

Discussion Paper

Addressing the Social Determinants of Noncommunicable Diseases

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Executive summary

Noncommunicable diseases (NCDs) — mainly cardiovascular disease, diabetes, cancer and chronic respiratory disease — are a significant global health and development challenge. They are the single greatest cause of preventable illness, disability and mortality worldwide, responsible for more deaths than all other causes combined. The social and economic impacts of NCDs are significant. NCDs reduce global and national economic output, strain health systems, burden vulnerable households, put human rights at risk and hamper progress on every Millennium Development Goal.

NCDs are unevenly distributed among and within countries.

Lower-income countries face large burdens, especially disproportionately high rates of NCD-related premature mortality. These countries have lower capacities to respond, and they simultaneously contend with ongoing communicable disease burdens. Within countries, various forms of disadvantage tend to be associated with NCDs, owing partly to greater exposure to the four main behavioural risk factors for NCDs: tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet. These behavioural causes have root causes. Differential exposures to NCD risk behaviours and access to preventive care can be traced to inequities in the conditions of daily life and further traced to underlying social, economic, political, environmental and cultural factors (and policy choices), broadly known as social determinants. Effectively and sustainably addressing the health and developmental burden of NCDs requires careful attention to these root causes. Responding to NCDs, like responding to HIV and other health issues, is not simply a matter of changing individual behaviour in isolation; broader changes in social, economic, environmental and cultural contexts are also needed.

Leadership and action from the health sector is the anchor for NCD responses. But 30 years of lessons from the AIDS response is a powerful reminder that the health sector cannot address complex health challenges on its own. Significant, complementary assistance from other sectors and stakeholders is crucial, especially to address social determinants. Multisectoral action as a cornerstone of NCD responses has been endorsed at the highest political levels, such as in the 2011 'UN Political Declaration on Non-communicable Diseases'.

A number of global and regional frameworks already exist to guide multisectoral action on NCDs and their social determinants, most recently the 'WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020'. These frameworks identify enablers for successful multisectoral action on NCDs and health more broadly: high-level political commitment, governance mechanisms to facilitate and coordinate multisectoral responses, and robust structures for monitoring, evaluation and accountability. These enablers have also been illustrated extensively in practice, not just with respect to NCDs but to other health challenges, such as HIV. This discussion paper builds on these foundations.

Noncommunicable diseases are not just one of the world's most pressing health concerns but also a significant development challenge. They impede social and economic development and are driven by underlying social, economic, political, environmental and cultural factors, broadly known as 'social determinants'. Working alongside specialist health partners, actors outside the health sector are uniquely well positioned to address the social determinants of noncommunicable diseases.

This paper offers two unique contributions. The first is a typology of multisectoral action on NCDs that highlights three general categories of possible action outside the health sector: expanding delivery platforms; NCD-specific actions on social determinants; and NCD-sensitive actions on social determinants.

- 1 **Expanding delivery platforms** involves using settings outside the health system — schools, workplaces, public-sector institutions — to deliver conventional biomedical and behavioural interventions to individuals and/or groups. Actors outside the health sector often have unique positions within communities, which can help extend the reach of services and information to remote and otherwise marginalized populations. The strength of actors outside the health sector, however, lies in addressing underlying social determinants directly through population-based policy and programmatic action. These actions may be either NCD-specific or NCD-sensitive.
- 2 **NCD-specific actions on social determinants** are laws, policies and programmes whose primary purpose is action on the social determinants of NCDs. These actions attempt to change conditions of daily life to promote physical activity and limit the production, advertising and consumption of tobacco, alcohol and unhealthy foods. Examples include taxes on tobacco and alcohol products, restrictions on ‘junk food’ advertising to children, the provision of smoke-free areas and limits on trans-fats.
- 3 **NCD-sensitive actions on social determinants** touch on the core business of actors outside the health sector, such as regulating employment and labour conditions, increasing access to education, challenging harmful gender norms, promoting a rights-enhancing legal environment, setting urban development policy or developing social protection programmes. Addressing NCDs is not the *raison d'être* of these broader activities; they matter in their own right. However, since they also tend to shape the nature, extent, distribution and potential impact of social disparities and marginalization — and, therefore, NCD distribution — the goal is to make the core business of actors outside the health sector even more sensitive to NCDs, to maximize the positive impacts on NCDs while minimizing the negative ones.

This paper's second contribution is a framework that outlines more specific areas and opportunities for actors outside the health sector to take action on the social determinants of NCDs. The framework has two parts. The first describes opportunities for NCD-specific and NCD-sensitive actions across the policy and programme lifecycle. The second part describes opportunities to create an enabling environment that promotes multisectoral action. Actors outside the health sector are uniquely positioned to help build political will, enabling legal frameworks, enforcement mechanisms and effective governance structures that are multisectoral and participatory – all anchored in a human rights-based approach.

This paper is intended for policymakers and programme managers at global, national and local levels, especially those outside the health sector. It is not meant to offer detailed prescriptions; instead, it is meant to serve as a reference for multisectoral dialogue and a platform on which further, more sector-specific and thematic guidance and tools can be developed. The hope is that this paper will strengthen partnerships among those inside and outside the health sector to help prevent and control one of the most significant threats to human development in the 21st century.

