean, everything we do is related to urban communities"* (L1). This was an important reflection, highlighting a potential issue for academies in scoping urban health as an area for scholarly and public communications activities.

7.2.3 Changing roles of academies in urban health

Scientific leadership, government advisory and communication roles of national academies were raised and explored by leaders, including those related to urban health-focused work.

Leaders shared a view that while the scope of their scientific interests varied, their national academies had an important contribution to make to the field of urban health that builds on their past body of work (which tended to be weighted to basic sciences). They noted that a key strength of their academies includes their ability to frame questions relevant to social development, new demands and challenges (such as the climate crisis, rapid urbanisation, contaminated environments, experiences of dispossession in cities and commercial determinants of health) and future societies.

In addition, a strength is building the scientific knowledge base for understanding and acting to enhance urban health and ensure urbanisation is health promoting. Moreover, they highlighted the role of their academies as active communicators of scientific concepts and evidence to policy makers, industry and business sector actors and citizens. One leader commented that his academy acts "*as a translator to provide voice to those that don't have the right to, or the possibility of, influence*" (L3).

Leaders suggested that processes used to identify how priorities are set within academies could frame or elevate urban health as a priority field of scientific endeavour if academy members or other champions agitated for this to occur. One leader explained that identifying priorities was largely a bottom-up process, starting from standing committees in the academy as well as requests from outside funders. The absence of a rural voice in the process meant that urban issues perceived by academy members dominated. *"I'm quite confident that all the activities we have do spin around what's happening in the urban environment because we have very little input from rural communities"* (L9).

Attention was drawn to the role of academies in activist or policy advocacy activities. One leader argued that academies should avoid making policy prescriptions and instead make only policy relevant statements and outline evidence-based options. This stance was justified in terms of sustaining credibility with political actors and protecting the potentially influential role that comes with being politically neutral and authoritative. This view was echoed by another leader, whose academy's reputation for neutrality and scientific capabilities underpinned their prominent role as a convenor of policy makers and other stakeholders.

Academies were developing new ways to nurture the next generation of researchers and leaders, particularly with gender equity in mind. This work was recognised as another important role of – and opportunity for – academies, with one leader proposing that academies should nurture enthusiasm in young scientists to pursue the interdisciplinary field of urban health as a domain of research and policy-related activities. One leader reported that this idea had already been implemented in their academy: an urban health-focused fellowship position had been offered to a Fulbright Scholar whose studies had focused on urban health, providing a new organisational focus.

Overall, interviews confirmed that strengthening the national academies' profiles and level of activity in urban health was a *"work in progress"* but moving in a positive direction. The metaphor of a protozoa was used to describe the continuous process of an academy gathering resources and reaching into a newer area (in this case, urban health and its broad determinants), then consolidating activities, such that the academy moves forward in new directions. It was suggested that the best way of convincing an academy to shift priorities is to *"do the action first and then allow influence"* (L7). This bias to action was considered by some to be particularly relevant at the local level, where projects could be designed based on a synthesis of evidence and implemented in partnership with communities.

7.2.4 Topics of urban health-related work

Some leaders reported that their academies' focus of work has been expanding beyond researcher-driven interests in basic sciences, biomedicine and health systems to societal issues.

There was a sense from some leaders that their academies are seeing previous work in a new light, that is, as having applications to healthy urbanisation, smart cities and urban health. One leader referred to their academy developing a *"laboratory of inequality"* through community-focused

research in line with the increasing acceptance of the social origins and determinants of health and disease in the country. This changing profile of national academies may reflect recognition of the need to *"establish links in a systemic approach to solve problems"* (L7).

Some of the topics of national academies' urban health-related activities in recent years, such as research or expert consensus studies, reflect the intersection of issues and systems perspectives on health and disease. For work on urban health, this integrated approach to science is exemplary. As one leader put it, *"food security, poverty and inequality and climate change are all interwoven and a relevant topic of late has been mental health"* (L9). Additional examples are presented in the Box below.

Box 2. Examples of intersecting topics of national academies' activities reported by leaders

- Air pollution, traffic, weather conditions and climate zones.
- Air pollution and dementia and neurocognitive disorders.
- Urban green spaces/parks, cardiovascular diseases and heart attacks.
- Psychosocial issues at a population level including suicide (and their distribution and social determinants).
- Distribution of social inequalities and their relationship to patterns of crime, environmental factors (such as air pollution) and diseases and conditions (such as suicides, fever).
- Spatial patterns of diseases and conditions (such as heart attacks, suicides, fever) and their relationship to socioeconomic factors.
- Measurement of social capital and use of social support to develop a *"cartography of vulnerability and solidarity"*.
- Food security, poverty and inequality.
- Public transportation systems.
- Governance for health.
- Urban development and its consequences for green space and mental health.
- Associations between vulnerability and biology, genomics and epigenetics.
- Community organisation strategies based on solidarity to secure necessities in a pandemic.
- Telemedicine, improving access to health care for chronic disease by people in less privileged parts of a city.
- Prevention of urban flooding through improving the ecosystem.

Current and emerging priorities for scientific initiatives include:

- the use of digital 'smart' technology to improve environmental monitoring and strategies for carbon neutrality (such as improving energy efficiency through waste recycling). Themes such as carbon neutrality were becoming priorities "because they have such a pervasive impact" and pertain to the "whole of society" … "and particularly in the city" (L4).
- environmental psychology as a new area of research focus, and mental health as a dimension of urban health.

7.2.5 Types of activities

Leaders reported that the main forms of urban health-related activity of their national academies were events, publications and projects, with work undertaken by committees and similar structures an additional area of work.

Events: Those events that enabled dialogue between different actors were viewed as having value and influence by establishing conditions for open discussion, trust and mutual understanding; knowledge and skill development, and building consensus about evidence-based policy and action. Events mentioned included national, regional and international conferences; workshops; seminars (in-person) and webinars, and technical meetings between members of the same academy or other academies. Meetings that are publicly broadcast or are open to enable community participation were reported as fulfilling an important social mission of national academies around public communication and engagement.

Publications: Again consistent with their mission, research and the production of peer reviewed scientific publications (eg. journal papers, expert consensus studies) were identified as priority outputs of academies and their individual members. One leader noted that consensus studies are the academy's *"prized publications"* (L9) because of the quality of scrutiny by experts in the peer review process, while another explained how resource-intensive their production is, limiting the number that can be completed annually. Some academies had produced consensus studies on specific aspects of urban health and its broad determinants, and utilised partnerships with external parties (such as universities, research groups) and individual researchers. A model for consensus studies used in one academy featured an in-depth multidisciplinary deliberative process under the guidance of a chairperson followed by the production of a report that is reviewed by three individuals – one national, one regional (from the same continent) and one international. Proceedings from conferences and workshops (whose organisation was led or co-led by national academies) were another commonly produced publication that covered urban health issues and debates.

Leaders noted a range of other types of publications that have covered urban health topics.

- White papers, with policy options have been produced for government departments.
- Fact sheets incorporating the latest scientific evidence about a range of topics have been developed to communicate research findings and scientific information to various stakeholders and inform dialogue in the public domain and elsewhere.
- News items have been frequently posted on academies' websites to alert interested parties, including the media, about academies' activities, as well as events and debates in the wider environment. Leaders recognised that their academies' websites were not necessarily comprehensive or up to date, and in some cases, urban health-related publications had lower visibility than those concerned with basic sciences.

Social media activities of national academies were not examined in this project, and may represent another prominent form of publication enabling science communication.

Projects and grants: Leaders reported that their academies often developed or participated in projects that were associated with urban health and its broad determinants, including research studies, action-oriented projects with government departments, and science education programs (about acting now for sustainable futures, for example) in community settings such as schools.

7.2.6 National academies and the SDGs

The *UN 2030 Agenda for Sustainable Development*, and the 17 SDGs (UN, 2022), were identified by leaders as facilitators of their work in urban health.

Engagement in them was, however, more pronounced and organised for some national academies than others. How invested countries are in the SDG agenda, and the overall set of arrangements for responding to, monitoring and reporting on the SDGs, appear to be decisive in shaping the role and level of engagement of national academies. Several examples from different academies are outlined below that show how they work on SDGs (Box 3).

Box 3. Examples of work on SDGs reported by national academy leaders

- Members of the academy are contributing to SDGs dialogues through roles on the Intergovernmental Panel on Climate Change, the Ministry of Science and Technology and other national bodies.
- With a central oversight body and engagement by various national government departments, the academy has been using its convening power to host inter-organisational meetings and workshops on SDG topics, such as water and sanitation, and rural/urban dynamics.
- The academy's Sustainable Development and Finance Working Group and Environment Working Group organise multidisciplinary scientific activities such as symposia and conferences. The working groups also publish scientific books on topics related to SDGs such as the circular economy, sustainable living, humanitarian finance, public health and welfare, environment and alternative energy sources. Scholars from many countries attend meetings organised by the academy and many expert academics contribute to the books. The academy organised a joint symposium on sustainable development and the circular economy with the United Nations Sustainable Development Solutions Network. As the only national and official science academy in the country, the academy provides science-based consultancy services to decision makers, thus contributing to boards related to sustainable development.
- Instead of undertaking new research on SDGs, the academy established a baseline understanding of how their existing body of work contributed to the SDGs by assessing their publications against the 17 goals. The 'footprint' was found to be very favourable, underscoring their mandate to contribute to the national SDG effort. At the same time, the process provided indications for where the academy could engage more deeply with academics and other stakeholders.
- The academy is engaged with the national committee of the International Science Council's *Future Earth* initiative, working directly with its central government to implement the 'ecological civilisation' concept. This includes designing policies and providing capacity building with national and local governments on SDG 11 (eg. how to implement carbon footprint accounting).

