

CHAPTER

6

**INTEGRATED
APPROACHES TO
HEALTH AND
WELL-BEING**

6.1. Introduction

Health is a human right and a core aspiration of every human being. Not only is health itself a dedicated goal of the 2030 Agenda for Sustainable Development Goals (SDGs), it is also recognised as a prerequisite, contributor and indicator for all other Goals. Conversely, health outcomes are influenced by a multitude of factors that correspond to policy areas located outside the health sector.

Health is defined as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.¹ Compared to the Millennium Development Goals (MDGs), the SDGs adopted a broader notion of health and well-being, and acknowledged today's burden of diseases. While maternal deaths (SDG Target 3.1), neonatal and under-five deaths (Target 3.2) and communicable diseases (Target 3.3) are still serious threats, there is increasing concern of non-communicable diseases and mental health issues (Target 3.4), substance abuse (Target 3.5) and traffic road accidents (Target 3.6). Ensuring universal health coverage (Target 3.8), universal access to sexual and reproductive health-care services (Target 3.7) and reducing mortality rates attributed to pollution and contamination (Target 3.9) remain far-reaching and ambitious targets in many countries.

Multi-disciplinary work by the science community has highlighted the many linkages between SDG 3 and other SDGs.² The existence of strong linkages between health and other policy areas makes integrated approaches a necessity for improving health outcomes across the board. On one hand, most of the targets under SDG3 are unachievable through actions in the health sector alone. On the other hand, achieving health targets will contribute to the effective implementations of other goals and targets. The 2016 Shanghai Declaration on Health Promotion in the 2030 Agenda for Sustainable Development highlighted that “healthy lives and increased well-being for people at all ages can be only achieved by promoting health through all the SDGs and by engaging the whole of society in the health development process”.³ Recognising the cross-cutting nature and deep interlinkages of health with other sectors, the 2017 High Level Political Forum emphasized that investment in health will contribute to reduced inequality and to sustainable and inclusive economic growth, social development, environmental protection, and to the eradication of poverty. It also called for strengthening inclusive and resilient health systems, addressing the social, economic and environmental determinants of health and investing in scientific research and innovation to meet the health challenges.⁴ Effective policies for the health sector also need to consider different perspectives, starting with those of users and beneficiaries of health services and those of service providers. And because health service provision is inherently local, integration and coordination across actors

operating at different geographical levels is also a critical element of effective health policies. This highlights the value of integrated approaches to health.

The recognition of interlinkages and interdependency of health with other sectors and the call for integrated action are not new. Already four decades ago in the Alma-Ata Declaration, governments highlighted that the right to health “requires the action of many other social and economic sectors in addition to the health sector”, and called for “the coordinated efforts of all related sectors and aspects of national and community development, in particular in agriculture, animal husbandry, food, industry, education, housing, public works, communications and other sectors”.⁵ In fact, many gains in health-related MDGs were recognised as being driven by progress in other sectors.^{6,7} Global monitoring of health exhibits strong integration features, as exemplified by studies on the global burden of disease, which span data well beyond the health sector itself.⁸ The framing of the 2030 Agenda has further and strongly reinforced this interdependency concept, highlighting that health, like other Goals, is indivisible from and integrated to the whole of Agenda 2030, although national circumstances and contexts are different.

Accordingly, as this chapter will highlight, a vast array of policies and institutional settings have been developed at the national level to address the various linkages between health and other SDG areas, with the aim of supporting integrated approaches. Research reveals, however, that the focus of many past and current attempts at integrated health initiatives has largely remained within the health care sector itself. In some cases, integration was seen in a siloed fashion, examining it through the lens of one specific health condition or illness.⁹ It has been said that in other cases, attempts at integration have been focused on finding ways to make non-health sectors and actors serve the goals of the health sector, without necessarily considering the impact of health on those sectors and their overarching objectives.¹⁰ Thus, the potential of integrated approaches to achieve synergies and minimise trade-offs, across sectors and government levels as well as across communities and other stakeholder groups, may remain relatively untapped in many countries.¹¹

This chapter considers integrated approaches to health through the SDGs lens, based on peer-reviewed literature and limited scoping of grey literature in the field of public administration and public health. Examples of interlinkages of health with other sectors are presented through multisectoral determinants of health and a few selected nexuses. To look at integration, the chapter uses the three structuring dimensions introduced in chapter 1: horizontal or cross-sectoral integration, vertical integration across various levels of governments, as well as engagement of non-State actors.

6.2. Addressing interlinkages between health and non-health sectors

6.2.1. Multisectoral determinants of health

Evidence has shown that many of the enormous improvements in health experienced over the past two centuries owe as much to changes in broad economic and social conditions as to medical advances.^{12,13} Such conditions can be seen as a complex web of determinants beyond the health sector, collectively referred to here as the multisectoral determinants of health and comprising of: (i) the social determinants of health; (ii) the commercial determinants of health; and (iii) the political determinants of health.

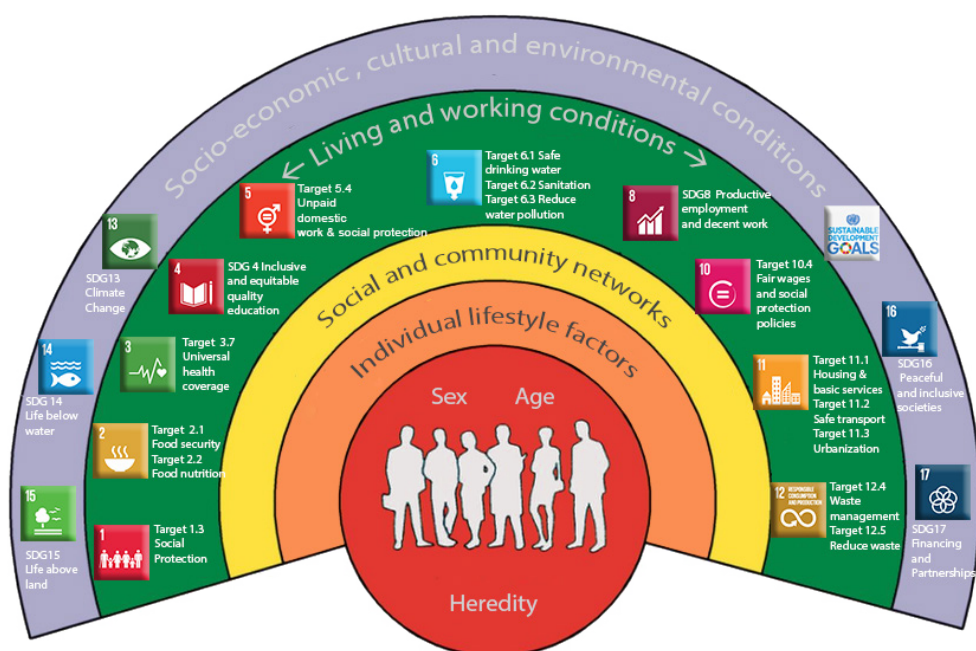
The well-established concept of “social determinants of health” highlights the influence of social, economic, cultural and environmental conditions as well as individual lifestyle factors on individual health and well-being.^{14,15,16} The integrated nature of health is also articulated as “social medicine,” given the strong relationships between health and the income level, housing circumstances, water and sanitation, nutrition, working environment that people encounter, among other factors.¹⁷ About 12.6 million deaths annually, representing 23% of all deaths worldwide, are attributable to environmental factors.¹⁸ On the one hand, the social determinants of health can influence the prevention, treatment and trajectory of illness of both physical and

mental health. On the other hand, many health conditions and diseases are prevented, mitigated or precipitated by the conditions under which people are born, grow, learn, work, play, worship and age.¹⁹ Figure 6.1 shows a mapping of social determinants of health as set out by Dahlgren and Whitehead in 1991, superimposed with relevant SDGs and targets.

The group of factors known as the commercial determinants of health stem from commercial and profit motives.^{22,23} Highlighted in the 2017 Adelaide Statement on Health in All Policies,²⁴ these refer to commercial and related interests which stand to gain from the sale and marketing of unhealthy products, such as sugary drinks, unhealthy processed foods, tobacco, alcohol and drugs. One piece of research shows that national trade and investment policy is a plausible causal driver of adverse diet-related health outcomes as a result of high-sugar, high-fat and high-sodium food products, which relates directly to Target 3.4 on non-communicable diseases.²⁵ In some situations, the private sector, at times though a few large corporations, has the power to shape the national health discourse.²⁶ The marketing of unhealthy food as lifestyle choice has also been extensively critiqued, especially in relation to food for children and infants.²⁷ Although this issue has gained renewed attention from policymakers and other actors, some experts and practitioners view this policy area as insufficiently explored and highlight the need to understand the potential of regulations and sanctions in addressing the drivers and channels through which corporations propagate “profit-driven diseases”.^{28,29,30}

Figure 6.1.

Mapping of “Social determinants of health” as set out by Dahlgren and Whitehead (1991)²⁰, superimposed with SDGs



Source: Author's adaptation from Dahlgren and Whitehead, 1991.

Third is the role of political economy and governments. Differences in health outcomes are not just a matter of social conditions and health behaviours but are also a result of the interplay of political economy factors -- some of which are affected by government policies and government action or inaction at both national and local levels.³¹ From health education and health promotion to urban planning to workplace health and safety to providing universal health coverage and combating epidemics, government policies and public institutions have always influenced and impacted on national health and well-being.³²

The evidence base for the impact of multisectoral determinants of health has been strengthened considerably in the last decade. Such determinants, separately or collectively, are increasingly seen as a rationale for actions to achieve not just the health Goal but also other related SDG targets, for example, on education, labour and social protection policies.

For integrated approaches to be effective, an intricate and contextual understanding of the multisectoral determinants is required, including the historical context and how these determinants impact people's needs and influence different stakeholders' interests. This includes, among others, how an issue is framed--whether it be in terms of development, equity, economy in general or specific health target--and the extent to which this resonates with political agendas in both health and non-health sectors.³³

One of the key challenges is how to effect change with understanding of the complex relationships of these multisectoral determinants and avoid a siloed approach to problem identification and solution.^{34,35} Because of the complex interplay of macro-, meso- and micro- determinants of health, a persistent problem for public administrators in developing and evaluating health policies is identifying the causal link between a specific policy intervention and an improvement in a specific health outcome.³⁶

Many determinants of health are perpetuated across generations -- not everyone starts on equal grounds, depending on birthplace, socioeconomic circumstances and other factors.³⁷ Implementation of integrated health approaches thus requires policymakers to be aware of these differences and seek to mitigate the risks of inequality through prioritization, inclusivity and social justice.

6.2.2. Health-SDGs nexuses

With the multiplicity of determinants of health, it is not surprising that relatively strong policy evidence and scientific agreement exist on the multiple interactions between health targets and other SDGs and targets in the 2030 Agenda.³⁸ A comprehensive assessment of the interlinkages and interconnectedness of health (SDG3) and other SDGs is beyond the scope of this chapter. For illustrative purpose, the following section briefly presents some of these relationships

and interactions through: (i) the health-nutrition-food system nexus; (ii) the health-electricity-pollution nexus; and (iii) the health-poverty-inequality nexus.

The health-nutrition-food system nexus

Whereas hunger affects 870,000 people worldwide, malnutrition, or nutrient deficiencies, affects much larger populations, especially in Africa.³⁹ What we eat is more often than not limited by choice, but also depends on several drivers, as highlighted earlier. There is also a clear relationship between malnutrition and poverty.

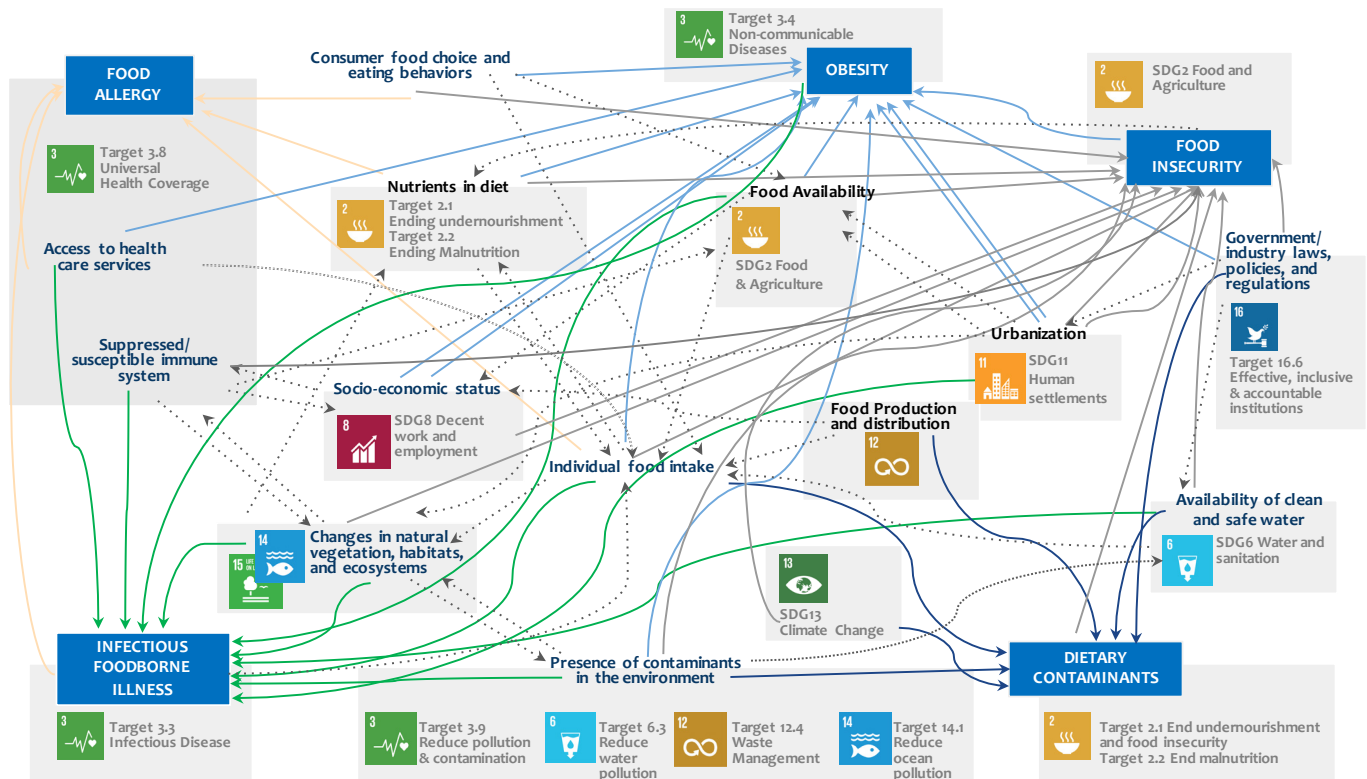
Food systems play a central role in generating and exacerbating health disparities.⁴⁰ Many epidemiological studies and government reports reveal drastic changes in recent decades in the way food is produced, distributed, advertised and consumed across all geographical regions.⁴¹ Production patterns have changed, but the very strategies that promote efficient production of food, such as concentrated farming systems, monoculture cropping, and use of chemical inputs such as fertilizer, pesticides, and herbicides, have unintended consequences that threaten health and well-being.⁴² Health disparities related to food consumption are also driven by the social, commercial and environmental impacts of food production and processing. It is estimated that one-third of all food produced for human consumption globally is lost or wasted every year.⁴³ There are obvious synergies between efforts to reduce food loss and manage waste (SDG target 12.3) and those promoting public health.⁴⁴

In many countries, obesity and other diseases related to low-nutrient diets are growing rapidly.⁴⁵ Such diets usually contain either highly-processed food or high-calorie food, or both, that contribute to obesity and chronic diseases including heart disease, high blood pressure and cancer.⁴⁶ The growing availability of high-calorie, nutrient-poor foods is generating a new type of malnutrition, in which a growing number of people are both overweight and undernourished.⁴⁷ One study claimed that more people are obese than underweight in general, with problematic developments affecting people across income levels, but particularly acute for those living in low-income communities.⁴⁸ Strong evidence ties socioeconomic disparities to diet quality or diet healthfulness and to obesity and diet-related diseases.⁴⁹ Food insecurity has been found to be highly correlated with obesity.⁵⁰

One illustration on health-nutrition-food-system nexus is shown in [Figure 6.2](#), based on research conducted through screening over 5,000 references from relevant literature.⁵¹ A conceptual model was developed to show the relationships among five food-related population health issues: (i) obesity; (ii) food allergy; (iii) infectious foodborne illness; (iv) food insecurity; (v) dietary contaminants; and how they are connected via shared drivers. [Figure 6.2](#) shows the top 11 drivers and 227 interconnections identified that are common

Figure 6.2.

