Health and the Sustainable Development Goals: an Urban Systems Perspective

Science Committee of the International Council for Science Global Programme on Health and Wellbeing in the Changing Urban Environment

Preamble: Processes of rapid regional and global change are transforming living spaces, lifestyles and demography, and, increasingly, the environment of the Earth itself, with important consequences for human health and wellbeing. Among the forces affecting health, urbanization is of primary importance—most people already live in cities, and the fraction of urban dwellers is rapidly increasing, entailing, *inter alia*, a geographical shift in the global and national incidence of poverty, mass migrations, crowded habitations, and significant stresses on resources and ecosystems.

If global goals for sustainable development (SDGs) are to effectively foster health and wellbeing, they must take explicit consideration of the centrality of urban areas to human lives and livelihoods. This includes recognizing the imperative for integrative systems approaches to evidence-based policy and scientific research, as well as consideration of how the goal-setting process itself channels public health knowledge and action in ways that may be intended and unintended, more or less effective.

Building on an urban systems perspective, we highlight seven substantive themes relevant to the dynamics of human population health that have particular applicability in the post-Millennium Development Goals (MDG) era. We discuss these as a contribution to the on-going process of producing a legitimate and operational set of SDGs. The first three themes encompass the flows or exchanges that set the framework for urban health (i.e., of energy, people, and resources), delimiting and defining urban systems. The last four themes are a set of cross-cutting issues (measurement, demography, data, and governance) that either affect health directly or affect the ability of policy-makers to translate evidence into public health action.

   I.   As cities concentrate increasingly large numbers of people, they act to focus, direct and drive energy flows that, even per capita, are greater than ever before. A significant proportion of non-communicable diseases (e.g., cardiovascular disease, diabetes, cancers) are associated with the global obesity epidemic, which reflects

imbalanced human energy budgets at the individual level. An energy systems perspective enables understanding of the obesity epidemic in the context of energy flows across a range of sectors (e.g., agriculture, food, transport). Moreover, energy flows are the primary determinant of climate change, which has far-reaching consequences for health and wellbeing.

We strongly support the inclusion of separate goals for health and resilient cities among the SDGs, such as Goals 5 and 7 proposed in the Report by the Sustainable Development Solutions Network (SDSN), emphasizing that these goals should consider the relationships among urban and broader energy policies, climate change and health. We further recommend specific targets that address active modes of low-carbon transport (e.g., walking, cycling and mass transit).

II.   The distribution of people, determined by existing population stocks, demographic processes and evolving flows, will continue to drive health outcomes around the globe. Rural-urban population flows, both intra- and international, are a critical component of urban growth—and therefore of attendant shifts in the burden of disease. Simultaneously, increases in mobility, migration and connectivity, as well as rising densities in underserviced and polluted urban neighbourhoods, potentiate the spread of communicable diseases, disease vectors and antibiotic resistance genes at rates that pose critical threats to public health. Although inherently difficult to address, sustainable development will need to find ways to improve both data collection and public health action for mobile, informal and illegal populations, a large fraction of which are economically disadvantaged. There is also an urgent need for better understanding of how society should allocate resources to mitigate the risk of pandemics and other health threats, given the increasing connectivity of cities.

Population flows impinge on and are intertwined with virtually every facet of sustainable development, including health. We strongly recommend that a separate health SDG, at a minimum, explicitly address the challenges of health in mobile populations and the implications for global health of increased connectivity/mobility and urban concentration.

III.   To survive and thrive, human populations require resources (e.g., food, water, materials, consumer goods), which can have direct or indirect, positive or negative consequences for health. Often, the conversion of resources into usable forms for urban consumption leads to by-products with deleterious effects. Cities are primary locations of demand for—and consumption of—resources and, as such, the urban future channels flows of materials and pollutants across the entire planet. Central to shaping resource flows are decisions about how people will live, including both individual choices about consumption and collective resolutions about the form and organisation of the built environment that determine the suitability of cities as human habitats. Such decisions are critical to both sustainability and health, affecting endpoints as varied as food and water security, accidents and injuries, and the effects of exposure to tobacco, alcohol or environmental hazards. Decision-making in the context of urban resource flows should adopt an ecological systems approach, acknowledging, for example, that by-products of one process can be inputs in other processes—seeing 'waste' as a system resource. A good illustration is the nutrient value of human waste, which is typically lost to the food system because of public health concerns.

We strongly support including a separate goal for sustainable cities among the SDGs, such as Goal 7 proposed by the SDSN, with clear targets geared toward basic urban services and environmental safety, including safe air and water quality. We also recommend that SDG goals on resilient cities, sustainable agriculture and food security take a systems approach to urban metabolism, including a specific target for the recovery of nutrients in human waste in agricultural production.