7.2.7 Organisational arrangements

Some leaders outlined the organisational arrangements and structures of their academies. They reflected on the extent to which these support work on urban health and its broad determinants, for example, by facilitating interdisciplinarity and dissolving silos between disciplines.

In one academy, standing committees are chaired by an academy member or relevant stakeholder, and comprise disciplinary representatives. Committees range across health; biosafety and biosecurity; science for the reduction of poverty and inequality; humanities; scholarly publishing, and science, technology, engineering and mathematics (STEM) education. These committees also collaborate on cross-cutting issues, such as inequalities, where diverse disciplinary expertise is needed. Virtual communication platforms have aided collaboration, particularly since 2020 as COVID-19 became a drawcard for engagement among academy members.

To foster a transdisciplinary systems approach, one academy has established several teams of scientists to examine different aspects of urban health – for example, megacities and infrastructure such as wastewater. Organisational arrangements support a *"complete innovation chain"* from science discovery to technological innovation to application in policy.

Notably, some leaders observed that their academy was collaborating more with other academies in their countries, enabling a broader range of expertise to be combined for activities in new areas without requiring new organisational structures. For example, one academy of natural sciences was increasingly collaborating with the social sciences academy on projects related to mental health and other issues.

7.2.8 Partnerships

Multiple types of partnerships were highlighted that bring complementary authority, credibility, expertise and resources into activities such as research studies, conferences and projects, as well as help in *"delivering the science and technology to the society"* (L4).

Leaders highlighted that a prominent partnership for their academies is with national governments. This involves engagement with departments including health, science and technology and other portfolios, and support for their work. Academies support national missions related to health, share research evidence, undertake commissioned research, provide policy advice and in some cases, are involved in framing, structuring and designing policies and how to have impact.

Other partners identified by leaders included:

- other national academies within the country
- other national academies from outside of the country including from other regions (eg. conducting research, cooperating in holding conferences and meetings, undertaking a fellowship)
- universities in the same country and other countries, including those who share a common language
- local governments (eg. engagement between an academy and a research team in a local government administration, focused around identifying priority issues for scientific endeavours and capacity building)
- research institutes and teams in other countries
- global or international organisations (eg. Bill and Melinda Gates Foundation, European Commission via Horizon 2020 program, International Science Council via programs such as Urban Health and Wellbeing, Future Earth)
- national organisations (Centers for Disease Control and Prevention, USA)
- local organisations particular to context
- industry and businesses from a variety of sectors, including built infrastructure.

Partnerships were a favoured approach, bringing in *"a different flavour of enthusiasm and commitment from participants"* (L1).

7.2.9 Facilitators of urban health work by national academies

Leaders observed several different types of facilitators to growing and consolidating urban health as an integral area of national academies' work.

- Interest in pursuing scientific goals that reflect societal needs and, at the same time, require scientists with different knowledge and techniques across multiple disciplines to come together, such as those working in basic science and social science.
- Compatibility between national priorities related to urban health and academy priorities and capacity. One leader characterised their country as a *"living laboratory"* for urban health "*because we are still being rapidly urbanised*" (L6) – urbanisation continues apace as does the level of scientific engagement in preventing problems and finding solutions.
- More widespread adoption of systems thinking, to steer academies towards transdisciplinary science and intersecting topics that reflect the complexity of urban health.
- Interest in cultivating partnerships with less familiar organisations and actors, including civil society and communities.
- Partner with local level actors, particularly local authorities.
- Cycles of strategic planning by national academies that offer opportunities to elevate urban health as a focus of activity, and increase co-creation of projects with local communities.
- Interest by funding partners (including government) in urban health research and other activities, including the potential for commercialising knowledge, products or services in a global marketplace.

New societal problems were raised as a facilitator of work in urban health. For example, the COVID-19 pandemic stimulated scientists and clinicians to turn their attention to environmental contexts in which people live, work and travel. During the pandemic, through a grant, SAGE (Strategic Advisory Group of Experts on Immunization) had supported one Young Academy to produce rapid syntheses of research on topics including urban health-related issues. This work brought visibility to the academy and the vital role it plays in current issues. In another context, the pandemic had brought increased attention to how to design cities so they are more sustainable and prepared for future pandemics, and to the work of scientists in relation to transport, public facilities, built environment and ventilation/good air quality, and green spaces.

7.2.10 Obstacles to urban health-related work

Several obstacles to strengthening their urban health-related work were noted by leaders as relevant to their academies. These included the following.

- Lack of, or variability in definitions for 'health' and urban health', and their relationship to current activities and capacity.
- Absence of framing activities pertaining to ecosystems, built infrastructure, technology and other topics in relation to health.
- Challenges for academies in expanding their reputation, activities, disciplinary scope and partnerships beyond basic sciences and biomedical research.
- Lack of access to the data necessary to contribute to this field.
- Insufficient awareness among scientists of societal needs, and too much focus on their own research interests *"without paying too much attention to the outside world"* (L4).
- Insufficient pre-conditions for effective urban health-related work, expressed by one academy in this way: *"long term projects need enough employees, resources, financial support and financial backing, power commensurate with their duties and commitments, and a suitable organisational structure to properly implement the healthy cities movement, and, of course, more patience, encouragement, and real intention"* (L1).
- Insufficient stability of academies' governance to support expansion or reframing of activities to urban health.

- Orientation of the academy to being an honorific society more so than being in service to the country and its people through practical scientific endeavours.
- Challenges in forming multidisciplinary teams to undertake the types of scientific activities that are relevant to urban health research and strategies.
- Historically low visibility of urban health-related work in an academy, or lack of prestige compared with basic sciences or medical sciences.
- Insufficient or poorly targeted recruitment of professionals to the national academy with relevant expertise and experience in urban health.
- Politics, in terms of a national academy pursuing scholarly work related to issues or topics the government of the day does not prioritise or recognise.
- Perception that urban-related issues are problems of other contexts (eg. for countries of the southern hemisphere, the issues are problems of the northern hemisphere).
- Time, where academy activities are undertaken in a voluntary capacity by members, many of whom are overly committed.
- As per obstacles for any other work, for example, access to energy to power computers for research, communications and writing.
- Structural and cultural issues such as equity and inclusion, including related to gender and race.

As well as obstacles for academies, one leader noted that private sector, civil society, educational institutions, local governments, and research institutions all needed to take more roles and responsibilities to increase social awareness about urban health and include all stakeholders in coordinated efforts.

7.2.11 Plans and aspirations in urban health-related areas

Leaders' views on gaps in the urban health discourse and action, and on their academy's future work in urban health, signalled interest in developing more focus on several topics. Topics that leaders noted included:

- telemedicine and other forms of digital services in healthcare and society
- racism and other societal issues
- public transportation systems
- integration of air pollution prevention and mitigation measures in everyday life
- energy infrastructure
- working conditions
- gender-based violence
- reproductive health
- advancement of health priorities for women
- food production
- access to health care and community engagement in prevention
- the economic value of investments in urban health.

One leader reported that their academy will enhance its orientation to public communication:

> *"… pay more attention to activities aimed at raising public awareness and disseminating accurate information, especially under the threat of social media. During the pandemic, the*

whole world saw the problems of this misinformation and the reflections of ignorance, paying a heavy price. This issue will continue to be on the agenda of nations more widely as an international problem. We have to find a solution to this for community security, individual freedoms and access to health information" (L1).

A leader who was relatively new to their position noted that the field of urban health had a less prominent reputation within their academy, yet it was highly relevant to the academy's mission. Urban health was thought to provide a fresh frame for the existing and future body of work of their academy, and could underpin one new direction for the academy.

Demonstrating how important leadership is in developing momentum for action, one leader shared their vision for their transformation strategy: to work with community-based input, going out to communities to determine what they would like the academy to prioritise and work on, then co-create, projects so the benefit is delivered to them and benefits society.

7.2.12 Support from IAP

IAP was well recognised by leaders for its pivotal role in bringing national academies together under one 'umbrella', and attracting academics and other professionals to collaborate on work concerned with the betterment of society. IAP was described as having an important "bird's eye view" of contemporary issues and usefully highlighting what is on, or may come onto, the global radar for national academies. Furthermore, IAP's reputation and influence were recognised as assisting some academies with staging important events in their countries that engaged politicians and prominent scientists and, in so doing, helped these academies secure their national standing.

Leaders suggested several ways that IAP could further support their academies. Among suggestions that specifically pertained to strengthening attention to urban health were that IAP could:

- given its high international profile, increase opportunities for multilateral dialogue on healthy cities and urban health
- encourage representatives to take part in working groups related to urban health to be formed by IAP
- promote exemplary practices for municipal governments
- build on its brand in the science community to develop a public domain profile and brand. This could increase public engagement in the field of urban health, public understanding of problems and solutions, and the role of IAP and academies in fostering engagement and understanding. One approach to brand development would be to create a media product on urban health (such as a TV program) targeted at the general public and policy makers.
- generate more educational material, again under the IAP brand, including policy briefs on urban health-related topics. Materials could be used by school students and others.

Ideas for more general ways that more support could be given to national academies were that IAP could:

- sustain its responsiveness to national academies when there are issues that the academies would like to bring on board for all academies to consider
- increase scientific events such as joint conferences, workshops or seminars held in association with individual academies and with the cooperation with other countries as well
- test hypotheses in vision statements in country contexts through partnerships with national academies.