Causal map of top drivers of food-related health issues, superimposed with goals and targets of the 2030 Agenda



Source: Majowicz, S. E. et al. (2016) , with author's adaptation (superimposed with SDGs and targets).

Note: The map was drawn in a 2016 study based on 5,145 academic references, which found as food-related health issues (in increasing order): (i) obesity; (ii) food allergy; (iii) infectious foodborne illness; (iv) food insecurity; and (v) dietary contaminants. See footnote⁵² for reference.

to two or more of the five main food-related health issues. This model highlights the importance of considering the impacts of multisectoral determinants in addressing nexus issues.⁵³

The health-electricity-pollution nexus

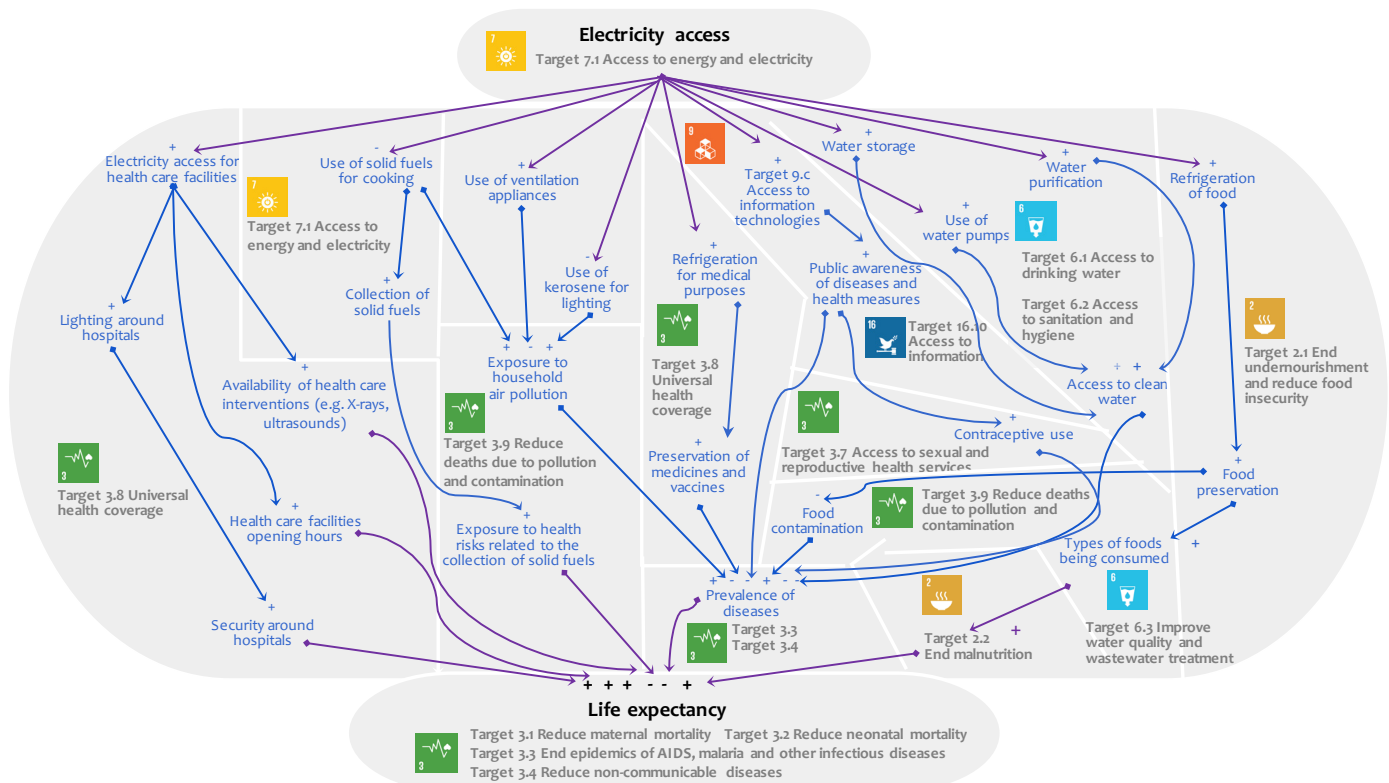
Reduction of ambient air pollution in cities is directly linked to improved health and reducing non-communicable diseases. Outdoor and indoor air pollution is responsible for 7 million deaths annually.⁵⁴ Household air pollution due to cooking with inefficient fuels and technologies led to an estimated 4.3 million deaths in 2012 worldwide, while ambient air pollution was responsible for 3 million deaths.⁵⁵ Large urban settlements in low and middle-income countries are the most exposed to this burden. Air pollution, whether indoor (household) or outdoor (ambient), increases the risk of cardiovascular disease, stroke, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections. Exposure to household pollution is particularly high among women and young children, who tend to spend more time indoors and near the stove.⁵⁶

Improved access to electricity has proved positive impacts on several multisectoral determinants of health. Not only does electricity access reduce the use of solid fuels and kerosene for cooking and lighting, which is still prevalent in many low-income settings, it also enables the use of alternative sources for heating and lighting such as electric kettles and light bulbs, and the use of ventilation appliances.⁵⁷ There are also reduced health risks related to fuel collection. In households, the availability of electric appliances improves food preservation, which both reduces contamination and enables an increase in the variety of foods that are being consumed. Electricity also enables the use of electric water pumps and water purification techniques.

Electricity also has positive impacts on health systems in communities. Electricity access enables refrigeration for medical purposes and improves health care infrastructure.⁵⁸ For example, refrigerated medicines and vaccines may be stored longer; health care facilities with electric lighting can be open after dark, and electricity enables the use of many health services and interventions such as x-rays and ultrasounds. With electricity access, information technologies

Figure 6.3.

Causal map of relationships of the health-electricity-life-expectancy nexus, superimposed with SDGs targets



Source: Collste, D., Pedercini, M. and Cornell, S. E. (2017),⁵⁹ with author's adaptation (superimposed with SDGs and targets).

Note: A '+' sign represents a *ceteris paribus* positive causal relationships (an increase in A causes B to increase, all things equal) and a '-' sign represents a *ceteris paribus* negative causal relationship (an increase in A causes B to decrease, all things equal).

including radios or televisions as well as short message service (SMS) or mobile applications, can be used to spread public awareness and knowledge related to, for example, specific diseases and health practices. Figure 6.3 shows a casual map of relationships of the health-electricity-life-expectancy nexus.

The health-poverty-inequality nexus

Over 400 million people still do not have access to essential health services and a further 6% of people in low- and middle-income countries are tipped into or pushed further into extreme poverty because of health spending.⁶⁰ As evidenced by recent reports of the World Health Organisation, health inequalities within and between countries remain substantial.⁶¹ It is, however, difficult to assess trends in within-country health inequality due to a lack of comparable and relevant data across health indicators in a large number of countries.

The SDGs include a specific target (3.8) focused on achieving universal health coverage (UHC). Beyond being a target, UHC is widely seen as an instrument for achieving

integrated health outcomes. The 2030 Agenda's principle of leaving no one behind also provides a framework for dealing with issues of discrimination, exclusion, and power asymmetries in priority setting in health policies.⁶² With the aim of reaching the furthest behind first, countries could prioritize the health and well-being of the most vulnerable and marginalized within their own national contexts. This consideration is pertinent not only in developing countries but also in advanced countries that have largely achieved UHC but where parts of the poorest and most vulnerable people are still left out.⁶³

Not only has UHC gained momentum in many countries, integrated efforts are also seen in implementing UHC with other targets such as through social protection policies. Many countries have introduced conditional cash transfer programmes that give money or vouchers to increase access to health services on condition of, for example, children attending schools.⁶⁴ For example, Mexico's Oportunidades programme provides income support to vulnerable families on condition that parents send their children to school.⁶⁵ Under the programme, children receive health check-ups, nutrition support and health services.

UHC as a concept encompasses a broad variety of interpretations in terms of population coverage, service coverage, and financial protection.⁶⁶ Regarding the latter, people may be insured or entitled to health services but still face high medical out-of-pocket payments.⁶⁷ In addition, financial risk of individuals may change over time with rising healthcare costs but no change in entitlement to health coverage. At the same time, UHC policies do not automatically or fully address the needs of the poorest and most vulnerable groups, including the “missing” or “hidden” populations and other vulnerable groups. There are data gaps, in particular on who currently does not have access and who is being impoverished because of health care costs and other reasons.⁶⁸ Example of demographic groups that are often overlooked and unable to access health and related services are adolescents, migrants and refugees (see chapter 5). Another hidden population is made up of uncounted births and stillbirths.⁶⁹ Delivering on health equity therefore implies using many tools as well as actions outside the health sector to include populations being currently or at risk of being left behind.

One vulnerable group with respect to health inequalities is migrants (see chapter 5 in this report). In understanding, framing and addressing the multifaceted challenges of migrant health, different integrated approaches have been used, such as: (i) monitoring migrant health, e.g. in Finland;⁷⁰ (ii) developing and implementing migrant-sensitive policies and legal frameworks, e.g. Sri Lanka’s whole-of-government approach to migrant health;⁷¹ (iii) building migrant-sensitive health systems, e.g. providing interpretation services for immigrants in health services;⁷² (iv) collective actions through

Box 6.1. Universal healthcare for all migrants in Thailand

In Thailand, migrants account for more than 6 percent of the country’s 67.1 million population. At the time of this writing, it is the only country in the world where illegal migrants have the same health care rights as nationals. This means that all migrants, like Thai nationals, can access the country’s universal health care. This policy was introduced in 2013 by the government through multisectoral action, coordinated across the interior, labour, public health and immigration ministries. This includes health insurance schemes for both documented and undocumented migrants, and covers medicine to manage chronic illnesses such as HIV, which is critical for patients who need constant and consistent treatment with antiretroviral drugs. While the 28 countries of the European Union provide universal health coverage for nationals, few offer migrants equal coverage.

Source: Tangcharoensathien, V., Thwin, A. A. and Patcharanarumol, W. (2017);⁷⁴ Wudan Yan (2016).⁷⁵

partnerships, networks and multi-country frameworks, e.g. the Canadian Collaboration for Immigrant and Refugee Health.⁷³ Box 6.1 illustrates how UHC is implemented for all migrants in Thailand.

In conflict and post-conflict situations, there is a critical need for enhanced cooperation between health officials, communities and stakeholders in other sectors including education, sanitation and water, to address the underlying causes of infection and transmission of infectious diseases. Poor access to conflict zones allows infection rates to rise and then spread as people flee. To illustrate, the Ebola epidemics introduced pressures on health systems in post-conflict countries (see chapter 7 in this report). Resilient health services are therefore vital for risk reduction as part of integrated reconstruction strategies.⁷⁶

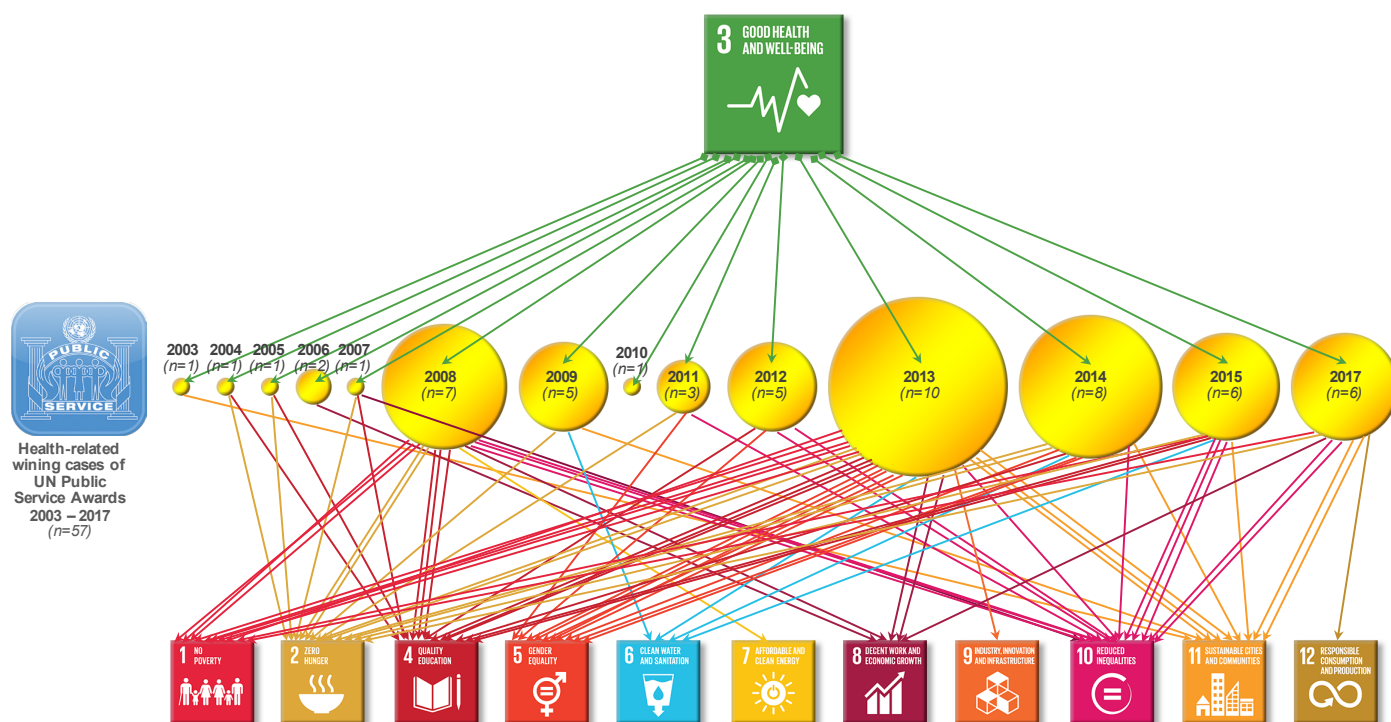
6.2.3. Examples of institutional initiatives addressing specific health-SDG linkages

Beyond the examples provided above, governments across the world have put institutional and administrative initiatives in place that address specific linkages between health and other SDGs. As mentioned earlier, multisectoral approaches in health are not new, but more dynamic and effective policies and strategies are being sought after in various domains of sustainable development to achieve overall health and well-being. Even though there are some documented examples of such initiatives, the reasons for their successful implementation -- and for implementation failures -- have not been systematically studied.