IV.   Whereas flows of energy, population and resources largely delimit the framework within which health arises, the burden of disease is mitigated through improved health care and non-biomedical interventions that are both preventative and curative. Efforts to improve health depend critically on normative and definitional decisions that determine how the health care and public health systems—and urban and economic planners and other decision-makers—perceive health issues. How we measure health, inequality and poverty will define (and potentially distort) sustainable development priorities at the national and sub-national scale. Goal-setting must carefully consider how health outcomes interface not just with medical care, but with improved income and social protection, settlement design and human consumption. Giving due weight to non-medical interventions—such as poverty alleviation, universal pensions, clean water, street lighting or alcohol regulation—that demonstrably improve health will have relevance for infectious and non-communicable diseases as well as for such issues as mental health, disability, and wellbeing.

We recommend that in order to capture sub-national differences, which may be particularly significant in the case of large countries like China, India, Indonesia, Nigeria and Brazil, reporting on the SDGs be prepared using geo-referenced data. Spatialised data would also allow for interrogation of the relationship between different variables and interventions and improve understanding of the system dynamics on which sustainable development rests. The ability to link health data to that of other sectors will harness new analytical capacities in the battle to achieve the SDGs.

V.   Demographic change is reshaping cultures and societies, with profound consequences for health and wellbeing. Sometimes such change recapitulates the experiences of developed countries a century ago, other times it engenders situations that are entirely unprecedented. It is crucial that goals for sustainable development recognize the diversity of demographic challenges faced by different groups and regions. In various contexts, this may include aging populations, so-called "youth bulges," pronounced gender disparities, or unmet needs for voluntary family planning.

We support the range of health contexts considered in Goal 5 of the SDSN Report, and recommend that health-related goals explicitly include targets relevant to countries in varied demographic circumstances—including those with aging populations and those with youth bulges resulting from reductions in infant mortality in high-fertility contexts.

VI.   Data is among the most important cross-cutting issues affecting health policy and research. The availability—or lack thereof—of accurate, complete, usable data at appropriate scales influences the evidence base that decision-makers use to create policy and take public health action, in particular by shaping what research can or will be done by scientists and the biomedical community. Critical needs include: the development of global protocols for data standardization, interoperability,

completeness and transparency that will allow for linkage of diverse data sets; the collection of data at disaggregated geographic (i.e., sub-national and, indeed, sub-urban) scales over lengthy and uninterrupted intervals; and the adoption of protocols that will promote the timely dissemination of existing or new data to easily accessible national and local repositories. Such efforts would ideally enable city-to-city comparisons, while constituting an efficient mechanism for urban health monitoring and evaluation. It is critical that the SDGs be prescriptive about such needs.

We recommend that issues related to data collection and standardization be incorporated more directly into the SDGs; a potential place for this is within a separate SDG on governance for sustainable development. Further, we recommend that the SDG process require routine collection of sub-national data to inform understanding of the systems on which human health and wellbeing are determined.

VII. Good governance has been, and will continue to be, a decisive factor in population health—conversely, poor governance can render both knowledge and good intentions powerless. Cities require innovative modes of governance to reduce health inequities and ensure coordination, both vertical and horizontal, among a multiplicity of sectors and partnerships. Multi-level/multi-sectoral coordination is a critical response to the complexity of health determinants in urban areas, and local capacity is crucial to ensuring effective coordination. Furthermore, consistency between global and national policies and local implementation of actions to improve health and wellbeing is imperative for the successful achievement of health-related SDGs. At the local level, urban health improvement activities should rely not only on partners from the health sector, but also on other decision-makers who can influence land use policies, building regulations, basic services and infrastructure, hygiene and waste management, integrated public health surveillance, transportation networks, etc. The success of interventions and policy for urban health and population wellbeing is highly dependent on city resilience, guided by hallmarks of good governance like effective tax and redistribution capacities, transparency, effective communication, broad participation and capacity building. Beyond governance *per se*, the role of politics in health is indisputable. Political commitment, policy formulation and high-level interventions are all mechanisms that will supplement, and at times transcend, simple health policies in shaping the future of urban health. Sustainable development should consider how political processes can be oriented toward producing good governance for health, in ways that flexibly recognize the right to self-determination, conceding that diverse groups are likely to come up with a diversity of solutions.

We strongly support including a separate governance goal among the SDGs, and recommend that urban governance be emphasized more strongly both in this goal and in separate goals for health and sustainable cities.

Key messages:

- Urban ecology and urban growth—which involve massive flows of energy, people and resources—will strongly influence health and wellbeing over the SDG period.
- Health and wellbeing are the product of multiple interacting determinants, which are most effectively captured and addressed through a systems approach.
- The contextual background for health varies widely; the SDGs must account for this by collecting data at sub-national scales and making use of locally relevant metrics.

- Science provides the evidence base for sustainable development but depends on the quality of data and effectiveness of governance in translating knowledge to actions.
- While we fully support four interconnected objectives for sustainable development (economic development, social inclusion, environmental protection, and good governance), it should be clearly recognized that the fundamental goal underpinning all such efforts is improving human wellbeing for current and future generations.

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