8. INSIGHTS AND OPPORTUNITIES

This section presents cross-cutting insights into national academies' activities in urban health and its broad determinants based on the desktop review of websites and interviews with leaders, and considers IAP's role in supporting national academies in this area of work. It also outlines some opportunities for national academies to develop a stronger activity level and scientific profile in urban health.

8.1 The missions of national academies are compatible with leadership roles in urban health

The mission statements of national academies highlight their focus on science for the benefit of society and the planet, and their scientific advisory role to governments on key national challenges. For example, the mission of National Academies of Sciences, Engineering, and Medicine (USA) is to:

> *… provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.*

The mission of the Academy of Science of South Africa is to:

- recognise scholarly achievement and excellence in the application of scientific thinking for the benefit of society
- mobilise members to ensure that they are available to contribute their expertise in the service of society
- conduct systematic and evidence-based studies on issues of national importance, producing authoritative reports that have significant impact on policy making
- promote the development of an indigenous system of South African research publications, increasing their quality, visibility, accessibility and impact
- publish science-focused periodicals that will showcase the best of southern African research to a wide national and international audience
- develop productive partnerships with national, regional and international organisations with a view to building our capacity in science and its application within the National System of Innovation (NSI)
- create diversified sources of funding for sustainable functioning and growth of a national academy
- communicate effectively with relevant stakeholders through various media and fora.

Many academies have long-standing and proud traditions of research in the basic sciences – chemistry, physics, biology and mathematics. Leaders noted that these basic sciences underpin a range of disciplines that are important to the contemporary, applied field of urban health. As such, there is further scope for all national academies to continue to advance their mission and benefit their countries by building on traditional and current areas of scientific focus to develop a stronger role in urban health and its broad determinants.

8.2 The concepts of 'health' and 'urban health' warrant clearer definition on national academies' websites and in publications

The concepts of 'health' and 'urban health' were often implied in materials on national academies' websites, but not explicitly defined. What is important is that the concept is defined, not that a particular definition is used.

With regard to the concept of 'health', multiple definitions co-exist in "knowledge landscapes" (Svalastog et al., 2017). Some are biomedical in orientation, while others are aligned with the concept of salutogenesis. Some focus on health as an attribute of individuals, while others are concerned with populations. Given that a role of academies is as a science communicator to governments, civil society and other sectors, clarifying a perspective on what an academy means by 'health' would be helpful.

The WHO definition of health appeared to sit behind much of academies' work on urban health – that is, health is "a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity" (WHO, 2006) and health and illness express the dynamic interaction of physiological, psychological and social factors. This definition incorporates the positive state of 'wellbeing' (or 'living well') and positions health as a human right.

'Health' was often a secondary, more than a main, focus of academies' activities. For example, many activities were concerned with climate change and its implications for a whole population, a country's national interests or economy. Climate change is having, and will have, serious impacts on the health of populations and communities and was therefore an integral consideration for research, policy and action related to mitigation and adaptation. As noted earlier in this report, a minority of academies' urban health-related activities included a focus on *Domain 4: Health risks and Health and wellbeing outcomes*. Where academies' activities concerned these, they tended to focus broadly on health, wellbeing and adaptive capacity (especially in activities involving academies in Europe and the Americas) and/or NCDs or infectious diseases in general, or specific NCDs or infectious diseases.

Similarly to 'health', the concept of 'urban health' was often not defined but implied. Where definitions were provided, these varied in scope and focus. For example, some academies' work referred to the International Science Council definition (Urban Health and Wellbeing Programme, 2021). This framed urban health in ecological terms: "improving population and planetary health in the context of complex urban systems". This conceptualisation represented a change from the earlier anthropocentric definition: "improving health and wellbeing of people in cities". It was evident in many activities that an ecological framing of 'urban health' underpinned academies' work, giving emphasis not only to the health of people in cities, but the implications of activities in cities for the urban environment and wider ecosystem. In *Owning our urban future: Enabling healthy cities in Eastern Africa* (Desta et al., 2018) urban health is represented as an integrative field of policy and practice, bringing together a range of themes:

> *The study of urban health, an emergent academic field over the past two decades, looks to the complex interconnections between the built environment, social dynamics, and the health of individuals (Galea & Vlahov, 2005). As these aspects become increasingly interconnected in dense cities, urban health is in large respect a study of this complexity itself (Bai et al., 2021). The study of urban health thus moves beyond simply documenting the health of populations in urban areas to a study of the inter-relations between material, social, mental, and spiritual factors that determine the health of individuals.*

8.3 Adopting systems thinking approaches and the concept of Health in All Policies will enhance national academies' impact on urban health

The case for national academies to use systems thinking approaches to inform their scientific work is outlined in *Urban health and wellbeing in the anthropocene. An interdisciplinary science-action plan for urban health and wellbeing in an age of complexity and systemic risks (2021–2025)* (Urban Health and Wellbeing Programme, 2021). Systems science-based approaches help to build understanding of the interconnectedness of factors shaping the dynamics of systems. These factors include social, economic, environmental, political, technological, ecological, ethical and governance factors – determinants of urban health. One leader outlined a program developed by their academy on promoting systems thinking in urban health.

> *"When we talk about health, traditionally, we immediately think about medicine, doctors, hospitals. But in this program, we think that before people get truly ill there are many other contributors to the overall health of the people. So it's the living environment, the built environment, air quality, food safety and also social networks. All these contribute to overall health and wellbeing. Over the years, the Academy, in working with the International Science Council, of which IAP is also part, was a partner for this program. So, we are promoting systems thinking in bringing all these elements together. It is more like a transdisciplinary approach. We look at the biological processes, the chemical processes, or the biophysical processes. All these processes, if they are related to health, must be taken into consideration into the big picture, rather than just studying them in isolation. We still don't know about the interactions between them so we still do these things in isolation, but in the end we try to put them together" (L6).*

Academies' activities commonly focussed on intersecting, rather than single, topics. For example, the implications of climate change for sustainable development and noncommunicable diseases in urban environments, and governance challenges in developing evidence-based policy responses.

There are several reasons why the focus of academies' activities was often on intersecting topics.

- The complex nature of health issues facing populations living in cities means that ecological, systems science-based approaches to understanding and acting on problems are required. Such approaches demand the collective contribution of multiple disciplines and sectors, and even the construction of new forms of knowledge and techniques.
- Analysing and advocating for action on the depletion of the planet's fundamental life support systems, which is affecting every aspect of urban life, demands diverse scientific disciplines to be utilised.
- The disruptive effect of climate change and unsustainable development are creating profound, existential risks for national and city-level economies, communities, and health and wellbeing across generations.
- Collaboration is needed across and between multiple sectors to properly understand and tackle systemic problems. The Health in All Policies approach is characterised by governance arrangements that sustain collaboration through all phases of policy making, and all policy areas systematically considering health and equity outcomes as they are developed.

Adoption by academies of this concept can assist in translating research outcomes to policy recommendations.

- Commitment, resources and sustained involvement of all sectors (government, business, academia and civil society) are required for transformational change in policy, capacity and systems.

As well as a health perspective, this review found there were opportunities for academies to strengthen an ecological perspective on urban health. For example, academies could link considerations of people, other species and various determinants of urban health to activities that primarily focused on aspects of the environment (eg. technical studies looking at air, water or land).

Many academies are well advanced in applying systems thinking and the Health in All Policies framework. As noted by one interviewee in relation to their own academy, *"building blocks"* of coherent programs of work on urban health and its broad determinants are forming from a range of existing and traditional areas of work, and being connected to form a *"new house",* that is, a new platform for work on urban health and its determinants that is informed by systems thinking.

8.4 Tailoring organisational arrangements and augmenting capacity to support interdisciplinary, multi-sectoral and systems-based approaches will help national academies to strengthen their focus on health and urban health

Academies varied considerably in terms of the degree to which they have appropriate infrastructure and stable capacity enabling work in urban health. For some academies, urban health was an important dimension of existing work. For others, it was a 'next step' beyond work they were already doing (eg. on a major public good such as water). For others still, it was a new application of expertise or area of expertise to develop. Several outstanding examples of organisational arrangements were evident from academies' websites and were highlighted by some leaders. It was noted that this is a potential area for a future IAP project.

Depending on the organisational structure of academies, arrangements supporting work on urban health and its broad determinants either cut across or were added to existing arrangements, or new arrangements had been put in place. Elements included standing or steering committees that sustain a program of work over the long term or carry out defined pieces of work in the short term; ad hoc committees that respond to particular grant opportunities or event organisation; permanent organisational divisions/units; departments that manage research, projects or grants programs; panels; strategy groups; incorporated entities established within national academies, commissions set up to undertake certain tasks and examine/advise on particular issues. One leader reported that in their country, an institute had been established in 2006 within the national academy with a brief around urban health. This had been identified as a long-term strategic priority for the country.

Information about how academies structure these arrangements was not always available on the websites. The most common arrangement seemed to be internal committees of various kinds involving academy members. An example follows.

- The US National Academies of Sciences, Engineering, and Medicine's internal strategy group informs decision making critical to challenging societal issues such as COVID-19 and

ecosystem services in the built environment. It uses “scenario planning methodologies such as futures visioning and backcasting to help policy makers and communities make decisions that position them well for achieving a common vision” (NASEM, 2022, March 27).

Some academies had experience of multidisciplinary, multi-sectoral work and the systems approach needed for urban health-related work. The review identified multidisciplinary groups of various kinds which brought together people from different disciplines and sectors to draw on each other’s disciplinary or professional knowledge in relation to urban health-related problems and their determinants. Examples included the following.