For illustration purposes, an empirical review of the past winning cases of the UN Public Service Awards (UNPSA) was conducted for this chapter. The database contains public initiatives put forward by government themselves, which received an award for being outstanding in their regional and sectoral context, based on information submitted by the public institutions.⁷⁷ In 2017, a specific category on health was added to the Award, with the aim to encourage public institutions to share successful innovations in this area. Out of the 292 winning cases for the period 2003-2017, 57 cases were related to the SDG on health. In observing interlinkages between health and other Goals, it is found that these health cases were linked to SDG2 on food and nutrition ($n=14$), SDG10 on inequality ($n=14$), followed by SDG4 on education ($n=13$), SDG10 on gender ($n=10$) and SDG11 on cities ($n=9$). More than half of the cases exhibit at least one interlinkage with other sectoral Goals (excluding Goal 16 and 17); 19 cases show at least two linkages and 8 cases have at least three linkages. Figure 6.3 shows the illustration of the UNPSA winning cases in relation with SDGs and their linkages. While clearly not representative of government actions in health, this sample of initiatives illustrate the broad range of health-SDG linkages that governments have sought to address for a long time.

Figure 6.4.

Winning cases ($n=57$) of the United Nations Public Service Awards for the period 2003-2017 that were related to health, with observed linkages to the 17 Goals of the 2030 Agenda for Sustainable Development



Source: Author's elaboration.

6.2.4. Trade-offs in resource allocation in the health sector and implication for integrated approaches

Various “false dichotomies” or dimensions of tension in relation to where to focus efforts and resources have been observed through research and practice in health in past decades^{78,79} While some of these refer to arbitrages within the health sector itself, other clearly impact choices and allocation of resources between health and other sectors, and as such are relevant to integrated approaches.^{80,81} Table 6.1 presents a list of such dimensions. One of them is the consideration of disease-specific or vertical programmes, versus horizontal health programme or primary care in competing for resources and attention. Such approaches, while important, may fail to produce long-term insights and impacts, given the various determinants of health.⁸² Another tension is between universal health coverage and disease outbreak preparedness, which should be viewed as two sides of the same coin, as epidemics and disease outbreaks like Ebola are not fully predictable.⁸³ Yet another tension exists between investing in health systems versus investing

in health determinants that are usually in non-health sectors, even though the relevance of non-health conditions as determinants of health has been observed for centuries. In order to navigate such false dichotomies, when considering policy coherence and integration policymakers should be aware of the multiple dimensions involved.

6.3. Horizontal integration in health

As argued earlier in this chapter, achieving any of health-related goals is likely to require approaches that involve non-health sectors and actors, as well as transformative policies and political commitment.⁸⁸ The value of intersectoral approaches in health has long been recognised. “Every minister is a health minister and every sector is a health sector. If we put fairness at the heart of all policies, health would improve”⁸⁹-- a quote from Sir Michael Marmot, the chair of the Commission on Social Determinants of Health in 2005, illustrates the need for horizontal integration in health.

Table 6.1. False dichotomies of health and related policies with an impact on integrated policies

False dichotomies	Brief description
Horizontal (primary care) versus vertical (disease-specific) programmes	Horizontal health resources include health systems that covers a broad spectrum, while vertical care programmes are disease-specific with precise services and equipment
Universal health coverage versus disease outbreak	While UHC covers health by population reach, service reach and financial inclusion, there is also a need to include emergency needs during disease outbreak. It is therefore important to integrate emergency measures in health systems as part of UHC strategy, as a defence to prevent disease outbreaks from becoming epidemics or pandemics
Investing in health systems versus investing in health determinants	Some views hold that investment in health determinants and in health systems are opposing choices; but they should be integrated in practical terms to achieve overall health and well-being for society
Infectious diseases versus non-communicable diseases (NCD)	Both are specific targets in the SDGs (Target 3.3 and 3.4). Although NCDs are fast emerging, in most countries there have not been sufficient attention and efforts to combat NCDs
Treatment versus prevention	Investing in resources for cure and treatment resources, versus search for preventive measures such as through vaccines and antibiotics, or behavioural change in term of diet, physical activity or life style

Source: Author's adaptation from varied sources: Frenk, J. and Gómez-Dantés, O. (2017);⁸⁴ Michael Porter (2009);⁸⁵ Sepúlveda J. et. al. (2006);⁸⁶ Murray et. Al (2000).

Box 6.2. Ireland's Sustainability Strategy for Health 2017-2019

The Sustainability Strategy for Health of Ireland was identified as “the first step on the pathway to achieving a more sustainable health system”. The strategy is part of and aligned to Ireland’s “Our Sustainable Future” -- a framework for sustainable development for Ireland, which sets the overarching national policy framework for sustainable development. Not only does it embrace the entire health sector, it also identifies integrated policy actions for successful implementation of the strategy, including:

- (i) Water conservation, such as through minimising water consumption in healthcare facilities, promoting awareness of applicable water management legislation and environmental stewardship
- (ii) Energy efficiency, meeting the National Energy Efficiency Action Plan (NEEAP) and the National Renewable Energy Action Plan (NREAP) targets and obligations
- (iii) Waste management, such as through increased recycling, reuse and recovery in healthcare facilities, providing waste management education to healthcare staff
- (iv) Sustainable transport, promoting health and well-being through improved opportunities for active and sustainable transport
- (v) Green procurement, e.g. to promote sustainability in procurement processes to reduce waste, operating costs and environmental footprint
- (vi) Designing the built environment, e.g. promoting green building legislation and sustainability audits of healthcare facilities

Source: National Health Sustainability Office, Ireland (2016).⁹⁰

In the United Kingdom, the 1980 Black Report was launched as a landmark review of health inequalities, recommending the Cabinet Office machinery to lead efforts across departments for reducing health inequalities.⁹¹ China's response to health and the SDGs -- the "Health China 2030 Development Plan" was drafted by over 20 Departments in areas of transportation, education, sports, food and drug inspection, environmental governance, media,

legislature, customs and others, recognising the significance of intersectoral collaboration.^{92,93} Another example is the "Sustainability Strategy for Health 2017-2019" in Ireland, based on integrated priorities of 33 key actions under seven pillars across different sectors (see Box 6.2). Table 6.2 shows some examples of policies in non-health sectors with potential for integrated approaches to health and well-being.

Table 6.2. Examples of policies in non-health sectors with potential for integrated approaches to health and well-being

Social policies	(i) Conditional cash transfer programmes and microloans (ii) Collective health insurance for people on low incomes (iii) Reducing social isolation (e.g. older people, the disabled, indigenous people) (iv) Community or self-help organisations for the vulnerable populations (elderly, disabled, women and girls, indigenous people, migrants and refugees, etc.) (v) Promoting overall well-being of people (for example, happiness programmes) (vi) Improving socio-cultural integration of all ethnic groups including minorities and indigenous people
Education policies	(i) School meals/breakfasts programmes (ii) Health education (on healthy foods, healthy lifestyle, violence prevention, drugs, safe sex, and overweight) (iii) Sports and extra-curricular facilities at schools (iv) School accommodation (hostels, school boarding with meals provided)
Youth policies	(i) Community centres; youth and family centres (promoting health and social education) (ii) Reducing alcohol and drug use amongst teenagers and young adults young people (iii) Availability of baby clinics for extra consultations in deprived neighbourhoods
Labour policies	(i) Ensuring decent work for all (ii) Promoting healthy work environments (e.g. workplace health; work-life balance) (iii) Workplace safety (e.g. unsafe equipment, exposure to toxic chemicals) (iv) Promoting employment participation amongst ethnic minorities, migrant workers etc.
Urban/spatial/ infrastructure planning and housing policies	(i) Sustainability and liveability policies (ii) Maintaining clean and healthy public spaces (iii) Availability of community sports facilities and playgrounds (iv) Smart cities (v) Greening (urban forests, parks, trees for shades, etc.) and open public space (vi) Smoke-free public places and alcohol control (regulating sales and merchandising display, etc.) (vii) Improved clean water access and sanitation especially in urban slums, rural and remote areas (viii) Eliminate or rebuild hazardous housing sites (e.g. hazardous wetlands, garbage dumps) (ix) Regulating the use of unsafe building materials and passing building codes, laws and regulations
Transport/Mobility policies	(i) Active mobility (e.g. promoting active lifestyle, walking/riding bicycles as complementary modes to public buses, railways, etc.) (ii) Road safety and pedestrian safety (iii) Effective, clean and sustainable public transport (iv) Vehicle safety and emissions
Environmental policies	(i) Noise abatement (ii) Air and water quality, pollution control policies (iii) Waste management (iv) Protection of natural environments, marine coastal areas, etc.
Sport policies	(i) Sport promotion (e.g. community/regional sport activities/facilities/competitions) (ii) Encouraging ethnic minorities to participate in sport (iii) Regional and local sports clubs
Security/safety policies	(i) Increased neighbourhood safety, especially for lower-income areas/districts/slums (ii) Improving the health/living conditions of ex-drug offenders (iii) Food inspection and food safety policies

Source: Authors' adaptation from various sources, including Storm, I. et al. (2016),⁹⁴ Rudolph, L. et al. (2013).⁹⁵

6.3.1. Policy Instruments

The World Health Assembly recently elaborated various considerations for effective policy instruments in integrated health approaches, including but not limited to (i) building the knowledge and evidence base for policy options; (ii) ensuring sustainable and adequate resources, agency support and skilled and dedicated staff; (iii) assessing health and health-related gender impacts of different policy options; (iv) understanding the political agendas of other sectors and creating intersectoral platforms for dialogue and addressing challenges, including with social participation; and (v) evaluating the effectiveness of intersectoral work and integrated policy-making and working with other sectors of government to advance health and well-being.⁹⁶

Some countries have adopted Health in All Policies (HiAP) as a specific integrated approach to deliver policies across sectors, systematically taking into account the health implications of policy decisions, seeking synergies and avoiding harmful impacts with an aim to achieve common goals.^{97,98,99} Such approach encourages the development of policies for improving health across all sectors of society and advocates health as a priority for all sectors.^{100,101} This provides opportunities to identify strategies that address multiple SDGs and targets at the same time. In essence, HiAP is in itself making health a whole-of-government priority and ensuring intersectoral cooperation and integration through a range of mechanisms and institutions.^{102,103}

Identifying co-benefits across sectors is one of the essential strategies for HiAP in building a shared vision, shared

goals, and synergistic outcomes. Finding so-called “win-win” intersectoral strategies that benefit multiple partners is key to establish buy-in, allow partners to leverage resources, and increase efficiency by simultaneously pursuing health and other goals. This can be seen as a reasonable response to resource scarcity for health especially in low and middle countries, as well as the limited flexibility of funding and mandates.¹⁰⁴

In addition, three other HiAP approaches are^{105,106}: (i) health at the core, where health objectives are at the centre of the activity. Examples include obesity measures, tobacco reduction policies or mandatory seat belt legislation to prevent road accidents; (ii) co-operation: emphasis is on systematic cooperation between health and other sectors that benefits the government as a whole, e.g. improving workplace health and safety, which also affects work productivity; (iii) damage limitation: efforts are made to limit negative health impacts of policy proposals, such as restricting the sale of alcohol near schools. Some countries that have introduced specific HiAP approaches at the national or sub-national level include: Australia (2007),¹⁰⁷ Brazil (2009), Cuba (2000), Finland (2002), Iran (2006), Malaysia (1988), New Zealand (2009), Norway (2005), Sri Lanka (1980), Sweden (2003),¹⁰⁸ Thailand (2007), United Kingdom (2003).¹⁰⁹ The Pan American Health Organization (PAHO) has begun to incorporate the Health in All Policies framework, putting it into practice across the region of the Americas, acknowledging HiAP as an important mechanism to identify synergies between health and other SDGs.¹¹⁰ Box 6.3 illustrates some details of selected national HiAP approaches.

Box 6.3. Examples of national Health-in-All-Policies (HiAP)

While some countries have put in place an integrated policy, for health as part of their National Sustainable Development Strategy, others have defined a separate HiAP strategy, such as the Health Master Plan in Iran.¹¹¹ Other countries have adopted new bills and legislation which include health-impact assessment as part of the adoption and review of HiAP policies.

The Mae Coruja Program in Brazil is a winning initiative in UNPSA 2016. The initiative was implemented at the local level on a limited scale to provide comprehensive care to women and children through integrated articulation of the Health, Education and Social Development sectors, with the main objective of reducing infant and maternal mortality rates (Target 3.1, 3.2) and associated social indicators.

In Namibia, in implementing a national response to combat HIV and AIDS, an AIDS policy was developed as a guide for a national multisectoral response.¹¹² A National Strategic Framework (NSF for HIV and AIDS for FY2010/11 to 2015/16) was established and developed through a participatory and consultative process,¹¹³ with clear roles spelled out of various ministries and agencies, including the National AIDS Council, Office of the Prime Minister, HIV and AIDS Unit, Ministry of Health and Social Services, Ministry of Regional and Local Government, Housing and Rural Development, Ministry of Gender Equality and Child Welfare, National Planning Commission and the Central Bureau of Statistics, Ministry of Education, the National Business Coalition on AIDS (an umbrella body that mobilises the private sector) and the Council of Churches in Namibia (NGO for faith-based organisations).

In Switzerland, in the implementation of the Health 2020 Strategy, the Government has focused on the main action in the implementation of “Health in all Policies” -- to define and realise specific procedures together with other federal offices in the domains of environment and energy, economy and social policy, and thus contributing to all three dimensions of sustainable development and several SDGs.¹¹⁴

Source: Author's elaboration.

Human intrusion into animal habitats has contributed to the spread of infectious diseases, with more than half of emerging infectious diseases spread by animals. The recent Zika infection, Ebola virus and Severe Acute Respiratory Syndrome (SARS), among others, are salient reminders of how human and non-human health are inextricably linked.¹¹⁶ Against this backdrop, some countries have adopted a holistic “One Health” policy approach, supported by multidisciplinary research, working at the human, animal and environmental interfaces to mitigate the risks of emerging and re-emerging infectious diseases.¹¹⁷ In Switzerland, three out of seven ministries are responsible for One-Health policy implementation, including Home Affairs, Economic Affairs, and the Environment, Transport, Energy and Communications. Similarly, at the regional level, the European One Health Action Plan Against Antimicrobial Resistance was adopted in 2017.¹¹⁸

6.3.2. Institutional arrangements

The implementation of integrated health policies needs to be supported by adequate institutional arrangements. Some forms of institutional set-ups are needed to establish rules of engagement and set the stage for ongoing interactions and strategy development across ministries and agencies for integrated approaches in health. In practice, different forms of institutional arrangements are found to support intersectoral health approaches in public administration (see Table 6.3). They range from informal to formal networks, from light-touch coordination mechanisms across sectors to collaborative problem solving for deeply rooted health-social problems, from inter-ministerial bodies to parliamentary deliberation. Across these mechanisms, different actors may be involved. Contexts in terms of history, institutional capabilities, and accountabilities vary enormously. Navigating formal and informal institutional hierarchies, such as deciding the role of health ministry vis-à-vis that of other ministries, may be key to successful mechanisms.¹¹⁹

Table 6.3. Examples of institutional arrangements that support intersectoral approaches to health

Institutional Instruments	Examples in countries
Parliamentary bodies	<ol style="list-style-type: none"> 1. Parliamentary Public Health Commission in Sweden¹²⁰ 2. Labour, Welfare and Health Parliamentary Committee in Israel, with sub-committees considering mental health reform, handicapped law, etc.^{121,122} 3. The United Kingdom House of Commons Health Select Committee – role of inquiry into health inequalities;¹²³ Beyond All-Party Parliamentary Health Group (APHG) is dedicated to disseminating knowledge, generating debate and facilitating engagement with health issues amongst Members of both Houses of Parliament¹²⁴
Inter-ministerial or interdepartmental taskforce/working group	<ol style="list-style-type: none"> 1. Initiated by the Ministry of Agriculture, the Estonian Food development plan is a broad-based council established to coordinate the preparation and implementation of the development plan, which focuses on increasing consumer awareness of the safety and quality of food, the components of a healthy diet and traditional food products. 2. The Supreme Council of Health and Food Security (SCHFS) in Iran was founded at the national level in 2006, followed by provincial district Councils of Health and Food Security (CHFSs), to ensure political commitment to inter-sectoral collaboration for health and Health in All Policies (HiAP). In 2009, the SCHFS mandated all provincial CHFSs across the country to develop provincial Health Master Plans to operationalize the HiAP approach.¹²⁵
Multistakeholder/participatory National Health Commission/Councils	<ol style="list-style-type: none"> 1. In Brazil, National Health Councils and Conferences are convened at the national, provincial and municipal levels with strong social participation.¹²⁶ These bodies meet every four years to assess the health situation and propose policy directives. They are not informal consultative platforms but permanent bodies institutionalised in the country's constitution and legislature. As a rule, half of the council membership are users of health-care services, and the other half are health workers, managers and providers. 2. National Collaborating Centres (NCCs) for Public Health, Determinants of Health, Aboriginal Health, in Canada¹²⁷ 3. For the period 2007–2015, a multistakeholder National Health Programme had been developed to define Poland's national strategies and policies regarding public health. The programme involved more than 30 organisations from different sectors, including governmental agencies and civil society.¹²⁸ 4. Thailand's National Health Commission (NHC), established in 2007 under the National Health Act, is responsible for ensuring that public policies, including health policies, are participatory and engage all actors, including through convening an annual National Health Assembly and other related Local Assemblies. The health impact assessment conducted to evaluate the outcomes was positive and showed that the institutional arrangement contributed to participatory evidence based policy formulations.¹²⁹

Source: Author's elaboration from various sources.

The decision on the type of institutional arrangement to be pursued needs to consider the profiles, interests, incentives, and relationships of key individuals and institutions operating in health and other sectors.

One common approach chosen by countries is to identify an inter-ministerial or inter-departmental body comprising relevant sectors to drive integrated health approaches. This can allow for joint programme design, common risk analysis, comprehensive solutions, joint targets, joint accountability, and eventually aiming for joint success.¹³⁰ In some cases, however, interdepartmental groups charged with leading integrated health strategies might have no formal authority on other departments and therefore would be able to generate limited or no change.¹³¹ In other words, developing interdepartmental committees can end up with new teams and administrative structures that are not well integrated with existing departments. While some departments continue to carry the burden of accountability and implementation, they may lack the implementation capacity to get things done. As the effects and consequences of some health policies may only become visible a long time after introduction, it is important that institutional arrangements to support integrated approaches be introduced with a mid- to long-term horizon. This may in turn conflict with the agendas of different stakeholders for various reasons such as changing politics or public views and sentiments.

6.4. Vertical integration, engagement and partnerships

Integrating the actions of actors operating at different geographical and administrative levels is important. Local authorities and communities have unique ground knowledge and opportunity to address the multisectoral determinants of health.¹³² In some cases, however, the inadequacy of resources has forced them to prioritise activities in ways which may not be focused on synergistic actions or may undermine opportunities for integrated approaches.

6.4.1. Cities, slum and urban health

The majority of the world's population has been living in urban centres since 2007. It is estimated that by 2030, about 60 % of the population will be living in urban settlements, rising to about 66 % by 2050.¹³³ Health inequalities in urban areas and slums are a continuing concern.¹³⁴ For example, in a study of urban areas in 46 countries, children in the poorest quintile were more than twice as likely to not survive till their fifth birthday (Target 3.2) than children in the richest quintile.¹³⁵ Urban living conditions, infrastructure and utilities have a critical influence on physical and mental health. Health disparities can occur due to inadequate or unsustainable urban planning, lack of decent work and employment, lack of affordable housing, or lack of access to basic services.

In urban slums and other informal settlements, it is not uncommon that pockets of marginalized, vulnerable populations have major health needs that are not being met. There is also a phenomenon of violence, including physical, sexual, gender-based and psychological violence in these areas.¹³⁶ As a result of the combination of these factors, slum dwellers increasingly face the multiple threats of burden of diseases, including infectious diseases, non-communicable diseases, as well as mental illness and injuries due to violence or road traffic accidents. The provision of health services for the urban poor is therefore a critical part of action to health targets, including universal health coverage. Conversely, slum upgrading as called for by SDG target 11.1 will directly contribute to reduce health inequalities experienced by the urban poor. Research suggests, however, that more work is needed to integrate multisectoral determinants of health as criteria into slum upgrading projects' design and evaluations.¹³⁷

Some major cities have put in place transformative strategies to address rapid urbanization and to also improve health outcomes. The co-benefits of joint investment in urban planning and health measures have been shown to be significant. Moreover, mayors around the world are increasingly becoming an important global voice for integrated action for health.¹³⁸ Mayors, especially those of large cities, may leverage on their visibility and managerial authority to cross interagency boundaries.¹³⁹ For instance, the Metropolitan Area Projects in Oklahoma City of the United States was made possible when voters agreed upon a one-cent sales tax to help revitalize the city's downtown, providing funds for a downtown park, biking and walking trails, senior health and wellness centres, as well as other city infrastructure and amenities. This is also an example of innovative financing that cuts across multiple sectors and ultimately supports the urban residents' health and well-being.¹⁴⁰

6.4.2. Engagement, inclusion and community health

The SDG's principles of inclusion and engagement apply to all goals including health. Already in 1978, the Alma-Ata Declaration established that community participation is a core principle of health, emphasizing that "people have a right and duty to participate individually and collectively in the planning and implementation of their health care".¹⁴¹ This set the impetus for engaging people and communities inclusively, in a whole-of-society approach towards health and well-being.

Evidence shows that communities are usually keen to contribute directly to the development of local strategies through which they can improve their own health and well-being.¹⁴² Such an approach can strengthen the sense of ownership of local problems, as opposed to the perception that problems can only be solved by external professionals or other stakeholders. The structure of community participation and leadership in health should include marginalised groups including women, youth and older people, as social exclusion is a contributor to health inequalities in itself.¹⁴³ The inclusion of women

and the most vulnerable groups in these processes as key stakeholders and agents of change is crucial in solving health inequities and creating sustainable changes.¹⁴⁴ As in other sectors, tokenistic participation, i.e. participation where community members are only informed or consulted to seek their consent, offers reduced opportunities for enhancing community members' sense of engagement and ownership.¹⁴⁵ See Box 6.4 on community-based health planning and services in Ghana.

There is well-documented success of community mobilization for fighting communicable diseases such as dengue in Nicaragua and Mexico.¹⁵⁰ Despite barriers stalling their initial engagement, when policy spaces are created and opportunities are available, communities can mobilise to bring about transformative change. For example, preventative health care through efforts of the community is often a foundation

Box 6.4. Community-based health planning and services in Ghana, highlighting gaps of community leadership and needs assessment

Many countries have taken active steps to involve community members in addressing health problems at the community level. In Ghana, this was carried out through the Community-based Health Planning and Services (CHPS) Programme that advocates the systematic planning and implementation of primary health care facilities and activities as part of integrated community development. CHPS facilities are health care delivery centres, managed and run by the communities they serve. In practice, this is achieved through the mobilization of community leadership, decision-making systems and resources within defined catchment zones.¹⁴⁶ CHPS is integral in national policy agendas including the current National Health Policy.¹⁴⁷ While resource mobilisation and organization are areas that had excelled in this programme, more reflection is needed in areas of needs assessment, i.e. empowering the beneficiaries in identifying their health needs and in designing the intervention; and of leadership - the inclusiveness and representativeness of all community interests groups. One key success factor was that CHPS are well integrated with other community (non-health) units in a collaborative manner.

As in other low-income countries in Africa and Asia, Ghana's most deprived communities are also affected by neglected tropical diseases (NTDs), also known as "diseases of the poor". Effective treatments exist for many NTDs but may not be available in low-income areas. Ghana has demonstrated some success in combating the guinea worm, largely because local communities were "in charge".¹⁴⁸

Source: Baatiema, L. et al. (2013).¹⁴⁹

for addressing non-communicable diseases, which requires people-centred, multisectoral approaches involving education, food security, nutrition, and other cultural and social drivers.

The recent years, however, have seen divergent trends in participation and engagement in health, for example, the increasing demand for participation in health policy making from opinion groups and individual citizens, and the rapid growth in the amount of health information to which people can have access, accompanied at times by a questioning of the reliability and truthfulness of health policies.¹⁵¹ Such trends show that genuine engagement is essential to ensure that integrated policies in health are responsive to community needs and gain public trust. Building and strengthening communities' public health capacities can lead to increased trust between authorities and communities, which in turn can be seen as social investment measures to contribute to prevention, preparedness and response in combating health crisis such as epidemics.¹⁵² See Box 6.5 on Liberia's experience in Ebola.

Box 6.5. Relationship between trust in government and public health: Liberia's experience in combating Ebola

The 2014 Ebola epidemic killed more than 4,800 people in Liberia. The epidemic affected many Liberians in one way or other, and directly or indirectly. Three-quarters of respondents in a large-N research survey reported experienced at least one of four hardships: (i) nearly one-quarter (24%) reported seeing dead bodies awaiting retrieval in the streets; (ii) over one-quarter (28%) knew at least one Ebola victim; (iii) nearly one-third (32%) reported foregoing health care. Nearly half (47%) reported losing their job in the six months during which the epidemic took place, and most attributed their job loss to Ebola specifically.

In the survey, it was found that Liberians who expressed trust in government were much more likely to support and comply with policy restrictions designed to contain the spread of the virus, and were much more likely to take precautions to prevent transmission in the home. Conversely, respondents who expressed low trust in government were much less likely to take precautions against Ebola in their homes, or to abide by government-mandated social distancing mechanisms designed to contain the spread of the virus. It was suggested that respondents who refused to comply may have done so not because they failed to understand how Ebola is transmitted, but rather because they did not trust the capacity or integrity of government institutions to recommend precautions and implement policies to slow Ebola's spread. It was observed that respondents who experienced hardships during the epidemic expressed less trust in government than those who did not, suggesting the possibility of a vicious cycle between distrust, non-compliance, hardships and further distrust.

Source: Blair, R. A., Morse, B. S. and Tsai, L.L. (2017).¹⁵³

Engagement and inclusion are particularly important to deliver on the “well-being” component of SDG3 that goes beyond mental health. Even though the empirical evidence for most countries is limited, available studies show that people living with mental health illness have a life expectancy at least 10 to 20 years lower than the general population, and this life expectancy gap is mostly due to undiagnosed and untreated co-existing physical health conditions.^{154,155} While addressing physical health has demonstrated a positive effect on mental health, likewise, addressing mental health issues has a proven positive effect on physical health.¹⁵⁶

Community participation will not only lead to empowerment of the marginalised group but also foster policy integration in health.¹⁵⁷ The value of community-based knowledge is often overlooked in understanding multisectoral determinants of health or identifying possible health interventions. Regular dialogue and relationship building between health providers and service users are central to addressing tensions, changing mind-sets and fostering respectful and culturally appropriate health care practices.¹⁵⁸ Table 6.3 shows some examples of participatory or multistakeholder institutional arrangements, such as National Health Commissions or National Health Councils in supporting integrated approaches in health.

Active engagement can thus help policymakers to manage the complexity arising from multiple determinants of health. The approach may also support more effective negotiations, by enabling stakeholders to see more clearly where their interests coincide, where they diverge, and how they might reconcile their differences. Public support is more likely if people understand the issues at stake and if policy implementation reflects community values and preferences. To this end, citizen journalists and citizens’ juries have been employed in some countries such as Australia, Bangladesh, and the United Kingdom, to explore issues and identify communities’ needs and preferences in health. It has been argued that such arrangements often represent informed public opinion better than other social research methods (e.g. surveys or focus groups) because the process of providing participants with factual information and establishing trust results into structured and constructive dialogue with experts.¹⁵⁹ Engagement efforts are also more likely to succeed if they are institutionalized in existing structures and not championed by a single group or individual. In general, the challenges related to health are persistent and require sustained efforts, which is more likely if they are not dependent on a single personality or group or driven by ad-hoc structures outside of formal institutional arrangements.¹⁶⁰

6.4.3. Partnerships in health

Goal 17 underpins the importance of partnerships between governments, the private sector and civil society in achieving sustainable development. “Working with markets” captures the fine balance of successful public-private collaboration

and it continues to shape the health development landscape. In some countries, the private sector is gradually taking on a more meaningful role in public health and partnerships provide an opportunity for the public sector to access cutting-edge products and services.

The European Union Platform on Diet, Physical Activity and Health is an example of health-focused public-private partnership, facilitating joint action between the European Commission, the industry and many non-governmental organisations.¹⁶¹ Some countries have mirrored these EU-based activities with similar focused national public private partnerships. However, these partnerships are under critical scrutiny, as they are evidently attractive to industry partners, especially in the food, alcohol, and entertainment sectors, with potentially undesired outcomes associated with the promotion of unhealthy products (see section 6.2.1).

Multistakeholder partnerships are gaining prominence and importance. To effectively implement health innovations, there is a call for a shift of the traditional concept of public-private partnerships, from the traditional bilateral and transactional models to an ecosystem of partnerships, where the type of cooperation changes over time and sustainability and accountability are key objectives.¹⁶² Not only is there a need

Box 6.6. Brazil’s national school feeding programme

Brazil has had a national school feeding programme for decades, which has evolved significantly over time. The programme was hailed as a good example of how public services with direct impact on health are delivered through the collective engagement of a wide range of actors through partnerships. The programme links schools with local farmers to provide quality meals for students. The programme emphasized the participation of actors at different levels — in having a say in what children should eat at school; in providing feedback on school food quality; in contributing to the transparent selection of contractors; etc. Linking loosely organized local farmers to a school feeding system presented challenges, including in relation to identifying the kind of institutions and capacities that had to be built and addressing multiple objectives and constraints through public procurement. Interestingly, even in a single country, it appeared that the best way to implement the programme differed across regions according to the level of infrastructure development, the degree of organisation and capacity of local farmers’ cooperatives and other factors. This case shows that the success of an integrated health public programme, as judged by its recipients, depended on often overlooked factors such as public participation, government support and genuine partnership mechanisms that helped small farmers reach a level of organisation and capacity where they were able to compete for public contracts.

Source: Kei Otsuki (2011).¹⁶³

for different stakeholder groups to work together, it is also important that different stakeholder groups collaborate to pool resources and work in an integrated manner, and not create competing efforts. **Box 6.6** shows a case study of the Brazilian national school feeding programme that focuses on enhancing the quality of public services through inclusive engagement of various actors.

6.5. Key enablers of integrated approaches to health

6.5.1. Health financing

Countries are confronted by challenges related to health on several fronts: (i) the increasing incidence of non-communicable diseases; (ii) the way healthcare is delivered is changing or going to change; and (iii) the ageing population in many middle and high-income countries. These trends have in turn led to, among others, increasing costs and risks in delivering public health services. The emergence of non-communicable diseases has further taxed national health finance, in both developed and developing countries. It is estimated that the annual cost of obesity to the Canadian economy is \$7 billion, which is driven partly by increasing availability of relatively cheap ultra-processed sugar and food products.¹⁶⁴ That increases annual healthcare costs for taxpayers and for those who pay private health insurance, also results in costs of lost productivity.