- The Polish Academy of Sciences’ multidisciplinary advisory group on the climate crisis draws members from various branches of science, as well as law, medicine, geophysics, agriculture, dendrology and engineering. Its work on ‘Cities vs climate crisis’ concerned the ways in which poorly designed cities contribute to climate change, while being particularly vulnerable to its effects.
- Following the devastating summer bushfires of 2019–2020, the Australian Academy of Health and Medical Sciences brought together Fellows and other experts from across health, medicine and related fields to identify the health impacts of climate change and address the most urgent areas for action. The aim was “to increase understanding of the short, medium and long-term impacts on health, and identify gaps in this understanding – especially where they relate to the actions needed to support individual and community recovery” (2021, July 22).

Some academies had taken steps to establish ongoing or longer-term organisational capacity to tackle the intrinsic challenges in the study of urban health. For example:

- TA-SWISS (Foundation for Technology Assessment) is an independently incorporated foundation associated with Swiss Academies of Arts and Sciences. Among its functions, it monitors technological innovations to recognise early on which have the potential to fundamentally impact society, and conducts in-depth analyses of selected themes including mobility, energy, climate, and COVID-19.
- The Austrian Academy of Sciences’ Climate and Air Quality Commission deals with anthropogenic influences on the atmosphere and their effects on humans and ecosystems, as well as the possibilities of reacting to these effects. The Commission, established for the period 2019–2023, is structured to efficiently address key tasks, viz. research, knowledge transfer, public relations and strategic priority setting.

Consideration to organisational capacity and infrastructure to support and ‘mainstream’ urban health-related activities within national academies seems both important and necessary, and is an area of work that could be supported in a separate project.

8.5 Continually enhancing their websites' functionality, comprehensiveness and quality will help national academies to optimise their scientific knowledge exchange and communication roles in urban health-related areas

A major challenge in this project was the use of academies' websites as one of the two major sources of data because of weaknesses in functionality, quality and/or comprehensiveness of many sites. Websites were used in a range of ways, from clearinghouses of academy business materials to well-designed, fully developed sources of knowledge and activities with features encouraging engagement and interactivity.

As noted in Section 4, the architecture and design of many websites made browsing the menus and finding information relevant to this project a complex task. Some lacked site maps or search engines or, when they existed, some were not optimised. Some websites had linking strategies for related materials that were to some extent complex, confusing or unreliable – for example, it was often difficult to find an activity on a later occasion to check a further detail. Academies' websites varied with respect to the type, amount and comprehensiveness of information featured, and also whether information from earlier years remained on the sites – for example, some activities involving a particular national academy were identified on other academies' websites but were missing from its own site.

Investments in high-quality, easy to use and comprehensive websites and a well-designed communications strategy, befitting scientific institutions at the leading edge of innovation, would enable all academies to better serve their mission, including communication with policy makers, civil society and other sectors.

8.6 Publications, events and multi-component projects in urban health-related areas are all important activities and have complementary roles to play in scientific knowledge production and communication

The overall picture that was derived from this project is that academies that have developed urban health and its broad determinants as a priority area have been active in undertaking and publishing research, hosting or participating in national and international meetings and instigating projects on issues of significance for enhancing urban health. These activities had complementary roles and helped to maximise the impact of national academies' efforts.

National academies engaged most frequently in activities where the main focus was the production of a publication. Consistent with the missions of academies, these included those of the highest scientific quality such as expert consensus reviews, evidence-based position papers and peer-reviewed journal papers reporting empirical research. In Europe, 59 per cent of relevant publications on academy websites were scholarly publications, possibly reflecting access to higher research budgets in these academies' countries or the region. Variation in the proportion of scholarly versus other publications across the regions may be due to a number of other factors. For example, it might reflect differences in the ways academies used their websites. Some might have primarily included scholarly publications; some might have included all types of communications on their websites;

while others might have used other platforms (such as social media) to communicate non-scholarly information such as notices of events or news items.

Activities where the main focus was an event were the next most common type of activity. These spanned national and international conferences, symposia, workshops and seminars (in person and online), information/education sessions, competitions and open days. Notably, two of the five years of the data collection period were during the COVID-19 pandemic, severely impacting on the ability of academies to deliver planned events or organise new ones.

Finally, a small number of projects and grants were identified. This number may be an underestimation, as publications and events were often components of larger projects, but information about these were not necessarily presented on websites. As well, the progress and outcomes of projects were often reported separately via publications and conference presentations.

8.7 Topics addressed by national academies' activities concerned broad determinants of urban health, reflected national contexts and challenges and aligned with SDG priorities

At the start of the project, it was anticipated that activities related to the COV1D-19 pandemic would have dominated national academies' work across all regions in 2020 and 2021. However, while many academies did initiate or participate in such activities, and produced and communicated vital research, few were focused mainly on the pandemic. That being said, the pandemic revealed the nature and significance of existing problems in societal systems related to broad determinants of urban health (from health care to housing) and elevated the visibility and impact of national academies' work in national and international responses.

The natural environment and economic development ranked among the top four determinants of urban health in terms of the proportion of academies whose activities addressed these. Except for the European academies, the built environment also ranked in the top four for academies in other regions. Within regions, the pattern of academies' engagement in these areas was similarly strong.

As part of this, there were high levels of involvement in activities concerned with the health and wellbeing of humans, other species and the environment: the life support system that provides the land, air, water and food that support all forms of life on Earth. Accordingly, many academies' activities were strongly oriented to natural or human-constructed systems (such as the economy; agriculture and food production; energy; water, and transport infrastructure). Not surprisingly, most academies' activities aligned, explicitly or implicitly, with one or more of the 17 SDGs. Many academies recognised the intersection, and even interdependence, of determinants, and activities often addressed social, economic and environmental aspects of sustainable development.

While some academies' activities demonstrated strong interest in education (especially of young scientists, school students and the public), except for European academies, fewer academies were active in education as a determinant of urban health. Similarly, the proportion of academies whose activities concerned the digital determinants of urban health was relatively low across all regions.

Equity was a cross-cutting theme, relevant to each of the determinants of urban health and a focus on equity was apparent in many academies' activities. For example, although climate change affects everyone, some academies overtly sought to examine how to ameliorate its unequal burden on populations and groups that already bear the burden of social and economic inequality. For other

academies, equity considerations were less evident, which may suggest that a more explicit focus is warranted.

8.8 Partnerships of various types, across sectors and levels, are fundamental to resourcing national academies' urban health-related activities and catalysing action

Partnerships are not only desirable but essential to academies' work on urban health, given its multi-sectoral, interdisciplinary nature. The functions of academies' partnerships were interpreted from available information. These included resource mobilisation; access to essential expertise and experience as well as influence; elevating the authority of activities such as conferences and meetings; communicating evidence to policy makers and others through presentations, publications and briefings; engaging in scientific discussions about research studies, and producing research publications, expert consensus reports and statements.

This project found that it was common for academies to initiate, lead or be part of partnerships. These were often with other like-minded organisations including other academies (within the country, in other countries, and outside the region) and the Regional Networks of academies. National governments sometimes partnered with academies in their countries. It was more common for the government portfolios of climate, science and technology, environment, agriculture, water, energy and similar policy areas to be involved than the health portfolios. This was possibly because much of academies' urban health-related activities concerned broad determinants of urban health rather than health care (the main focus of many countries' health ministries).

Non-government organisations were a common partner. Those with specific urban health expertise played important roles across regions to support academies' work, including International Society for Urban Health and International Science Council. Other NGOs and not-for-profit organisations included major funding partners working on SDG-related goals, such as Bill and Melinda Gates Foundation. While WHO did not feature prominently as a partner, other UN agencies and entities (eg. UNESCO National Commissions, UN Network for Sustainable Development Solutions) provided strategic and technical expertise.

Financing arrangements for academies' activities were not analysed. While involvement of the private sector was identified as a characteristic of some academies' activities, a key area of further analysis could be the stance of academies in relation to public-private partnerships.

8.9 National academies value IAP's role in urban health and want it to continue and expand

The role of IAP in the global arena is well recognised and valued by leaders. IAP's work and partnership-oriented style positioned them as a key partner for national academies and Regional Networks in urban health. IAP was valued for its role in promoting solidarity among international researchers and academies in the field of urban health.

Ideas for continuing, expanding or initiating activities by IAP were offered by leaders, including the following.

- IAP could convene bi-lateral and multi-lateral dialogues on health in cities and healthy cities. IAP's convening power and prominence among international actors were viewed as substantial assets that would enable high-quality scientific discussions to be held on this agenda. IAP has demonstrated its effectiveness in engaging high-level office holders in governments and parliaments, which could help to give urban health even more visibility and open doors for academies to access sufficient resources and support for their organisations and programs of work.
- IAP could research and provide access to exemplary practices, including how local governments might best operate and invest to enhance urban health.
- IAP could produce more educational resources for academies to use in working with policy makers and other stakeholders. IAP could produce digital media for television, social media and other platforms. IAP's global perspective and appreciation of the role of academies in different countries could help to ensure these products are relevant, evidence based and designed to have impact.
- IAP should continue to invite academy representatives to participate in IAP Working Groups, as they provide value to academies and help to build significant capacity.

One strategic suggestion offered was that the themes prioritised by IAP could be further reflected on to ensure that the needs of the Global South were as well recognised as those of the Global North.

8.10 Strategic opportunities exist for national academies to take the lead on scientific efforts in urban health-related areas

Twelve opportunities to enhance the organisational arrangements of national academies and expand and strengthen their work on urban health are proposed, drawing on findings from both the desktop review of websites and interviews with academy leaders.