In nearly all European countries, the public sector remains the main source of financing in health, as seen in data sources of public and private (out-of-pocket) expenditure on public health. The proportion of private expenditure, however, varies widely across countries, ranging from less than one per cent in some to over 50 per cent in others. A global average of 45 per cent of expenditure on health was out-of-pocket in 2014.¹⁶⁵ Increasing the role of private sources of funding has been a deliberate policy in some countries, including some in Europe and Central Asia, to ensure sustainability. European countries differ in whether they mediate their publicly-funded health systems through social health insurance agencies (funded through a combination of social insurance contributions and general tax transfers) or rely strictly on general tax revenues, and for the latter, in which administrative level pays for public health activities. Joint budgets from different public sources of financing are an intersectoral structure that can facilitate the funding of health-related activities. Joint budgets are used, for example, in England and in Sweden. The challenge of agreeing and establishing joint accountability has been a hurdle for ministries in many countries from developing joint budgets.^{166,167}

Cross-sectoral financial allocation systems can help to promote the integration of policies.¹⁶⁸ For example, in the Netherlands there is a joint budget for research and policy activities in connection with the national action programme on environment and health.¹⁶⁹ In Sweden, the government sets objectives that cut across ministerial and budget boundaries and the budget system, at least initially, allocates money according to policy areas, rather than to departments.¹⁷⁰ One example of integrated approaches to financing in health is the allocation of a percentage of taxation on tobacco and alcohol for the creation of health promotion agency.¹⁷¹ **Box 6.7** illustrates an example of enacting and implementing “sin taxes” in the Philippines.

Box 6.7. Example of enacting and implementing “sin taxes” in the Philippines

In 2012, the Philippines enacted and implemented legislation for “sin taxes” for alcohol and tobacco consumption through an elaborate process. The health benefits, strongly supported by evidence from other countries, were not sufficient to win political support to pass the legislation. Instead, the turning point came when the reform was framed as a health measure with additional revenues from higher sin taxes earmarked to finance the universal health care programme. The Ministries of Health and Finance worked together with a civil society coalition to enlist the support of Congress and other political leaders. This example of a successful multisectoral effort between finance and health sectors for “sin taxes” has since been replicated in other jurisdictions. It is unclear, however, whether this experience will lead to sustained improvements in collaboration between these two sectors towards improved health outcomes.

Source: Kaiser K, Bredenkamp C, Iglesias R. (2016),¹⁷² Rasanathan, K. et al. (2017).¹⁷³

6.5.2. Capacity development

Capacity building for multisectoral health work is essential for all levels of governments across ministries and at the community level. Capacity building involves information, resources and communication, and particularly education, training, research, administration and the provision of infrastructure related to health. The need for building capacity for integrated health actions at both national and local levels requires institutionalizing it. Integrated or joint work requires effective communication via a shared lingo that is understood across different sectors, and between national and local governments. It is also important to encourage openness and exchange in data collection and analysis, research and innovation. Without the capacity and competence, institutions

might also hesitate to enter partnerships with other key agencies or actors who may fill the gaps to develop and implement integrated health policies.

It has been argued that in order to support an integrated health agenda, public health professionals should have a broader mind-set and enhanced knowledge of various SDG areas, including in economics, social and environment aspects, and beyond their own sectoral expertise in health.¹⁷⁴ New skills are required to negotiate the interface between varied groups with different interests, legitimacy, and power. In addition to classical technical skills and knowledge in health, public health professions need new skills such as critical thinking and creativity, understanding of related sectors such as education, transport, climate change, and among other goals; as well as soft skills such as diplomatic communication and political competences, and good general knowledge of economics and health economy.¹⁷⁵

Moreover, the health sector is a leading source of skilled migrant workforce and the international migration of health workers is increasing. Over the past decade, the number of migrant doctors and nurses working in OECD countries increased by 60%.¹⁷⁶ While migration of health personnel can bring mutual benefits to both source and destination countries such as through increased remittance flow to developing countries, it can raise various concerns for countries already experiencing various challenges in developing their health workforce as it may further weaken already fragile health systems. Given the acuteness of this challenge, the 2010 World Health Assembly adopted a Code of Practice on the international recruitment of health personnel, providing ethical principles for international recruitment in a manner that will strengthen health systems of developing countries.¹⁷⁷

See **Box 6.8** on building capacity of health workers and improving health facilities in developing countries.

6.5.3. Data, information and science-policy interface

The collection and use of timely high-quality health data remains a challenge in many countries, especially in lower income countries where resources are scarce. At the same time, health sectoral data is often disconnected from other non-health data.

Health information systems can be defined as integrated efforts to collect, analyse, report and use health information and other knowledge to influence policymaking, programme action and research.¹⁸⁴ Such systems include a wide range of population-based and facility-based sources, both health and non-health, including census, households' surveys, service-generated data derived from health facilities and patient-provider interactions covering aspects such as quality of care. Such database could include geographic data. One example is a multisectoral reporting system for nutrition data in Madagascar, carried out through five levels of decentralized structures and sent via the Regional Nutrition Offices to the national level.¹⁸⁵

Effective monitoring of indicators requires well-functioning national health information systems that integrate data from sources including civil registration and vital statistics, household and other population-based surveys, routine health-facility reporting systems and health-facility surveys, administrative data systems and surveillance systems.¹⁸⁶ **Figure 6.7** shows a snapshot of a real-time health information dashboard of Bangladesh at the national level, with data from multiple sectors in addition to the health sector (such child malnutrition, water and sanitation, clean energy, death

Box 6.8. Building capacity of health workers and improving health facilities in developing countries

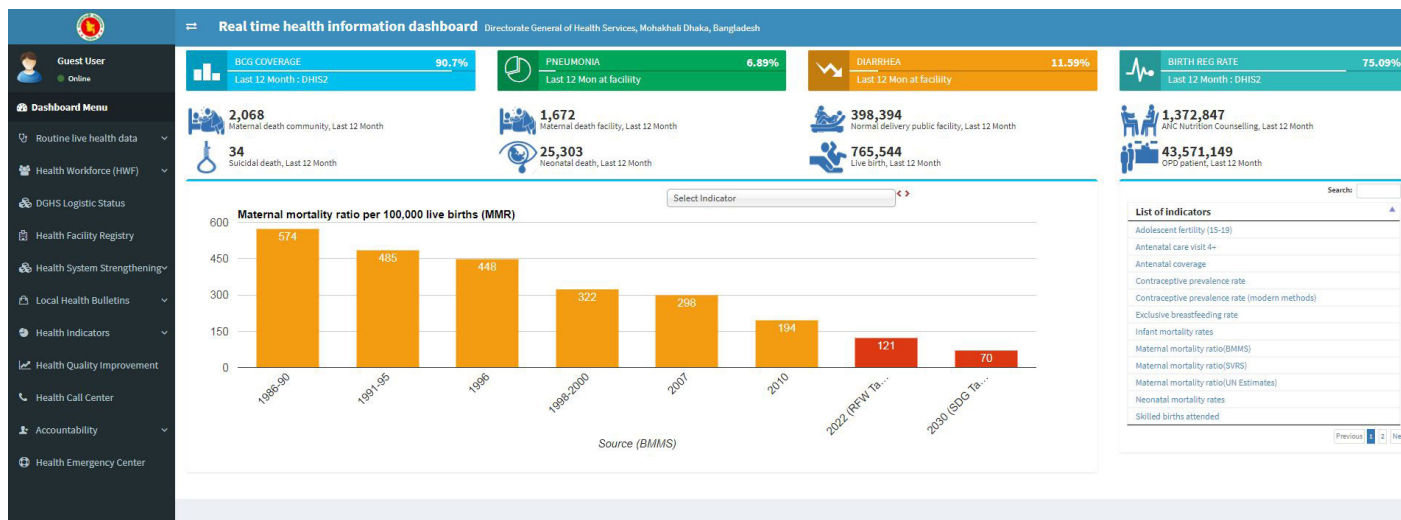
Health systems in many countries are facing human resource constraints. Many local communities, especially in sub-Saharan Africa, there are severe shortfalls in health systems as well as health workers, partly because of migration.^{178,179} The World Health Organisation (WHO) gives a basic threshold of 23 skilled health professionals per 10,000 people, but there are still 83 countries that fail to meet this bar.¹⁸⁰ The issue is important and widespread enough to have generated a (voluntary) Global Code of Practice, produced by WHO in 2010.

Coping with the personnel resource challenge in the health sector requires a multi-pronged integrated strategy.¹⁸¹ One key policy is through long-term education, as well as short-term, broad-based training programmes for existing health-care professionals. Motivating and retaining health workers is key to addressing the shortage to prevent emigration of trained health-care personnel from countries which severely lack them. An example of positive intervention is Malawi's Emergency Human Resources Programme, which employed measures such as a 52% salary top-up for top candidates and an expansion of postgraduate medical training.¹⁸² This, however, required substantial help from outside donors and organisations.¹⁸³ The structural difficulties associated with not only training a health workforce, but maintaining that workforce despite the strong pull of other countries with a better integrated health infrastructure, working conditions and wages, require a deep overhaul of the health system of origin countries and the cooperation of destination countries.

Source: Author's illustration from various sources.

Figure 6.5.

Snapshot of the real-time health information dashboard of Bangladesh



Source: Government of Bangladesh (2017). Real-time health information dashboard.¹⁸⁷

registration, etc), as well as disaggregated data at the local levels (divisions and districts).

Countries may want to create mechanisms for easy sharing of health-related data to maximise data utilization in integrated policy-making, for example through establishing multisectoral health data dashboards and portals. At the same time, there is a need to exercise caution in exchanging of personal health data with other sectors, as it poses ethical problems in relation to, for example, employment screening, genetic therapy, and potential discrimination in some areas.¹⁸⁸ To safeguard the exchange of health data, there is a need for legal and regulatory frameworks, for example regarding the provision of appropriate firewalls between different sectors for safeguarding individual privacy and rights.

Information exchange should go beyond the technical linking of databases. To support integrated approaches in health, it is also necessary to integrate health data and analysis across sectors, including through clustering of health, socioeconomic, and environmental indicators across sectors to produce a composite profile of progress towards health and well-being. Data and analytical integration tools relevant to integrated health approaches include the following: (i) health lens analysis;¹⁸⁹ (ii) foresight mechanism,¹⁹⁰ e.g. the Finnish foresight mechanism¹⁹¹ Foresight 2030 Report which traverses election cycles and includes mechanisms for cross-party collaboration in health and other sectors; (iii) scenario planning; (iv) system thinking and long term analysis; (v) health equity impact assessments;¹⁹² (vi) health technology assessment;¹⁹³ (vii) health analytics and learning analytics;¹⁹⁴ and (viii) health decision support systems.¹⁹⁵

Integrated policies in health require scientific studies that integrate social sciences, epidemiology, ecology,

microbiology, economics and other disciplines.¹⁹⁶ Total health and well-being involves complex interactions of multisectoral determinants, and systems thinking can improve understanding of the interplay between various health determinants and suggest practical approaches.

Academic institutions can act as trusted conveners and brokers, to not only bring evidence, data and analysis to bear on health policy issues, but also to provide spaces and platforms where different societal actors can engage in these debates in an informed and inclusive way.¹⁹⁷

The achievement of health goals is also dependent on reliable multidisciplinary scientific research and innovation levers in the areas of social science, health science and information communication technologies. The motivation and capacity within government to process and apply policy advice developed by regional or national health policy analysis institutes, such as the European Institute of Health, National Institutes of Health (for example, in Finland, Peru, Republic of Korea, United States), Canadian Institutes of Health Research,¹⁹⁸ were found to contribute to success of intersectoral policies in health. Enabling factors for such institutions have included a supportive policy environment, some degree of independence in governance and financing, and strong links to policy makers that facilitate trust and influence. Such institutions may become even more important in the future due to rising health-care costs and increased demands from the population for transparency and accountability on how policy decisions are planned and implemented.¹⁹⁹

Beyond the national level, effective science-policy interfaces are also relevant at the sub-national level to tackle contextualised local health issues. Capable national think

tanks and academic institutions are instrumental in the process. However, as seen in most literature, including peer-review and grey literature, the majority of health-focused think tanks and academic institutions are from Northern America and Europe. While think tanks tend to be seen as contributing to accountability and pluralistic debate in society, it is important to keep in mind potential conflicts of interest, especially where industry funding is supporting research.²⁰⁰ For example, research on alcohol regulation has revealed the extent to which the alcohol industry has used think tanks to influence policy debates.²⁰¹ This underlines the importance of an independent funding base and credible processes for identifying conflict of interests for think tanks to safeguard their impartiality.

6.5.4. Health technologies and innovation

The health sector is one where new paradigms on science, technology and innovation (STI) in areas such as microelectronics, nanotechnology, biotechnology, and information technology, are developed or intensively applied.²⁰² In recognising STI as a fundamental cross-cutting issue to achieve the SDGs, the 2030 Agenda proposed the global Technology Facilitating Mechanism (TFM) to advance knowledge exchange and collaboration, and to realise the potential of health-related and other STI initiatives for the SDGs.²⁰³ The Brazilian experience of linking academic research with innovation and implementation policies for the “Health Care Economico-Industrial Complex” showcases the potential of STI in innovative health approaches.²⁰⁴

Appropriate technologies in health, or digital health in general, should no longer be identified with high income luxuries but be readily explored in all relevant contexts when pursuing integrated health approaches especially in low income countries for leapfrogging technical hurdles. Disruptive innovations and the use of technologies could be seen as levers to counter challenges such as reconceptualising how universal health coverage can work in resource limited settings; and exploring how to best create intersectoral policies to tackle the causes of non-communicable diseases. From providing services to remote populations and underserved communities through telehealth or mobile health, or virtual medicine, there are untapped opportunities for innovations that could help nations accelerate implementation of health goals and targets.

Given the right enabling conditions, the strategic use of innovation and technologies also has the potential to drastically improve the operations and financial efficiency of multisectoral health care systems.²⁰⁵ Sensors, mobile apps and data analytics allow healthcare to be delivered online through virtual services, delivering health to the poorest and vulnerable groups. Cost-saving innovation also can put downward pressure on healthcare spending and digital health can also help prevent medical errors, initiate rapid responses and better track health events through multisectoral approaches.²⁰⁶ Box 6.9 describes features of initiatives aiming to enable “aging in place”, where older people’s health can be monitored in their own homes rather than in care homes.

Box 6.9. Using technology to support “ageing in place”

While conventional models of institutionalised care such as nursing homes have been imperative in providing long-term care for elderly who require such services, there is a shortage of facilities due to the ageing population in some countries. Not only are there costly and undesirable outcomes for the elderly and their family members, there is often a disconnect of those who stay in nursing homes with the rest of the society.

Through digital health, the point of care for older people could be moved from costly health facilities to the home and the community, or “aging in place”, i.e. integrating enabling health factors with the urban environment. Recent years have witnessed the proliferation of home and community care to support ageing-in-place whereby the elderly can stay within the comfort of their homes and familiarity of their neighbourhoods, and have minimal disruptions to their lives and activities. This allows them to age gracefully, safely and comfortably in the community that they live in, and have access to a range of aged care facilities and partake in other societal activities through active ageing. In Singapore, a national vision is in place for enabling holistic and personalised ageing through technology, together with its exemplification in the form of responsive and pre-emptive care and intervention models.²⁰⁷ The efficiency, effectiveness and responsiveness of this model is dependent on the integration of care across social and health services, collective effort of the whole-of-society, as well as availability of admissible technological solutions. To support the needs and wants of the elderly and to enable them to age in place, several government-initiated schemes are currently underway, with focus on the individual, community and city levels. These include the roll-out of initiatives to ensure that the elderly can receive better services from healthcare providers, live in elderly-friendly homes, travel about more easily, and enjoy public spaces such as aged-friendly public walkways and other public spaces and facilities.

Box 6.9. (continued)

Likewise, in Australia, a digital assisted living solution using Artificial Intelligence and sensor technology is on trial to support seniors to live independently.²⁰⁸ This non-intrusive solution monitors residents' behavior and engages them with family members or health providers whenever there is a need. The primary interface for a resident with the technology is via low-cost sensors, a home-based computing device and a multi-modal end-user interface with voice and speaker, with no new wiring or complicated installation. The goal of this system is to provide reminders (hydration, medication), issue alerts such as weather forecasts, identify potential security risks (back door has been left open), identify anomalous situations, and automate the physical environment (heating, cooling).