1. Establish 'health' and 'equity' as core concerns of all national academies' activities, and strengthen explicit consideration of 'health' and 'equity' in work on drivers of societal change (eg. urbanisation), broad determinants of urban health (eg. transport, housing, water infrastructure, air quality) and the urban context.
2. Position academies for a leadership role in 'urban health'. As a key element of national academies' societal role of bringing evidence to governments (city, regional, national), connect academies' existing leadership role in authoritative research to the production and communication of evidence to advance urban health. The SDGs and the 'one UN' approach to urbanisation of the *New Urban Agenda* have opened the door to national academies being an essential partner to other actors on urban health work.
3. Build national academies' capacity in strategic areas relevant to urban health. Recruit expertise in areas that might not currently be represented, for example, social science, or create links with other national academies that have this expertise (such as a national academy of social science and humanities). Build on existing academy models, or innovate new ones, to expand capacity within academies to work on priority areas of urban health. For example, consider establishing an interest group, division or unit, policy advocacy group, research program and so on. These could promote and encourage strategic initiatives and projects across the wider organisation and in collaboration with other actors. Develop futures literacy among academy members, and

utilise foresight tools or undertake foresight projects to distinguish leadership roles for national academies in this field.

4. Optimise use of digital communications to strengthen urban health-related activities. Adopt 'next practice' approaches to using digital communications for research in urban health, as well as to announce and showcase urban health-related activities and amplify engagement.
5. Build national academies' interest in health and urban health by leveraging their existing interest in sustainable development and climate change. Optimise the potential for the growing interest in these complex ecological and societal challenges among national academies to build deeper involvement in urban health and its broad determinants.
6. Create incentives for urban health innovation. Encourage work on urban health and its broad determinants via awards. A number of academies already have prestigious award programs for specific areas of science and medicine (eg. chemistry, physics, biology, engineering). These could be augmented with awards for activities that nudge academies' members to orient their efforts to urban health.
7. Convene urban health-focused groups. Host national multidisciplinary scientific societies and clusters focused on urban health to undertake research and other activities. These can also provide advisory roles to other societies and clusters in relation to how to strengthen their contribution to health and urban health research and knowledge exchange.
8. Expand national academies' membership in order to expand and grow disciplinary expertise. Urban health work requires a wide range of disciplinary expertise. One way to grow the base of expertise that can stimulate cross-disciplinary activities with an urban health goal is to expand the range of professions that are eligible to be academy members.
9. Review national academy mission statements and strategic goals to ensure they support work in urban health. Given the significance of urban health for inter-generational health, wellbeing and prosperity, and the relevance of urban health to many national academies' current mission statements (eg. to 'advance medical and social goals'), review mission statements to incorporate health, wellbeing and urban health concepts. Consider the development of priorities, goals, targets and deliverables for work related to urban health and its broader determinants, and embed in them in academies' strategic plans.
10. Instigate or expand academy-academy partnerships. Create twinning arrangements between national academies around the theme of urban health and its broad determinants. Leverage opportunities to pair academies with a strong body of work in this area with academies with less experience.
11. Multiply connections between basic science/engineering-focused academies and academies which emphasise urban health. Encourage more systematic applications of work by engineering-focused academies to ecological health in urban contexts, to transform social and economic conditions including reducing poverty.
12. Forge strategic partnerships for urban health-related activities. Partnerships are essential for mobilising and accessing diverse types of resources and power, constructing new forms of knowledge, tapping into lived experience of population groups and taking action. National academies could seek out appropriate partnerships with relevant local, national and international actors including those operating in public, private, NGO and civil society sectors. SDG 17 advocates for partnerships to be formed to advance action on the SDGs such as SDG 11.

9. CONCLUSION

National academies have vital, established roles in providing independent expert advice to their nations, governments and citizens on scientific, technological and health issues. This project was commissioned by InterAcademy Partnership to examine the recent activities of national academies of science and medicine around the world in relation to urban health and its broad determinants.

The project is timely. Urbanisation continues apace across all regions, producing a dynamic array of opportunities for and threats to the health and wellbeing of populations, communities, families and ecosystems. Significant platforms for global cooperation – the *New Urban Agenda*, the *2030 Agenda for Sustainable Development* and the *Sendai Framework for Disaster Risk Reduction* – have identified urban health as a grand challenge of our time, and developed political legitimacy around the urban health agenda, policy frameworks and targets for action. Systems thinking concepts have become pivotal to researching urban health problems and developing approaches and tools to addressing them. The Health in All Policies concept is one of these tools and is increasingly used to frame research, shift policy thinking and locate health and equity as core concerns across all sectors and systems in a society.

The overall finding of this project was that between 2017 and 2021, national academies in Africa, the Americas, Asia Pacific and Europe, as well as Regional Networks, engaged in a wide range of work on urban health and its broad determinants. Notably, the period under review included the first two years of the COVID-19 pandemic, which curtailed a range of activities.

The desktop review of websites and interviews with leaders of selected national academies indicated that there is a continuum of engagement by national academies in urban health-related activities. A number of academies have strongly defined, multi-year programs of work related to urban health and its determinants that feature systems thinking and promote a Health in All Policies approach. Others are involved in a variety of activities that could develop into a comprehensive urban health-oriented program of work. Some academies retain a traditional focus on basic science with less integration of disciplines and applied research. Regional Networks have played an important role in bringing together academies with other partners for a range of urban-health relevant scientific activities.

Publications and events were the major types of activities. The main topics related to broader determinants of urban health, often with an equity focus. The natural environment, economic development, built environment and food (including food security) were strongly represented. Digital determinants were less often a focus of activities. Stages of the lifecourse and particular population groups were seldom an explicit focus of activities, many of which were intended to benefit broader populations. Specific health issues and diseases were represented in the rationale for activities (eg. increasing rates of noncommunicable diseases globally) but were infrequently the major focus. Typically, national academies' work was focused on intersecting, rather than single, themes reflecting the relevance of a systems thinking approach.

Partnerships were a common feature of these activities. The main partners were: other national academies within the country, in other countries, and outside the region; regional networks of academies; InterAcademy Partnership; a diverse range of national ministries and departments in national governments, non-government organisations, not-for-profit organisations, and UN agencies and entities. Functions of partnerships included resource mobilisation; communicating evidence to

policy makers and others through presentations; publications and briefings; engaging in scientific discussions about research studies, and producing expert consensus reports and statements.

Substantial opportunities exist for all academies to further mature their organisations and orient their leadership, expertise, resources, focus and activities to make an impact in the field of urban health. Interviews with leaders revealed that the SDG agenda was an important facilitator for increasing academies' work on urban health-related topics, regarded as key areas for scientific leadership, research and other activities involving academies. Leaders expressed commitment to and interest in aligning their academies' scientific activities with the SDGs, and to continuing to provide independent technical expertise to national and international committees related to the SDGs.

With their missions to serve society through science, national academies of science and medicine around the globe are in the forefront of actors that have a pivotal role in urban health policy development and action. To enable all academies to reach their potential, InterAcademy Partnership has a valued and well recognised role to fufil in networking and supporting national academies and Regional Networks in tangible ways to develop their capacity and activities in urban health-related areas.

10. REFERENCES

Bai, X., Nath, I., Capon, A., Hasan, N., & Jaron, D. (2012). Health and wellbeing in the changing urban environment: complex challenges, scientific responses, and the way forward. *Current Opinion in Environmental Sustainability*, *4*(4), 465–472. https://doi.org/10.1016/j.cosust.2012.09.009

Barton, H., & Grant, M. (2006). A health map for the local human habitat. *The Journal for the Royal Society for the Promotion of Health, 126*(6), 252–253. https://doi.org/10.1177/1466424006070466

Dahlgren G., & Whitehead, M. (1991). *Policies and strategies to promote social equity in health. Background document to World Health Organization – Strategy paper for Europe*. Stockholm: Institute for Future Studies. https://core.ac.uk/download/pdf/6472456.pdf

Desta, A.F., Mwendwa, S.K.K., Sewankambo, N., Dambisya, Y., Eriki, P., Gachuno, O., Lulseged, S., Mutabingwa, T., Mwesigye, C., Nshemereirwe, C., Odubanjo, O. (2018). *Owning our urban future: Enabling healthy cities in Eastern Africa. A collaborative consensus study report by the National Science Academies of Ethiopia, Kenya, Tanzania, Uganda, the Young Academies of Ethiopia and Uganda, and the African Centre for Global Health and Social Transformation*. https://achestdatabase.achest.org/publications/research-reports-152

Fudge, C., & Fawkes, S. (2017). Science meets imagination – cities and health in the twenty-first century. *Cities & Health*, *1*(2); 101-106. https://doi.org/10.1080/23748834.2018.1462610

Galea, S., & Vlahov, D. (2005). Urban Health. In *Handbook of urban health* (1–15). Springer, Boston, Massachusetts. https://doi.org/10.1007/0-387-25822-1_1

Galea, S., Ettman, C. K., & Vlahov, D. (Eds.). (2019). Why cities and health? Cities as determinants of health. In S. Galea, C.K Ettman & D. Vlahov (Eds.) *Urban health* (15–23). Oxford University Press

InterAcademy Partnership. (2022, April 28). About IAP. https://www.interacademies.org

Institute for Health Metrics and Evaluation. (2022, June 13). *Global burden of disease study 2019 (GBD 2019) data resources.* https://ghdx.healthdata.org/gbd-2019

Kitaw, Y. (2020). Editorial. Urban health – Catching up on the future for Ethiopia. *Ethiopian Journal of Health Development, 34*(2). https://www.ejhd.org/index.php/ejhd/article/view/2652

Ramirez-Rubio, O., Daher, C., Fanjul, G., Gascon, M., Mueller, N., Pajín, L., Plasencia, A., Rojas-Rueda, D., Thondoo, M., & Nieuwenhuijsen, M.J. (2019). Urban health: an example of a "health in all policies" approach in the context of SDGs implementation. *Global Health*. Dec 18;*15(*1), 87. https://doi: 10.1186/s12992-019-0529-z

Svalastog, A. L., Donev, D., Kristoffersen, N. J., & Gajović, S. (2017). Concepts and definitions of health and health-related values in the knowledge landscapes of the digital society. *Croatian Medical Journal*, 58(6), 431–435. https://doi.org/10.3325/cmj.2017.58.431

Tsouros, A. D. (2019) The healthy cities movement. In S. Galea, C.K. Ettman & D. Vlahov (Eds.), *Urban Health* (pp. 285–292). Oxford University Press.