The UNPSA winning initiative on "Excellent Happy Home Ward" in Khaoprangram Municipality, Thailand, is an example of provision of integrated health and social services to senior citizens with chronic illnesses.²⁰⁹ As a result, there was improved understanding of the needs of elders and increased involvement of communities, families and patients themselves in a network of support and social care.

Source: Author's illustration from various sources.

6.6. Conclusions

The recognition of the multiple linkages between health and other SDGs makes a compelling case for public institutions to adopt integrated approaches. This chapter illustrates how multiple determinants of health, various nexuses of issues and associated challenges and opportunities can be addressed in practice through policies and institutional arrangements. The chapter focuses on three dimensions of integration - horizontal integration across sectors, vertical integration across levels of governments, and engagement of people and communities in planning and implementing policies that are related their own health and well-being.

This chapter has shown that there already exist many examples of practical approaches to integration for health, which cover different linkages with the SDGs, both horizontally and vertically. This is valid both in terms of policies and in terms of institutions. In comparison with other sectors, integrated approaches seem rather common and well developed. Lessons learned in terms of how various institutional and administrative approaches have worked could prove useful in other areas of the SDGs that also have strong connections with other SDGs.

However, the path to integrated approaches to health, though compelling, is not easy. Adopting and implementing integrated approaches has proven to be difficult, partly because of the complexity and the dynamics of the multisectoral determinants of health and the involvement of multiple actors. Many questions remain regarding how best to kickstart integrated approaches: on how to define priorities in specific national contexts in order to best address multisectoral issues; how to jar the inertia that surrounds health inequities; and how to sustainably promote whole-of-government efforts to tackle the root causes of ill health.

There is insufficient systematic evidence to reveal the most effective policy processes and institutional arrangements that allow for successful integrated approaches to SDG implementation, for example, in elaborating integrated policy for health and urbanisation. Further work of combing the available evidence about policy experimentation and framing appropriate policy research is required and will help to develop the necessary metrics and evidence base for integrated approaches to health problems.

Endnotes

- 1 World Health Organisation 1946. 'Constitution of the World Health Organisation', Geneva.
- 2 International Council for Science (ICSU) 2017. 'A Guide to SDG Interactions: from Science to Implementation', *International Council for Science*, Paris. DOI: 10.24948/2017.01
- 3 World Health Organisation 2016. 'Shanghai Declaration on Health Promotion in the 2030 Agenda for Sustainable Development', *9th Global Conference on Health Promotion*, Shanghai, 21-24 November 2016, pp. 1-2, available from: <http://www.who.int/healthpromotion/conferences/9gchp/shanghai-declaration.pdf?ua=1> [Last accessed on 25 September 2017]
- 4 United Nations 2017. 'Ministerial declaration of the 2017 high-level political forum on sustainable development, convened under the auspices of the Economic and Social Council, on the theme Eradicating poverty and promoting prosperity in a changing world', E/2017/L.29-E/HLPF/2017/L.2
- 5 World Health Organisation 1978. 'Declaration of Alma-Ata', *International Conference on Primary Health Care*, Alma-Ata, USSR, 6-12 September 1978.
- 6 United Nations Department of Economic and Social Affairs 2017. 'Expert Group Meeting on Integrated Approaches to Implementing Sustainable Development Goal 3 in preparation for the 2017 HLPF', June 16 2017, pp. 1-5.
- 7 World Health Organisation 2014. 'PMNCH's 2014 studies on Success Factors for Women's, Children's and Adolescents' Health', *The Partnership for Maternal, Newborn, & Child Health*. Available from: <http://www.who.int/pmnch/knowledge/publications/successfactors/en> [Last accessed on 25 September 2017].
- 8 Lim, S. S. et al. 2016. 'Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015', *The Lancet*. doi: 10.1016/S0140-6736(16)31467-2.
- 9 Rasanathan, K. et al. 2017. 'Governing multisectoral action for health in low- and middle-income countries', *PLoS Medicine*, 14(4), pp. 1-9. doi: 10.1371/journal.pmed.1002285.
- 10 Baum, F. E. et al. 2009. 'Changes not for the fainthearted: Reorienting health care systems toward health equity through action on the social determinants of health', *American Journal of Public Health*, 99(11), pp. 1967-1974. doi: 10.2105/AJPH.2008.154856.
- 11 Weitz, N. et al. 2014. 'Cross-sectoral integration in the Sustainable Development Goals: A nexus approach', *PLoS Medicine*, 14(4), p. 8. doi: 10.1371/journal.pmed.1002285.
- 12 Note: Based on the McKeown thesis derived through demographic data from England and Wales; McKeown argued that the population growth since the late eighteenth century was due to improving economic and social conditions rather than improved medicine. (Ref: McKeown, T. 1976. 'The Role of Medicine: Dream, Mirage, or Nemesis?' *London: Nuffield Provincial Hospitals Trust. Mechanic*, D. 2002. *Disadv: Rogut, L. B., Knickman, J. R., Mechanic, D., & Colby, D. 2005. 'Policy Challenges in Modern Health Care'. Chapter 5 Fundamental Sources of Health Inequalities, page 71).*
- 13 Bharmal, N; Pitkin Derose, K; Felician, M; Weden, M. 2015. 'Understanding the Social Determinants of Health', *Working Paper: RAND Social Determinants of Health Interest Group*, May 2015, pp. 1-18.
- 14 World Health Organisation 2009. 'Reducing health inequities through action on the social determinants of health', WHA62.14, 22 May 2009
- 15 World Health Organisation (2011). "Rio Political Declaration on Social Determinants of Health", *World Conference on Social Determinants of Health*.
- 16 Council on Social Determinants of Health 2015. 'A Review of Frameworks on the Determinants of Health Canadian Council on Social Determinants of Health', available from: http://ccsdh.ca/images/uploads/Frameworks_Report_English.pdf [Last accessed on 25 September 2017].
- 17 Bhugra, D. 2014. 'All medicine is social', *Journal of the Royal Society of Medicine*, 107(5), 183-186. <http://doi.org/10.1177/0141076814525069> [Last accessed on 25 September 2017].
- 18 World Health Organisation 2016. 'Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks' [Prüss-Ustün, A. et al. (2016)], p. 147, available from: http://www.who.int/quantifying_ehimpacts/publications/preventing-disease/en/ [Last accessed on 25 September 2017].
- 19 Street, M. and Nsw, S. 2016. 'The Royal Australasian College of Physicians Health in All Policies Position Statement December 2016', (December), pp. 1-30.
- 20 Göran Dahlgren & Margaret Whitehead 2007. 'Policies and Strategies to Promote Social Equity in Health', *Institute for Futures Studies, Working Paper* 2007.
- 21 Göran Dahlgren & Margaret Whitehead 2007. 'Policies and Strategies to Promote Social Equity in Health', *Institute for Futures Studies, Working Paper* 2007.
- 22 Schram, A. and Labonté, R. 2017. 'Trade and public health', *Canadian Medical Association Journal*, 189(26), pp. E879-E880. doi: 10.1503/cmaj.170089.
- 23 Johan P. Mackenbach 2014. 'Political determinants of health', *European Journal of Public Health*, Volume 24, Issue 1, 1 February 2014, Pages 2, <https://doi.org/10.1093/eurpub/ckt183> [Last accessed on 25 September 2017].
- 24 World Health Organisation 2017. 'Adelaide Statement I, Outcome Statement from the 2017 International Conference Health in All Policies: Progressing the Sustainable Development Goals'.
- 25 Barlow P, McKee M, Basu S, et al. 2017. 'Impact of the North American Free Trade Agreement on high-fructose corn syrup supply in Canada: a natural experiment using synthetic control methods'. *CMAJ* 2017;189:E881-7.
- 26 Lomazzi, M., Jenkins, C. and Borisch, B. 2016. 'Global public health today: Connecting the dots', *Global Health Action*, 9(1). doi: 10.3402/gha.v9.28772.
- 27 Cairns G, Angus K, Hastings G, Caraher M. 2013. 'Systematic reviews of the evidence on the nature, extent and effects of food marketing to children: a retrospective summary'. *Appetite* 2013; 62: 209-15.
- 28 Kickbusch, I., Allen, L. and Franz, C. 2016. 'The commercial determinants of health', *The Lancet Global Health*, 4(12), pp. e895-e896. doi: 10.1016/S2214-109X(16)30217-0.
- 29 World Health Organisation 2011. 'Background paper. Prevention and control of NCDs: priorities for investment', April 2011.
- 30 Gerard Hastings 2012. 'Why Corporate Is Public Health Priority', *British Medical Journal*, vol 345(7871), pp. 26-29.
- 31 Weitz, N. et al. 2014. 'Cross-sectoral integration in the Sustainable Development Goals: A nexus approach', *PLoS Medicine*, 14(4), p. 8. doi: 10.1371/journal.pmed.1002285.

- 32 Ottersen OP, Dasgupta J, Blouin C, et al. 2014. 'The political origins of health inequity: prospects for change'. *The Lancet* 2014;383:630-67. doi:10.1016/S0140-6736(13)62407-1pmid:24524782.
- 33 Rasanathan, K. et al. 2017. 'Governing multisectoral action for health in low- and middle-income countries', *PLoS Medicine*, 14(4), pp. 1-9. doi: 10.1371/journal.pmed.1002285.
- 34 Marmot M, Wilkinson R. 2010. 'Social Determinants of Health'. 2nd edition. Oxford: Oxford University Press.
- 35 Raphael D., 2006. 'Social determinants of health: present status, unanswered questions, and future directions'. *Int J Health Serv* 2006, 36(4):651-677.
- 36 Carey, G., Crammond, B. and Keast, R. 2014. 'Creating change in government to address the social determinants of health: how can efforts be improved?', *BMC public health*, 14(p 205), p. 1087. doi: 10.1186/1471-2458-14-1087.
- 37 United Nations Department of Economic and Social Affairs 2017. 'Expert Group Meeting on Integrated Approaches to Implementing Sustainable Development Goal 3 in preparation for the 2017 HLPF', June 16 2017.
- 38 International Council for Science (ICSU), 2017. 'A Guide to SDG Interactions: from Science to Implementation'. *International Council for Science*, Paris. DOI: 10.24948/2017.01
- 39 Humphries DL, Behrman JR, Crookston BT, et al. 2014. 'Households across all income quintiles, especially the poorest, increased animal source food expenditures substantially during recent Peruvian economic growth'. *PLoS One*. 2014 Nov 5;9(11):e110961.
- 40 Note: Food systems refer to systems comprised of all processes involved in getting food from farm to table to disposal, including production, processing, distributing, preparing, marketing, accessing, consuming, and disposing. Food systems also involve people, farms, businesses, communities, interventions, policies, and politics. (Ref: Sobal J, Khan LK, Bisogni C. 1998. 'A conceptual model of the food and nutrition system'. *Soc Sci Med*. 1998;47:853-863.)
- 41 Andrew Jacobs and Matt Richtel 2017. 'How Big Business Got Brazil Hooked on Junk Food - As growth slows in wealthy countries, Western food companies are aggressively expanding in developing nations, contributing to obesity and health problems', *New York Times*, 16 September 2017.
- 42 Foley JA, Ramankutty N, Brauman KA, et al. 2012. 'Solutions for a cultivated planet'. *Nature*. 2011 Oct 12;478(7369):337-42.
- 43 Gustavsson J, Cederberg C, Sonesson U, van Otterdijk R, Meybeck A. 2011. 'Global food losses and food waste: extent, causes and prevention', *Food and Agriculture Organization*.
- 44 Neff, R. A., Kanter, R. and Vandevijvere, S. 2015. 'Reducing food loss and waste while improving the public's health', *Health Affairs*, 34(11), pp. 1821-1829. doi: 10.1377/hlthaff.2015.0647.
- 45 Global Panel on Agriculture and Food Systems for Nutrition 2016. 'Food Systems and Diets: Facing the Challenges of the 21st Century', *Global Panel on Agriculture and Food Systems for Nutrition*, London. <https://www.glopan.org/foresight> [Last accessed on 25 September 2017].
- 46 Centers for Disease Control and Prevention, United States of America 2010. 'State-specific trends in fruit and vegetable consumption among adults—United States, 2000-2009'. *Morbidity and Mortality Weekly Report*, 59(35):1125-1130. <http://www.cdc.gov/mmwr/pdf/wk/mm5935.pdf> [Last accessed on 25 September 2017].
- 47 Andrew Jacobs and Matt Richtel 2017. 'How Big Business Got Brazil Hooked on Junk Food', *New York Times*, 16 September 2017.
- 48 Bell, J., and V. Rubin. 2007. 'Why place matters: Building a movement for healthy communities', *Oakland, CA: PolicyLink*.
- 49 Neff, R. A., Palmer, A. M., McKenzie, S. E., & Lawrence, R. S. 2009. 'Food Systems and Public Health Disparities'. *Journal of Hunger & Environmental Nutrition*. <https://doi.org/10.1080/19320240903337041> [Last accessed on 25 September 2017].
- 50 Dinour LM, Bergen D, Yeh MC 2007. 'The food insecurity-obesity paradox: a review of the literature and the role food stamps may play'. *J Am Diet Assoc*. 2007;107: 2071-2076.
- 51 Majowicz, S. E. et al. 2016. 'Food, health, and complexity: towards a conceptual understanding to guide collaborative public health action', *BMC Public Health*, 16(1), p. 487. doi: 10.1186/s12889-016-3142-6.
- 52 Majowicz, S. E. et al. 2016. 'Food, health, and complexity: towards a conceptual understanding to guide collaborative public health action', *BMC Public Health*, 16(1), p. 487. doi: 10.1186/s12889-016-3142-6.
- 53 Frieden TR. 2010. 'A framework for public health action: the health impact pyramid'. *Am J Public Health*. 2010;100(4):590
- 54 International Council for Science 2017. 'A Guide To SDG Interactions: From Science To Implementation'. doi: 10.24948/2017.01. Implementation.A.
- 55 World Health Organisation 2017. *Children's environmental health – Air pollution*, available from: <http://www.who.int/ceh/risks/cehair/en/> [Last accessed on 25 September 2017].
- 56 United Nations Department of Economic and Social Affairs 2017. 'The Sustainable Development Goals Report 2017', pp. 1-56.
- 57 Abdelkarim OB, Ben Youssef A, M'Henni H, Rault C 2014. 'Testing the causality between electricity consumption, energy use and education in Africa (Working Paper No. 1084)'. *William Davidson Institute at the University of Michigan*.
- 58 Khandker SR, Barnes DF, Samad HA 2013. 'Welfare impacts of rural electrification: a panel data analysis from Vietnam'. *Econ Dev Cult Change* 61(3):659-692.
- 59 Collste, D., Pedercini, M. and Cornell, S. E. 2017. 'Policy coherence to achieve the SDGs: using integrated simulation models to assess effective policies', *Sustainability Science*. Springer Japan, pp. 1-11. doi: 10.1007/s11625-017-0457-x.
- 60 Joint World Health Organisation / World Bank Group report 2015. 'Tracking universal health coverage: First global monitoring report'.
- 61 World Health Organisation 2017. *World Health Statistics 2017*.
- 62 Rumbold, B. et al. 2017. 'Universal health coverage, priority setting, and the human right to health', *The Lancet*. Elsevier Ltd, 390(10095), pp. 712-714. doi: 10.1016/S0140-6736(17)30931-5.
- 63 Ottersen, O. P. et al. 2014. 'The political origins of health inequity: Prospects for change', *The Lancet*, 383(9917), pp. 630-667. doi: 10.1016/S0140-6736(13)62407-1.
- 64 Skoufis E. 2005. 'Progress and its impact on the welfare of rural households in Mexico'. *Research Report 139*. Washington, DC: IFPRI, 2005.
- 65 World Health Organisation 2011. *Education: shared interests in well-being and development*, p. 10.
- 66 Abihiro, G. A. and De Allegri, M. 2015. 'Universal health coverage from multiple perspectives: a synthesis of conceptual literature and global debates', *BMC International Health and Human Rights*. doi: 10.1186/s12914-015-0056-9.

- 67 World Health Organisation 2016. 'Monitoring Universal Health Coverage', available online: <https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-03/3rd-IAEG-SDGs-presentation-WHO--3.8.1-and-3.8.2.pdf> [Last accessed on 25 September 2017].
- 68 Boutilier, Z. and Development, I. 2017. *SDGs and health : A vision for public policy*, pp. 1–7.
- 69 United Nations Department of Economic and Social Affairs 2017. 'Expert Group Meeting on Integrated Approaches to Implementing Sustainable Development Goal 3 in preparation for the 2017 HLPF, June 16 2017', pp. 1–5.
- 70 Kilpela, K. et al. 2016. 'Finnish experiences of health monitoring: local, regional, and national data sources for policy evaluation', 1(August 2017). doi: 10.3402/gha.v9.28824.
- 71 Kontunen, K. et al. 2014. 'Ensuring health equity of marginalized populations: Experiences from mainstreaming the health of migrants', *Health Promotion International*. doi: 10.1093/heapro/dau042.
- 72 Kontunen, K. et al. 2014. 'Ensuring health equity of marginalized populations: Experiences from mainstreaming the health of migrants', *Health Promotion International*. doi: 10.1093/heapro/dau042.
- 73 Kontunen, K. et al. 2014. 'Ensuring health equity of marginalized populations: Experiences from mainstreaming the health of migrants', *Health Promotion International*. doi: 10.1093/heapro/dau042.
- 74 Tangcharoensathien, V., Thwin, A. A. and Patcharanarumol, W. 2017. 'Lessons from the field Implementing health insurance for migrants, Thailand', *Bull World Health Organ*, 95 (May 2016), pp. 146–151. doi: 10.2471/BLT.16.179606.
- 75 Wudan Yan 2016. "Only One Country Offers Universal Health Care To All Migrants". *NPR.org*, 31 March 2016, available from: <http://www.npr.org/sections/goatsandsoda/2016/03/31/469608931/only-one-country-offers-universal-health-care-to-undocumented-migrants> [Last accessed on 25 September 2017].
- 76 United Nations Department of Economic and Social Affairs 2017. 'Expert Group Meeting on Integrated Approaches to Implementing Sustainable Development Goal 3 in preparation for the 2017 HLPF, June 16 2017', pp. 1–5.
- 77 United Nations Department of Economic and Social Affairs 2011, *Good Practices and Innovations in Public Governance United Nations Public Service Awards Winners, 2003–2011*; United Nations Department of Economic and Social Affairs 2013. *Good Practices and Innovations in Public Governance United Nations Public Service Awards Winners, 2012–2013*; UN Public Service Awards 2014, 2015 and 2017, available from: <https://publicadministration.un.org/en/UNPSA> [Last accessed on 25 September 2017].
- 78 Frenk, J. and Gómez-Dantés, O. 2017. 'False dichotomies in global health: the need for integrative thinking', *The Lancet*. doi: 10.1016/S0140-6736(16)30181-7.
- 79 Porter M. 2009. 'A strategy for health care reform. Toward a value-based system'. *N Engl J Med* 2009; 361: 109–12.
- 80 Sepúlveda J. Foreword. In: Jamison DT, Breman JG, Measham AR, et al, eds. 2006. *Disease control priorities in developing countries* (2nd edn). New York: Oxford University Press for The World Bank, 2006: xiii–xv.
- 81 Murray CJL, Frenk J. 2000. 'A framework for assessing the performance of health systems'. *Bull World Health Organ* 2000; 78: 717–31.
- 82 Fazey, I. et al. 2014. 'Evaluating knowledge exchange in interdisciplinary and multi-stakeholder research', *Global Environmental Change*. Elsevier Ltd, 25(1), pp. 204–220. doi: 10.1016/j.gloenvcha.2013.12.012.
- 83 Ghebreyesus, T. A. 2017. 'All roads lead to universal health coverage', *The Lancet Global Health*. World Health Organisation, (17), pp. 2–3. doi: 10.1016/S2214-109X(17)30295-4.
- 84 Frenk, J. and Gómez-Dantés, O. 2017. 'False dichotomies in global health: the need for integrative thinking', *The Lancet*. doi: 10.1016/S0140-6736(16)30181-7.
- 85 Porter M. 2009. 'A strategy for health care reform. Toward a value-based system'. *N Engl J Med* 2009; 361: 109–12.
- 86 Sepúlveda J. Foreword. In: Jamison DT, Breman JG, Measham AR, et al, eds. 2006. *Disease control priorities in developing countries* (2nd edn). New York: Oxford University Press for The World Bank, 2006: xiii–xv
- 87 Murray CJL, Frenk J. 2000. 'A framework for assessing the performance of health systems', *Bull World Health Organ* 2000; 78: 717–31.
- 88 Boutilier, Z. and Development, I. 2017. *SDGs and health: A vision for public policy*, pp. 1–7.
- 89 Edmonton Newspaper 2012. 'Highlights From An Australian Interview With Sir Michael Marmot And His Recent Canadian Presentation To Health Economists', available from: http://www.epimonitor.net/Michael_Marmot_Interview.htm [Last accessed on 25 September 2017].
- 90 National Health Sustainability Office, Ireland 2016. *Sustainability Strategy for Health 2017–2019*.
- 91 Black D., 1982. *Inequalities in Health: The Black Report*. London: Penguin.
- 92 Communist Party of China Central Committee and The State Council 2016. *Healthy China 2030" Development Plan*, available from: http://www.gov.cn/zhengce/2016-10/25/content_5124174.htm [Last accessed on 25 September 2017].
- 93 World Health Organisation 2016. 'Healthy China 2030 (from vision to action)', available from <http://www.who.int/healthpromotion/conferences/9gchp/healthy-china/en/> [Last accessed on 25 September 2017].
- 94 Storm, I. et al. 2016. 'How to improve collaboration between the public health sector and other policy sectors to reduce health inequalities? - A study in sixteen municipalities in the Netherlands.', *International journal for equity in health*, 15, p. 97. doi: 10.1186/s12939-016-0384-y.
- 95 Rudolph, L. et al. 2013. *Health in All Policies: Improving Health Through Intersectoral Collaboration*.
- 96 World Health Organisation 2016. *Resolutions and Decision, 69th World Health Assembly*, Geneva, 23–28 May 2016, available from: http://apps.who.int/gb/ebwha/pdf_files/WHA69-REC1/A69_2016_REC1-en.pdf#page=27 [Last accessed on 25 September 2017].
- 97 Note: The Shanghai Declaration highlighted that "Healthy lives and increased wellbeing for people at all ages can be only achieved by promoting health through all the SDGs and by engaging the whole of society in the health development process." (Ref: World Health Organisation 2016. 'Shanghai Declaration on Health Promotion in the 2030 Agenda for Sustainable Development', *9th Global Conference on Health Promotion*: Shanghai 21–24 November 2016, pp. 1–2. Available from: <http://www.who.int/healthpromotion/conferences/9gchp/shanghai-declaration.pdf?ua=1> [Last accessed on 25 September 2017].
- 98 World Health Organisation 2013. *Health in All Policies*, available from <http://www.healthpromotion2013.org/health--promotion/health-in-all-policies> [Last accessed on 25 September 2017].
- 99 Agenda, S. D. and Policies, A. 2017. 'Adelaide Statement I Implementing the Sustainable Development Agenda through good governance for health and wellbeing: building on the experience of Health in All Policies'.

- 100 Leppo K., Ollila E., Pena S., Wismar M., Cook S. 2013. 'Health in All Policies—Seizing Opportunities, Implementing Policies'. *STM, Ministry of Social Affairs and Health*, Helsinki, Finland.
- 101 Greaves L. J., Bialystok L. R. 2011. 'Health in All Policies—all talk and little action?', *Canadian Journal of Public Health/ Revue Canadienne de Santé e Publique*, 102, 407–409.
- 102 Boutilier, Z. and Development, I. 2017. 'SDGs and health : A vision for public policy', *G20 Insights, G20 Germany 2017*. pp. 1–7.
- 103 The World Health Organisation and the Ministry of Social Affairs and Health, Finland 2013. 'The Helsinki Statement on Health in All Policies', (June 2013). Available from: http://www.who.int/healthpromotion/conferences/8gchp/8gchp_helsinki_statement.pdf?ua=1 [Last accessed on 25 September 2017].
- 104 Rudolph, L. et al. 2013. *Health in All Policies: Improving Health Through Intersectoral Collaboration*.
- 105 Baum, F. et al. 2014. 'Evaluation of Health in All Policies: Concept, theory and application', *Health Promotion International*, 29, pp. i130–i142. doi: 10.1093/heapro/dau032.
- 106 Ollila, E. 2011. 'Health in All Policies: from rhetoric to action'. *Scandinavian Journal of Public Health*, 39(Suppl. 6), 11–18.
- 107 Department of Health, Australia 2010. *Health in All Policies: background and practical guide*, available from: <http://www.sahealth.sa.gov.au/wps/wcm/connect/public/content/sa+health+internet/resources/the+south+australian+approach+to+health+in+all+policies+background+and+practical+guide>. [Last accessed on 25 September 2017].
- 108 Pinto, A. D. et al. 2015. 'Economic considerations and health in all policies initiatives: evidence from interviews with key informants in Sweden, Quebec and South Australia', *BMC public health*, 15(1), p. 171. doi: 10.1186/s12889-015-1350-0.
- 109 Baum, F. et al. 2014. 'Evaluation of Health in All Policies: Concept, theory and application', *Health Promotion International*, 29, pp. i130–i142. doi: 10.1093/heapro/dau032.
- 110 Becerra-Posada, F. 2015. 'Health in all polices: A strategy to support the Sustainable Development Goals', *The Lancet Global Health. Pan American Health Organization*, 3(7), p. e360. <http://www.paho.org/> [Last accessed on 25 September 2017].
- 111 Khayat-zadeh-Mahani, A. et al. 2016. 'How Health in all policies are developed and implemented in a developing country? A case study of a HiAP initiative in Iran', *Health Promotion International*, 31(4), pp. 769–781. doi: 10.1093/heapro/dav062.
- 112 Ministry of Health and Social Services, Republic of Namibia 2010. 'Plan for national multi-sectoral monitoring and evaluation of HIV and AIDS', 2010/11-2015/16 /; Windhoek, Namibia, Directorate of Special Programs, Division Expanded National HIV and AIDS Coordination, Response Monitoring and Evaluation Subdivision. NYPL call number: Sc G 13-8 no. 1.
- 113 Ministry of Health and Social Services, Republic of Namibia 2010. 'Plan for national multi-sectoral monitoring and evaluation of HIV and AIDS', 2010/11-2015/16 /; Windhoek, Namibia, Directorate of Special Programs, Division Expanded National HIV and AIDS Coordination, Response Monitoring and Evaluation Subdivision. NYPL call number: Sc G 13-8 no. 1.
- 114 World Health Organisation, 2016. 'Progress in the implementation of the 2030 Agenda for Sustainable Development'. Available from: <https://www.news.admin.ch/news/message/attachments/44877.pdf> [Last accessed on 25 September 2017].
- 115 United Nations Department of Economic and Social Affairs, 2017. 'Multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals', *High-level political forum on sustainable development*, E/HLPF/201(E/HLPF/2017/4).
- 116 Lebov, J. et al. 2017. 'A framework for One Health research', *One Health*. doi: 10.1016/j.onehlt.2017.03.004.
- 117 Note: Examples of countries that have adopted One-Health policies include: Switzerland, Thailand, Uganda.
- 118 European Commission 2017. *A European One Health Action Plan against Antimicrobial Resistance (AMR)*.
- 119 Weitz, N. et al. 2014. 'Cross-sectoral integration in the Sustainable Development Goals: A nexus approach', *PLoS Medicine*, 14(4), p. 8. doi: 10.1371/journal.pmed.1002285.
- 120 Höög, E. 2013. 'Challenges in managing a multi-sectoral health promotion program', *Leadership in Health Services*, 26(4), pp. 368–386. doi: 10.1108/LHS-12-2011-0048.
- 121 Rosen, Bruce 2011. *The role of the Government in Israel in containing costs and promoting better services and outcomes of care*.
- 122 Knesset (Israel's unicameral parliament), State of Israel 2017. "Labor, Welfare and Health Committee", available from: https://knesset.gov.il/committees/eng/committee_eng.asp?c_id=28. [Last accessed: 25 September 2017].
- 123 Organization, W. H. and Office, R. 2012. *Preliminary review of institutional models for delivering essential public health operations in Europe*.
- 124 United Kingdom 2017. *All-Party Parliamentary Health Group (APHG)*, available from: <http://www.healthinparliament.org.uk/about-us>. [Last accessed: 25 September 2017].
- 125 Khayat-zadeh-Mahani, A. et al. 2016. 'How Health in all policies are developed and implemented in a developing country? A case study of a HiAP initiative in Iran', *Health Promotion International*, 31(4), pp. 769–781. doi: 10.1093/heapro/dav062.
- 126 Phua K. 2016. *Health care: What Brazil, Thailand are doing right*, available from: <http://www.asiaone.com/health/health-care-what-brazil-thailand-are-doing-right> [Last accessed on 25 September 2017].
- 127 Edwards, N. and Cohen, E. R. M. 2012. 'Joining up action to address social determinants of health and health inequities in Canada', *Healthcare Management Forum. Elsevier Inc.*, 25(3), pp. 151–154. doi: 10.1016/j.hcmf.2012.07.002.
- 128 Aluttis C, Baer B, Barnhoorn F, Brand H, van den Broucke S, Chiotan C, Costongs C, Jelfs E, Levin-Zamir D, Michelsen K, Otok R and Rechel B 2012. 'Reviewing public health capacity in the EU'. *Maastricht, Maastricht University*.
- 129 Tangcharoensathien, V., Walaiporn, P. and Panichkriangkrai, W. 2016. 'Health system review: Achievements and challenges Thailand Health Systems in Transition', pp. 1–11, available from: http://www.wpro.who.int/asia_pacific_observatory/hits/thailand-hit-policy-notes-2016.pdf [Last accessed on 25 September 2017].
- 130 Keast R 2011. 'Joined-Up governance in Australia: How the past Can inform the future'. *Int J Public Adm* 2011, 34(4):221–231.; Ross S, Frere M, Healey L, Humphreys C 2011. 'A whole of government strategy for family violence reform: a whole of government strategy for family violence reform', *Aust J Public Adm* 2011, 70(2):131–142.
- 131 Carey, G., Crammond, B. and Keast, R. 2014. 'Creating change in government to address the social determinants of health: how can efforts be improved?', *BMC public health*, 14(p 205), p. 1087. doi: 10.1186/1471-2458-14-1087.