United Nations. (2015). *Paris Agreement*. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations. (2016). *UN Habitat III New Urban Agenda*. https://habitat3.org/the-new-urban-agenda

United Nations Department of Economic and Social Affairs. *Sustainable Development*. (2022, April 28). Do you know all 17 SDGs? https://sdgs.un.org/goals

United Nations General Assembly. (2015). *Transforming our world: The 2030 Agenda for sustainable development, 21 October 2015*. Seventieth session. Agenda items 15 & 116. https://www.refworld.org/docid/57b6e3e44.html

United Nations Office for Disaster Risk Reduction. (UNODRR). (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030.* https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

Urban Health and Wellbeing Programme. (2021). *Urban health and wellbeing in the Anthropocene. An interdisciplinary science-action plan for urban health and wellbeing in an age of complexity and systemic risks (2021–2025).* Xiamen, China: UHWP. https://council.science/wp-content/uploads/2020/06/UHWB-Sciecne-and-Action-Plan-2021.pdf

World Health Assembly. (2022). *Strengthening health emergency preparedness and response in cities and urban settings.* Resolution 75.7, Agenda item 16.2, A75/A/CONF./2 (24 May 2022). Geneva, Switzerland: WHA. https://apps.who.int/gb/e/e_wha75.html#resolutions

World Health Organization. (1986). *The Ottawa charter for health promotion*. Geneva, Switzerland: WHO. https://www.who.int/publications/i/item/ottawa-charter-for-health-promotion

World Bank. (2022, March 27). *The world by income and region*. World Bank. https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

World Health Organization. (2006). *Constitution of the World Health Organization*. WHO. https://www.who.int/about/governance/constitution

Zhang, N. (ed.). (2021, July 29). Scientists produce high-resolution urban floor area map of China. Chinese Academy of Sciences. https://english.cas.cn/newsroom/research_news/earth/202107/t20210729_276398.shtml

APPENDICES

Appendix 1. National academies deemed out of scope for review

The websites of 11 of the 141 InterAcademy Partnership (IAP) member national academies were not accessible and deemed out of scope for review, while the remaining 130 were in scope. Academy weblinks were tried three times over the data collection period for each region (beginning in early 2021). This was to allow for temporary inaccessibility due to issues such as scheduled web maintenance, unplanned outages, firewall blocks or problems in translating websites. Websites that could not be accessed after these attempts on different occasions were deemed to be out of scope for this project. The reasons in each case are detailed in this Appendix.

No.	Region, country & national academy	No website located
	Africa	
1	*Algeria* Algerian Academy of Science and Technology	– Technically inaccessible from IAP website at time of data collection
2	*Benin* Benin National Academy of Sciences and Arts	– Url on IAP site linked to expired site, Academy not listed on IANAS site, Not found via Google search
3	*Burkina Faso* National Academy of Sciences of Burkina Faso	– No url on IAP site or NASAC site, Not found via Google search
4	*Kenya* Kenya National Academy of Sciences	– Url on IAP site linked to another organisation, No url on NASAC site, Not found via Google search
5	*Madagascar* National Academy of Arts, Letters and Sciences	– Url on IAP site linked to site placeholder, No url on NASAC site, Not found via Google search
6	*Mauritius* Mauritius Academy of Science and Technology	– No url on IAP site, Url on NASAC site inactive, Not found via Google search
7	*Mozambique* Academy of Science of Mozambique	– No url on IAP site or NASAC site, Not found via Google search
8	*Zambia* Zambia Academy of Sciences	– No url on IAP site or NASAC site, Not found via Google search
9	*Zimbabwe* Zimbabwe Academy of Sciences	– Url on IAP site and url on NASAC site inactive, Not found via Google search
	Americas	
10	*Mexico* National Academy of Medicine of Mexico	– No url on IAP site, Academy not listed on IANAS site, Not found via Google search
	Asia Pacific	
11	Armenia Academy of Medical Sciences of Armenia	– No url on IAP site, Url on AASSA site unresponsive, Not found via Google search

Acronyms

AASSA Association of Academies and Societies of Sciences in Asia
EASAC European Academies' Science Advisory Council
IANAS Inter-American Network of Academies of Sciences
NASAC Network of African Science Academies

Appendix 2. Types of urban health-related activities by national academy, Africa, 2017–2021

National Academy		Country	Types of activities				
			Publications	Events	Projects & grants	Committees	Total
1	Academy of Science of South Africa	South Africa	5	3	0	0	8
2	Uganda National Academy of Sciences	Uganda	3	0	1	0	4
3	Ethiopian Academy of Sciences	Ethiopia	1	1	0	0	2
4	Nigerian Academy of Science	Nigeria	2	0	0	0	2
5	Tanzania Academy of Sciences	Tanzania	1	1	0	0	2
6	Cameroon Academy of Sciences	Cameroon	0	1	0	0	1
7	Academy of Scientific Research and Technology	Egypt	0	0	0	1	1
8	Ghana Academy of Arts and Sciences	Ghana	0	1	0	0	1
9	Sudanese National Academy of Science	Sudan	1	0	0	0	1
10	Ivorian Academy of Sciences, Arts, Cultures of Africa and African Diasporas	Côte d'Ivoire	0	0	0	0	0
11	Hassan II Academy of Science & Technology	Morocco	0	0	0	0	0
12	Academy of Medicine Specialties of Nigeria	Nigeria	0	0	0	0	0
13	Rwanda Academy of Sciences	Rwanda	0	0	0	0	0
14	Tunisian Academy of Sciences, Letters & Arts Beit al Hikma	Tunisia	0	0	0	0	0
Total			13	7	1	1	22

Appendix 3. Types of urban health-related activities by national academy, Americas, 2017–2021

National Academy		Country	Types of activities				
			Publications	Events	Projects & grants	Committees	Total
1	National Academies of Sciences, Engineering, and Medicine	United States	8	29	2	2	41
2	Academia Mexicana de Ciencias	Mexico	14	0	0	0	14
3	National Academy of Sciences	United States	0	11	0	0	11
4	Royal Society of Canada	Canada	6	2	0	0	8
5	The National Academy of Medicine	United States	1	4	1	1	7
6	Academia de Ciencias Físicas, Matemáticas y Naturales de Venezuela	Venezuela	4	0	1	1	6
7	Academia Nacional de Ciencias	Argentina	0	2	1	0	3
8	National Academy of Sciences of Honduras	Honduras	0	3	0	0	3
9	National Academy of Exact, Physical and Natural Sciences	Argentina	0	1	1	0	2
10	Academia Nacional de Medicina, Brazil	Brazil	0	2	0	0	2
11	Brazilian Academy of Sciences	Brazil	0	1	1	0	2
12	Canadian Academy of Health Sciences	Canada	0	1	0	0	1
13	Academia Chilena de Ciencias	Chile	0	1	0	0	1
14	Academia Chilena de Medicina	Chile	0	1	0	0	1
15	Academia Nacional de Medicina de Colombia	Colombia	1	0	0	0	1
16	Colombian Academy of Exact, Physical and Natural Sciences	Colombia	0	1	0	0	1
17	Academia Nacional de Ciencias Perú	Peru	0	1	0	0	1
18	Academia Nacional de Medicina del Perú	Peru	0	1	0	0	1
19	Academia Nacional de Medicina de Buenos Aires	Argentina	0	0	0	0	0
20	Academia Boliviana de Medicina	Bolivia	0	0	0	0	0
21	Academia Nacional de Ciencias de Bolivia	Bolivia	0	0	0	0	0
22	Academy of Sciences of Cuba	Cuba	0	0	0	0	0
23	Academia de Ciencias de la República Dominicana	Dominican Republic	0	0	0	0	0
24	Academy of Sciences of Ecuador	Ecuador	0	0	0	0	0
25	Academia de Ciencias Medicas, Físicas y Naturales de Guatemala	Guatemala	0	0	0	0	0

			Types of activities				
National Academy		Country	Publications	Events	Projects & grants	Committees	Total
26	Nicaraguan Academy of Sciences	Nicaragua	0	0	0	0	0
27	Academia Nacional de Ciencias del Uruguay	Uruguay	0	0	0	0	0
28	National Academy of Medicine of Uruguay	Uruguay	0	0	0	0	0
29	Academia Nacional de Medicina de Venezuela	Venezuela	0	0	0	0	0
Total			34	61	7	4	106

Appendix 4. Types of urban health-related activities by national academy, Asia Pacific, 2017–2021