- 132 Browne, G. R., Davern, M. T. and Giles-Corti, B. 2016. 'An analysis of local government health policy against state priorities and a social determinants framework', *Australian and New Zealand Journal of Public Health*, 40(2), pp. 126–131. doi: 10.1111/1753-6405.12463.
- 133 United Nations Department of Economic and Social Affairs 2014. *The 2014 Revision of the World Population Prospects*, available from: <http://esa.un.org/unpd/wup/Publications/Files/WUP2014-Report.pdf> [Last accessed on 25 September 2017].
- 134 State of African cities 2014. 'Re-imagining sustainable urban transitions'. *UN-Habitat*, available from: <http://unhabitat.org/wpdm-package/state-of-african-cities-2014-re-imagining-sustainable-urban-transitions/?wpdmml=111948> [Last accessed on 25 September 2017].
- 135 World Health Organisation 2015. *Global Health Observatory data: urban health*, available from: http://www.who.int/gho/urban_health/en/ [Last accessed on 25 September 2017].
- 136 McIlwaine, C. 2013. 'Urbanization and gender-based violence: exploring the paradoxes in the global South', *Environment and Urbanization*, 25(1), pp. 65–79. doi: 10.1177/0956247813477359.
- 137 Corburn, J. and Sverdluk, A. 2017. 'Slum upgrading and health equity', *International Journal of Environmental Research and Public Health*, 14(4), pp. 1–12. doi: 10.3390/ijerph14040342.
- 138 Boutillier, Z. and Development, I. 2017. *SDGs and health: A vision for public policy*, pp. 1–7.
- 139 Dubowitz, T. et al. 2016. 'Creating healthier, more equitable communities by improving governance and policy', *Health Affairs*, 35(11), pp. 1970–1975. doi: 10.1377/hlthaff.2016.0608.
- 140 City of Oklahoma 2017. 'MAPS history. Oklahoma City'. available from: <https://www.okc.gov> [Last accessed on 25 September 2017].
- 141 World Health Organisation 1978. *Declaration of Alma-Ata International Conference on Primary Health Care*, para 3. 6-12 September 1978.
- 142 Baatiema, L. et al. 2013. 'Assessing participation in a community-based health planning and services programme in Ghana', *BMC health services research*, 13(1), pp. 1–13. doi: 10.1186/1472-6963-13-233.
- 143 Goodman R, et al 1998. 'Identifying and defining the dimensions of community capacity to provide a basis for measurement', *Health Educ Behav* 1998, 25:258–278.
- 144 Hernández, A. et al. 2017. 'Engaging with complexity to improve the health of indigenous people: a call for the use of systems thinking to tackle health inequity', *International Journal for Equity in Health*. *International Journal for Equity in Health*, 16(1), p. 26. doi: 10.1186/s12939-017-0521-2.
- 145 Arnstein S 1969. 'A ladder of citizen participation', *J Am Plann Assoc* 1969, 35(4):216–224.
- 146 Ministry of Health, Ghana 2007. *The Ghana National Health Policy: Creating Wealth Through Health*.
- 147 Rifkin S, Muller F, Bichmann W 1988. 'Primary Health Care: On Measuring Participation', *Soc Sci Med* 1988, 26(9):931–940.
- 148 Andrew Jack 2017. 'The long road to elimination of neglected tropical diseases'. *Financial Times*, 18 April 2017.
- 149 Baatiema, L. et al. 2013. 'Assessing participation in a community-based health planning and services programme in Ghana', *BMC health services research*, 13(1), pp. 1–13. doi: 10.1186/1472-6963-13-233.
- 150 Andersson, N. et al. 2015. 'Evidence based community mobilization for dengue prevention in Nicaragua and Mexico (Camino Verde, the Green Way): cluster randomized controlled trial', *BMJ*, p. h3267. doi: 10.1136/bmj.h3267.
- 151 Tsoukias, A. et al. 2013. 'Policy analytics: an agenda for research and practice', *EURO Journal on Decision Processes*, 1(1), pp. 115–134. doi: 10.1007/s40070-013-0008-3.
- 152 United Nations, 2016. 'Report of the Secretary-General: Strengthening the global health architecture: implementation of the recommendations of the High-level Panel on the Global Response to Health Crises', A /70/824, 8 April 2016.
- 153 Blair, R. A., Morse, B. S. and Tsai, L. L. 2017. 'Public health and public trust: Survey evidence from the Ebola Virus Disease epidemic in Liberia', *Social Science & Medicine*. Elsevier Ltd, 172, pp. 89–97. doi: 10.1016/j.socscimed.2016.11.016.
- 154 Thornicroft G. 2013. 'Premature death among people with mental illness. At best a failure to act on evidence; at worst a form of lethal discrimination', *British Medical Journal* 2013; 346: f2969. doi:10.1136/bmj.f2969.
- 155 The BMJ 2013. *Life expectancy gap widens between those with mental illness and general population*, published 21 May 2013, available from: <http://www.bmj.com/press-releases/2013/05/21/life-expectancy-gap-widens-between-those-mental-illness-and-general-popula> [Last accessed on 25 September 2017].
- 156 Roberts, R. 2017, 'Integrating rural health care - Editorial'. doi: 10.1111/ajr.12350.
- 157 Petesch P, Smulovitz A, Walton M 2005. 'Evaluating empowerment: a framework with cases from Latin America. In Measuring empowerment: cross-disciplinary perspectives', edited by Narayan D. Washington, DC: *The World Bank*, 2005:39–67.
- 158 Hernández, A. et al. 2017. 'Engaging with complexity to improve the health of indigenous people: a call for the use of systems thinking to tackle health inequity', *International Journal for Equity in Health*, 16(1), p. 26. doi: 10.1186/s12939-017-0521-2.
- 159 Degeling, C. et al. 2015. 'Implementing a One Health approach to emerging infectious disease: reflections on the socio-political, ethical and legal dimensions', *BMC Public Health*, 15(1), p. 1307. doi: 10.1186/s12889-015-2617-1.
- 160 Weitz, N. et al. 2014, 'Cross-sectoral integration in the Sustainable Development Goals: A nexus approach', *PLoS Medicine*, 14(4), p. 8. doi: 10.1371/journal.pmed.1002285.
- 161 World Health Organisation 2012. 'Preliminary review of institutional models for delivering essential public health operations in Europe', *WHO Regional Office for Europe*.
- 162 World Economic Forum 2016. "Health Systems Leapfrogging in Emerging Economies Ecosystem of Partnerships for Leapfrogging", *WEF and Boston Consulting Group 2016 Industry Agenda*, May 2016.
- 163 Otsuki, K. 2011. 'Sustainable partnerships for a green economy: A case study of public procurement for home-grown school feeding', *Natural Resources Forum*, 35: 213–222. doi:10.1111/j.1477-8947.2011.01392.x
- 164 Picard A. 2011. 'Obesity costs economy up to \$7-billion a year'. *The Globe and Mail [Toronto]* 2011 June 20, available from: www.theglobeandmail.com/life/health-and-fitness/health/conditions/obesity-costs-economy-up-to-7-billion-a-year/article583803 [Last accessed on 25 September 2017].
- 165 World Health Organisation 2017. *Global Health Observatory (GHO) data*, available from: http://www.who.int/gho/health_financing/out-pocket_expenditure/en/ [Last accessed on 25 September 2017].
- 166 McDaid D 2012. Joint budgets. In: McQueen D et al., eds. *Intersectoral governance for Health in All Policies (forthcoming)*. Copenhagen, *WHO Regional Office for Europe on behalf of the European Observatory for Health Systems and Policies*.

- 167 Wismar M and Martin-Moreno JM 2013. 'Intersectoral working. In: Rechel B and McKee M, eds. Facets of public health (forthcoming)', Copenhagen, World Health Organisation, on behalf of the European Observatory on Health Systems and Policies.
- 168 Stead, D. 2008. 'Institutional aspects of integrating transport, environment and health policies', *Transport Policy*, 15(3), pp. 139–148. doi: 10.1016/j.tranpol.2007.12.001.
- 169 Stead, D. 2008. 'Institutional aspects of integrating transport, environment and health policies', *Transport Policy*, 15(3), pp. 139–148. doi: 10.1016/j.tranpol.2007.12.001.
- 170 Pinto, A. D. et al. 2015. 'Economic considerations and health in all policies initiatives: evidence from interviews with key informants in Sweden, Quebec and South Australia.', *BMC public health*, 15(1), p. 171. doi: 10.1186/s12889-015-1350-0.
- 171 World Health Organisation 2016. 'Health Promotion Track 5: Building capacity for health promotion', available from: <http://www.who.int/healthpromotion/conferences/7gchp/track5/en/> [Last accessed on 25 September 2017].
- 172 Kaiser K, Bredenkamp C, Iglesias R. 2016. 'Sin tax reform in the Philippines: transforming public finance, health, and governance for more inclusive development', *Washington, D.C.: World Bank*.
- 173 Rasanathan, K. et al. 2017. 'Governing multisectoral action for health in low- and middle-income countries', *PLoS Medicine*, 14(4), pp. 1–9. doi: 10.1371/journal.pmed.1002285.
- 174 McKee M. 2013. 'Seven goals for public health training in the 21st century', *Eur J Public Health* 2013; 23: 186?
- 175 Lomazzi, M., Jenkins, C. and Borisch, B. 2016. 'Global public health today: Connecting the dots', *Global Health Action*, 9(1). doi: 10.3402/gha.v9.28772.
- 176 Organisation for Economic Co-operation and Development (OECD) 2017. *International Migration Outlook 2017*, available from: <http://www.oecd.org/migration/international-migration-outlook-1999124x.htm> [Last accessed on 25 September 2017].
- 177 World Health Organisation 2010. 'WHO Global Code of Practice on the International Recruitment of Health Personnel', *Sixty-third World Health Assembly - WHA63*, 16 May 2010, available from: http://www.who.int/hrh/migration/code/code_en.pdf [Last accessed on 25 September 2017].
- 178 United Nations Department of Economic and Social Affairs 2014. *World Economic and Social Survey 2014/2015: Learning from National Policies Supporting MDG Implementation*.
- 179 Gillam, S. 2008. 'Is the declaration of Alma Ata still relevant to primary health care?', *BMJ : British Medical Journal*, 336(7643), pp. 536–538. doi: 10.1136/bmj.39469.432118.AD.
- 180 World Health Organisation 2013. *Global health workforce shortage to reach 12.9 million in coming decades*, available from: <http://www.who.int/mediacentre/news/releases/2013/health-workforce-shortage/en/> [Last accessed on 25 September 2017].
- 181 United Nations Department of Economic and Social Affairs 2014. *World Economic and Social Survey 2014/2015: Learning from National Policies Supporting MDG Implementation*.
- 182 Cometto, G. et al. 2013. 'Health Workforce Brain Drain: From Denouncing the Challenge to Solving the Problem', *PLoS Medicine*, 10(9), pp. 10–12. doi: 10.1371/journal.pmed.1001514.
- 183 Management Sciences for Health 2010. *Evaluation of Malawi's Emergency Human Resources Programme*, available from: <http://www.msh.org/news-bureau/msh-publishes-evaluation-of-malawi-human-resource-program.cfm>. [Last accessed on 25 September 2017].
- 184 Glenn Laverack 2014. *A-Z of Public Health (Professional Keywords)*.
- 185 Scaling Up Nutrition in Practice 2014. *Information Systems for Nutrition*, Issue 2, April 2014, available online: https://scalingupnutrition.org/wp-content/uploads/2012/10/Green_External_InPractice_second_ENG_20140806_web-spreads.pdf [Last accessed on 25 September 2017].
- 186 World Health Organisation 2017. *World Health Statistics 2017: Monitoring Health for The SDGs*, doi: 10.1017/CBO9781107415324.004.
- 187 Government of Bangladesh 2017. *Real-time health information dashboard*, available from: <http://103.247.238.81/webportal/pages/index.php> [Last accessed on 25 September 2017].
- 188 Carter, S. M. et al. 2011. 'Evidence, Ethics, and values: A Framework for Health promotion', *American Journal of Public Health*. doi: 10.2105/AJPH.2010.195545.
- 189 Lawless, A. et al. 2012. 'Health in all policies: Evaluating the South Australian approach to intersectoral action for health', *Canadian Journal of Public Health*, 103, pp. S15–S19. doi: 10.17269/cjph.103.2969.
- 190 Note: See also, for example, "Agent-based Modeling for Korean Strategic Foresight", *International Institute for Applied Systems Analysis (IIASA)*, available from: www.iiasa.ac.at; "The World in 2050 (TWI2050)", available from: www.twi2050.org [Last accessed on 25 September 2017].
- 191 Nilsson, M. 2017. *Important interactions among the Sustainable Development Goals under review at the High-Level Political Forum 2017*, available from: www.sei-international.org [Last accessed on 25 September 2017].
- 192 Harris-Roxas, B. F. et al. 2011. 'A rapid equity focused health impact assessment of a policy implementation plan: An Australian case study and impact evaluation.', *International journal for equity in health*. doi: 10.1186/1475-9276-10-6.
- 193 Allen, J. et al. 2013. 'Delivering Value in Healthcare : A Multi-Stakeholder Vision for Innovation', *Avalere Health LLC*. 2013 (March), pp. 2–27.
- 194 Buckingham Shum S 2012. 'Learning analytics', *UNESCO Policy Brief*.
- 195 González C, López DM, Blobel B. 2013. *Case-based reasoning in Intelligent Health Decision Support Systems*; Joseph K. H. Tan and Samuel Sheps 1998, *Health Decision Support Systems*.
- 196 Cardona, C. et al. 2015. 'Advancing One Health Policy and Implementation through the Concept of One Medicine One Science', *Global Advances in Health and Medicine*, 4(5), pp. 50–54. doi: 10.7453/gahmj.2015.053.
- 197 Boutilier, Z. and Development, I. 2017. 'SDGs and health: A vision for public policy', *G20 Insights, G20 Germany 2017*. pp. 1–7.
- 198 Edwards, N. and Cohen, E. R. M. 2012. 'Joining up action to address social determinants of health and health inequities in Canada', *Healthcare Management Forum. Elsevier Inc.*, 25(3), pp. 151–154. doi: 10.1016/j.hcmf.2012.07.002.
- 199 Jeremy Lim 2017. 'Health care: What Brazil, Thailand are doing right', *The Straits Times*, available from: <http://www.asiaone.com/health/health-care-what-brazil-thailand-are-doing-right> [Last accessed on 25 September 2017].
- 200 Shaw SE, Russell J, Greenhalgh T, Korica M. 2014. 'Thinking about think tanks in health care: a call for a new research agenda', *Social Health Illn* 2014;36:447–61. doi:10.1111/1467-9566.12071pmid:24111597.

- ²⁰¹ Hawkins B, McCambridge J. 2014. 'Industry actors, think tanks, and alcohol policy in the United Kingdom', *Am J Public Health* 2014;104:1363-9. doi:10.2105/AJPH.2013.301858pmid: 24922137.
- ²⁰² United Nations Department of Economic and Social Affairs 2016. 'Harnessing the Contribution of Science, Technology, and Innovation For Achieving the 2030 Agenda and the 17 Sustainable Development Goals. - Prepared by the 10-Member Group to support Technology Facilitation Mechanism', June 4th, 2016.
- ²⁰³ United Nations Department of Economic and Social Affairs 2017. *Technology Facilitation Mechanism (TFM)*, available from: <https://sustainabledevelopment.un.org/TFM/> [Last accessed on 25 September 2017].
- ²⁰⁴ Gadelha, C. et al. 2013. 'The health care economic-industrial complex: Concepts and general characteristics', *Health*, 5(10), pp. 1607-1621. doi: 10.4236/health.2013.510217.
- ²⁰⁵ World Health Organisation 2015. 'Global Observatory for eHealth', *the third global survey on e-health conducted by WHO Global Observatory for eHealth in 2015*.
- ²⁰⁶ European Commission 2007. "eHealth for Safety - Impact of ICT on Patient Safety and Risk Management", *Digital Single Market*.
- ²⁰⁷ Singapore Management University 2016. 'Technologies for Ageing-in-Place: The Singapore Context', *White Paper published in March 2016*.
- ²⁰⁸ Deakin University 2010. 'Smart Homes Can Help to Alleviate Loneliness among Senior Citizens.' *Deakin Software & Innovation Laboratory*.
- ²⁰⁹ United Nations Department of Economic and Social Affairs 2017. *United Nations Public Service Awards*, available from: <https://publicadministration.un.org/en/UNPSA> [Last accessed on 25 September 2017].