			Types of activities				
National Academy[1.]		Country	Publications	Events	Projects & grants	Committees	Total
1	Chinese Academy of Sciences	China	40	4	1	0	45
2	Royal Society Te Apārangi	New Zealand	10	5	1	0	16
3	Chinese Academy of Engineering	China	5	5	2	0	12
4	Australian Academy of Science	Australia	7	3	1	0	11
5	Academy of Sciences Malaysia	Malaysia	10	0	0	0	10
6	Australian Academy of Health and Medical Sciences	Australia	7	0	0	1	8
7	Science Council of Japan	Japan	6	1	0	0	7
8	Indonesian Academy of Sciences	Indonesia	2	4	0	0	6
9	Academy of Sciences of the Islamic Republic of Iran	Iran	2	3	0	0	5
10	National Academy of Science and Technology, Philippines	Philippines	3	2	0	0	5
11	Thai Academy of Science and Technology Foundation	Thailand	4	0	0	0	4
12	Singapore National Academy of Science	Singapore	3	0	0	0	3
13	Academy of Sciences of Afghanistan	Afghanistan	2	0	0	0	2
14	Bangladesh Academy of Sciences	Bangladesh	2	0	0	0	2
15	Indian National Science Academy	India	2	0	0	0	2
16	The Iranian Academy of Medical Sciences	Iran	2	0	0	0	2
17	Royal Scientific Society of Jordan	Jordan	2	0	0	0	2
18	Israel Academy of Sciences and Humanities	Israel	0	0	1	0	1
19	Israeli National Academy of Science in Medicine	Israel	1	0	0	0	1
20	National Academy of Sciences of the Republic of Kazakhstan	Kazakhstan	1	0	0	0	1
21	Nepal Academy of Science and Technology	Nepal	1	0	0	0	1
22	Pakistan Academy of Sciences	Pakistan	1	0	0	0	1
23	Palestine Academy for Science and Technology	Palestine	1	0	0	0	1
24	National Academy of Sciences of Sri Lanka	Sri Lanka	0	1	0	0	1
25	National Academy of Sciences of Armenia	Armenia	0	0	0	0	0

			Types of activities				
National Academy[1.]		Country	Publications	Events	Projects & grants	Committees	Total
26	Georgian Academy of Medical Sciences	Georgia	0	0	0	0	0
27	Georgian National Academy of Sciences	Georgia	0	0	0	0	0
28	National Academy of Medical Sciences, India	India	0	0	0	0	0
29	The Korean Academy of Science and Technology	Republic of Korea	0	0	0	0	0
30	The National Academy of Sciences, Republic of Korea	Republic of Korea	0	0	0	0	0
31	National Academy of Sciences of the Kyrgyz Republic	Kyrgyzstan	0	0	0	0	0
32	Lebanese Academy of Sciences	Lebanon	0	0	0	0	0
33	Mongolian Academy of Sciences	Mongolia	0	0	0	0	0
34	Russian Academy of Sciences	Russia	0	0	0	0	0
35	Academia Sinica	Taiwan, China	0	0	0	0	0
36	Academy of Sciences of the Republic of Tajikistan	Tajikistan	0	0	0	0	0
37	Uzbekistan Academy of Sciences	Uzbekistan	0	0	0	0	0
Total			114	28	6	1	149

Appendix 5. Types of urban health–related activities by national academy, Europe, 2017–2021

			Types of activities				
	National Academy	Country	Publications	Events	Projects & grants	Committees	Total
1	Swiss Academies of Arts and Sciences	Switzerland	19	7	3	5	34
2	German National Academy of Sciences Leopoldina	Germany	13	1	1	0	15
3	Royal Irish Academy	Ireland	8	3	0	2	13
4	European Academy of Sciences & Arts (EASA)	Austria	0	8	3	0	11
5	Austrian Academy of Sciences	Austria	0	7	1	1	9
6	Pontificia Academia Scientiarvm	Holy See (Vatican City State)	4	5	0	0	9
7	Norwegian Academy of Science and Letters	Norway	1	6	0	1	8
8	Académie des Sciences, Institut de France	France	2	3	0	2	7
9	Slovenian Academy of Sciences and Arts	Slovenia	2	2	0	2	6
10	The Royal Society, UK	United Kingdom	4	1	0	0	5
11	Academy of Athens	Greece	1	4	0	0	5
12	Accademia Nazionale dei Lincei	Italy	0	4	0	0	4
13	Polish Academy of Sciences	Poland	2	1	0	1	4
14	TÜBA – Turkish Academy of Sciences	Turkey	1	0	0	3	4
15	Académie Nationale de Médecine, France	France	2	1	0	1	4
16	Académie des Technologies, France	France	0	0	0	3	3
17	Latvian Academy of Sciences	Latvia	2	0	1	0	3
18	Academy of Sciences of Moldova	Republic of Moldova	0	1	2	0	3
19	Serbian Academy of Sciences & Arts	Serbia	0	0	0	3	3
20	The Royal Academies for Science and the Arts of Belgium	Belgium	2	0	0	1	3
21	Albanian Academy of Sciences	Albania	0	2	0	0	2
22	Bulgarian Academy of Sciences	Bulgaria	1	0	0	1	2
23	Croatian Academy of Sciences and Arts	Croatia	0	2	0	0	2
24	Macedonian Academy of Sciences and Arts	Republic of North Macedonia	0	1	0	1	2
25	Academy of Sciences of Lisbon, Portugal	Portugal	0	2	0	0	2

			Types of activities				
	National Academy	Country	Publications	Events	Projects & grants	Committees	Total
26	Romanian Academy	Romania	0	2	0	0	2
27	Slovak Academy of Sciences	Slovakia	0	1	1	0	2
28	Royal Academy of Exact, Physical and Natural Sciences of Spain	Spain	0	2	0	0	2
29	Royal Swedish Academy of Sciences	Sweden	0	2	0	0	2
30	Academy of Medical Sciences, UK	United Kingdom	2	0	0	0	2
31	Czech Academy of Sciences	Czech Republic	0	0	1	0	1
32	Estonian Academy of Sciences	Estonia	1	0	0	0	1
33	Lithuanian Academy of Sciences	Lithuania	0	0	0	1	1
34	Montenegrin Academy of Sciences and Arts	Montenegro	0	1	0	0	1
35	National Academy of Sciences of Ukraine	Ukraine	1	0	0	0	1
36	National Academy of Sciences of Belarus	Belarus	0	0	0	0	0
37	Académie Royale de Médecine de Belgique	Belgium	0	0	0	0	0
38	Koninklije Academie voor Geneeskunde van Belgie	Belgium	0	0	0	0	0
39	Academy of Sciences and Arts of Bosnia and Herzegovina	Bosnia and Herzegovina	0	0	0	0	0
40	The Bulgarian Academy of Sciences and Arts	Bulgaria	0	0	0	0	0
41	Croatian Academy of Medical Sciences	Croatia	0	0	0	0	0
42	Royal Danish Academy of Sciences and Letters	Denmark	0	0	0	0	0
43	Council of Finnish Academies	Finland	0	0	0	0	0
44	Union of German Academies of Sciences and Humanities	Germany	0	0	0	0	0
45	Hungarian Academy of Sciences	Hungary	0	0	0	0	0
46	Accademia Nazionale di Medicina (AccMed), Italy	Italy	0	0	0	0	0
47	Kosova Academy of Sciences and Arts	Kosovo	0	0	0	0	0
48	Royal Netherlands Academy of Arts and Sciences	Netherlands	0	0	0	0	0
49	Academy of Medical Sciences of Romania	Romania	0	0	0	0	0
Total			68	69	13	28	178

Appendix 6. Participant information sheet and interview schedule

InterAcademy Partnership Urban Health Working Group Project

PARTICIPANT INFORMATION

Dear Colleague,

You are invited to take part in this research project:

Review of current work on urban health and its broad determinants by national academies of science and medicine

You have been invited because you are in a key leadership role in either a national academy of science and medicine that a desktop review has identified has been involved in work related to urban health and its broad determinants. Your contact details were obtained from InterAcademy Partnership (IAP).

The **Project Information Sheet** (Attachment 1) tells you about the project's background, aim, conceptual framework and methods.

The **Interview Schedule** (Attachment 2) explains the interview process and identifies the topics we wish to explore with you.

Participation in this interview is voluntary. If you do not wish to take part, you do not have to. If you decide you want to take part in the research project, you will be asked at the start of the interview to confirm your consent to taking part. By stating you agree to take part, you are telling us that you:

- Understand what you have read
- Consent to take part in the project
- Consent to the use of your information as described.

If you have any questions at all about the project or the interview, please contact:

Dr Sally Fawkes, BSc, GradDipHealthEd, MBA, PhD, AFCHSE

Independent Researcher and Consultant

Email: FAWKESSALLY@GMAIL.COM

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ATTACHMENT 1: PROJECT INFORMATION SHEET

Background to the project

The world is rapidly urbanising, and as Kitaw (2020) notes:

"Globally, for the first time in history, more people (54% in 2011) live in urban areas (8) compared to only about 20% … a century ago. The global urban population ratio is predicted to reach over two-thirds by 2050 (8), with cities destined to define the future of global health."

The global and national focus on cities has been magnified by the COVID-19 pandemic. It has not only impacted on urban public health and health and social care systems, but many broad determinants of health (Barton & Grant, 2006)[3] such as urban governance and planning, socioeconomic development, place-based amenities and use of space, public transport, and food and housing security. Morbidity and mortality from COVID-19 has disproportionately affected vulnerable communities in cities who are already experiencing health inequalities, especially those with high levels of pre-existing noncommunicable diseases.

InterAcademy Partnership (IAP) has been working on urbanisation and urban health since around 2018, establishing an Urban Health Working Group (UHWG), whose members were nominated by national academies, in 2019. As cities and countries are moving through the pandemic seeking lessons learned that can be applied to "building back better" across sectors within cities and nations, IAP's UHWG initiated a project to conduct a systematic review of current work by national academies of science and medicine on urban health and its broad determinants. IAP seeks to assess how to advance a health- and health equity-in-all-policies approach to urban health governance and deeper involvement by academies in national-level work to achieve targets under SDG 11 Sustainable Cities & Communities which has the goal: *Make cities and human settlements inclusive, safe, resilient and sustainable.*

Project aim

This project aims to review current activities by national academies of science and medicine in the area of urban health, including activities concerned with the broad determinants of urban health. Activities include research studies, events, conferences and meetings, publications and advocacy.

Conceptual frameworks

Three health conceptual frameworks inform this project:

(1) *The Dahlgren and Whitehead 'main determinants of health' framework* (1991). This organises determinants of health into four categories, from distal to proximal: general socioeconomic, cultural and environmental conditions; social and community networks; individual lifestyle factors; and age, sex and constitutional factors (see Figure 1).

(2) *The Barton and Grant Settlement Health Map* (Barton & Grant, 2006). This builds on the Dahlgren and Whitehead framework. It introduces the additional category of global ecosystem (climate stability, biodiversity), differentiates natural and built environments, and applies a community/population focus ('people') rather than individual focus.

[3] Barton & Grant's model (2006) is developed from the model by Dahlgren & Whitehead (1991).

(3) The *International Society for Urban Health* (ISUH) broad determinants of urban health framework. This depicts a constellation of sectors that interact to shape urban health outcomes. (Figure 2).

Also informing this project is the proposition that approaches based on systems science are core to urban health research and action. As the International Science Council notes (Urban Health and Wellbeing Programme, 2021), such approaches are relevant because cities may be conceptualized as complex adaptive systems, with factors shaping urban health outcomes being highly interconnected and dynamic. For example, projects on food insecurity bring focus to factors including climate change, socioeconomic development, urban planning and land use, and physical, mental and social health implications of food insecurity (eg. increased risk of NCDs such as obesity).

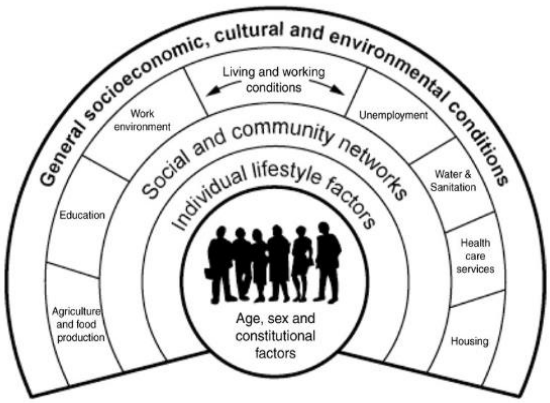
Project methods

In this project qualitative methods are used to gather and analyse relevant data.

1. A **desktop review** of websites of national academies in the four IAP regions (Africa, Americas, Asia-Pacific and Europe). This review identifies and classifies academies' activities in urban health and its broad determinants between 2017–2021, and identifies key partners. Key search terms were used to locate activities. These were derived from the urban health conceptual frameworks, and were identified at the start of the project with the assistance of UHWG members. Websites in English or those able to be translated were in scope.
2. **Interviews** with leaders of national academies that the desktop review indicates have been most active in the field of urban health and its broad determinants. Building on findings from the desktop review, interviews will further explore: information gathered about each academy's activities related to urban health and its broad determinants; the reasons for and nature of their interest; their experiences collaborating with city and national governments and UN or other relevant regional and global organisations on urban health-related topics; the major facilitators of and obstacles to engaging in urban health work; and insights that could help IAP to support future efforts in this field.

The data will be analysed to identify themes, trends and patterns in the work of national academies of science and medicine on urban health and its broad determinants between 2017–2021, and to assess opportunities for future activities and partnerships.

Figure 1. Main determinants of health framework



Source: Dahlgren and Whitehead, 1991, p. 11

Figure 2. Broad determinants of urban health



Source: Adapted from International Society of Urban Health, 2021

InterAcademy Partnership Urban Health Working Group Project

ATTACHMENT 2: INTERVIEW SCHEDULE

Respondent ID: _____

Date: _____

Time: _____

Thank you for taking part in this interview.

My name is Dr Sally Fawkes. I am an independent consultant engaged by InterAcademy Partnership to undertake a project on activities of national academies of science and medicine around the world that relate to urban health and its broad determinants. Our desktop review has indicated that your academy has been active in this field over the last 5 years.

During this interview, I would like to further explore the work of your academy by asking you to share information about your academy's activities (such as research, events, conferences or meetings, reports, advocacy) in the field of urban health and its broad determinants, and insights about your academy's aspirations in this area of work that could help IAP to support work in this field. We would also like to ask for the names of individuals who are national academy members that are particularly active or involved in urban health.

I appreciate your time in sharing your experiences with me.

Taking part of this interview is optional. You may skip answering questions if you need to. The interview will take around 30–45 minutes. In order to make sure I don't miss any details, and to assist me in writing up our report for this project, I will be recording the interview. The recording and notes will be kept completely confidential, and your name will not be linked to what we discuss today in any publications. The recording will not be shared with anyone outside of the research team.

Do you agree to proceed with the interview?

*Do you have any questions for me at this stage? (**pause**)*

Personal information

To start our interview, I am interested in finding out about your own association with work related to urban health and its broad determinants.

1. Briefly, has your own professional work been concerned with urban health or its broad determinants, or is this a current focus of your work? What topics or themes are you interested in and what types of activities have you been involved in?

National academy information

Let's move on to discuss your national academy.

1. Can you tell me a bit about your academy and the role it currently plays in [country] and your views of its impact?

2. What topics or themes are recent and current priorities of your academy?

3. Is your academy involved with national government bodies addressing national responses to the UN SDGs? For example, has your academy been asked to join with any lead agencies or national commissions on SDGs?

Activities in urban health and its broad determinants

Now I would like to learn about recent work of your national academy in relation to urban health and its broad determinants.

1. Our desktop review found that your academy has been involved in some work on urban health and its broad determinants. Can you **describe how**, over the last 5 years, urban health has been a focus of work your academy has led, or collaborated on?

2. What have been the **main topics or themes** of this work? Have you focused on, for example:

    a. social determinants

    b. economic determinants

    c. built environment

    d. urban planning

    e. natural environment

    f. technological determinants including data systems

    g. the health of population groups in urban contexts, including at different stages of the lifecourse

    h. health risks, conditions or health outcomes in urban contexts

    i. health care in urban contexts

    j. governance for health in urban contexts

3. Can you tell us more about the **types of activities** your academy led or collaborated on and your rationale for engaging in these types of activities?

    (Activities may have included conferences, meetings, research, peer reviewed studies, projects, professional development programs, advocacy activities, policies or publications.)

4. How **important or influential** would you say these recent activities of your academy have been?

5. In relation to work on urban health and its broad determinants, which organisations has your academy **partnered** with?

    - Within [country], for instance, universities, NGOs or government agencies?
    - Or outside of [country], for example, international bodies such as other national academies or networks of academies, the UN, WHO or other relevant regional and global organisations?

6. Could you please share the names of individuals who are national academy members that are particularly active or involved in urban health?

Reflections on recent activities in urban health and its broad determinants

I am interested in your reflections on your national academy's activities in relation to urban health and its determinants.

1. What do you think have been the major **facilitators of and obstacles to** your academy engaging in work on urban health and its broad determinants?

2. Have the SDGs played a role in your academy's activities in relation to urban health and its broad determinants? If so, how?

3. Can you comment on **funding** of work by your academy on urban health and its broad determinants? (Prompts – sources, availability, amounts, focus, limitations)

Let's turn to some questions about trends in urban health analyses, discourse and activities.

**Note: For the next question, the interviewee will be shown a list of common topics in urban health work that was distilled from the IAP UH search terms list.*

	Broad determinant of urban health	**Examples**
Common Topics and Themes in Urban Health work	Social determinants	Education Working life conditions Social inclusion
	Economic determinants	Job security Affordable housing Poverty
	Built environment	Public transport Energy infrastructure Lighting
	Natural environment	Air pollution Green space Biodiversity
	Technological determinants including data systems	Access to digital technologies Digital literacy
	Health of population groups in urban contexts at different stages of the lifecourse	Children Women Migrants
	Health risks, conditions or health outcomes in urban contexts	Tobacco use Mental wellbeing Noncommunicable diseases
	Health care in urban contexts	Primary health care Access to chronic disease care Disease prevention in health care
	Governance for health in urban contexts	Health in all policies Sustainable development Citizen participation

2. With regard to your national academy, what **trends and gaps** in urban health analyses, discourse and action have you noticed emerging over the last five years? (Draw attention to the shaded column)

    a. Which urban health topics and themes on this list are discussed more often or less often by your Academy?

    b. Are there topics and themes you think are missing in your Academy's work on urban health and its broad determinants?

Closing questions

To complete this interview, I have some final questions.

1. Do you think that your national academy is likely to increase its **activities** in relation to urban health and its broad determinants in the next 5 years? Can you comment on why or why not?

2. Where do you think the biggest **opportunities** are for advancing urban health by your national academy?

3. What could **InterAcademy Partnership** do to support your academy in these efforts?

4. Do you have anything else to add about the current and future work of your national academy in the area of urban health and its broad determinants?

Closing comments by Interviewer

Thank you very much for your time.

I greatly appreciate you sharing your insights into the work of your national academy in urban health.

We will be back in touch with you to share the final results of this project. Thank you.

Interviewer: Stop recording of the interview.

----STOP----



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