Structure of the document

Chapter 1: Noncommunicable diseases — a global health and development challenge provides background on the health and developmental burden of NCDs, explains that NCDs and their risk factors are rooted in social determinants and documents the high-level political momentum for taking multisectoral action in the response to NCDs.

Chapter 2: The social determinants of NCDs details the root causes of the level and distribution of NCDs. Specifically, it describes the social determinants of health framework conceived by the Commission on Social Determinants of Health and applies it to NCD outcomes and risk factors.

Chapter 3: Action on the social determinants of NCDs highlights existing frameworks and key enablers for taking action on the social determinants of NCDs. It offers a typology of multisectoral action on NCDs, with three general categories of possible action outside the health sector. Examples in each category are provided from various global contexts.

Chapter 4: Roles for actors outside the health sector builds on the typology and what is known to look more closely at opportunities for NCD-specific and NCD-sensitive action on social determinants. It presents the framework of suggested action outside the health sector, with illustrative examples.

Conclusion recaps broader messages and provides thoughts on future NCD-related work, including work that builds on this paper's key themes.

CHAPTER 1

NONCOMMUNICABLE DISEASES — A GLOBAL HEALTH AND DEVELOPMENT CHALLENGE



Purpose

This chapter provides background on the health and developmental burden of noncommunicable diseases (NCDs), explains that NCDs and their risk factors are rooted in social determinants and documents the high-level political momentum for taking multisectoral¹ action in the response to NCDs.

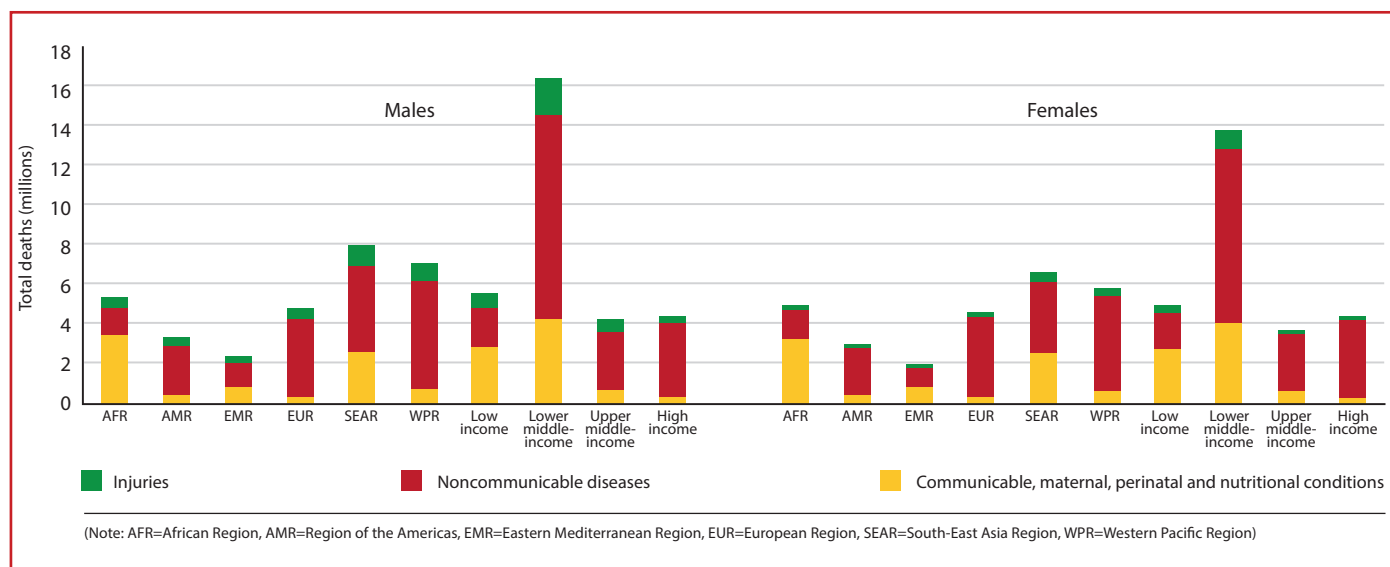
1.1 Status and trends of NCDs

NCDs — principally cardiovascular disease (CVD),² diabetes,³ cancer and chronic respiratory disease — are the world's leading forms of preventable illness, disability and mortality⁴ [4]. In 2010, all NCDs accounted for nearly 35 million (two thirds) of the 53 million global deaths, killing more people than all other causes combined. Five of the top six specific causes of death worldwide were NCDs [11]. NCDs were responsible for 54 percent of disability-adjusted life years (DALYs)⁵ globally in 2010. By comparison, the next highest contributor — communicable, maternal, neonatal and nutritional disorders — was responsible for 35 percent of DALYs. The contribution of NCDs to disease burden has grown since 1990, when communicable diseases were the leading cause of DALYs. At the time, communicable diseases accounted for 47 percent of total DALYs while NCDs accounted for 43 percent [12].

NCD epidemics are a global challenge. While they are often misconstrued as a problem of high-income countries, they place an equal — or even greater — burden on low- and middle-income countries (LMICs)[4]. LMICs account for approximately 80 percent of all NCD deaths, and 90 percent of NCD deaths before the age of 60 [4,13]. These countries have a lower capacity to respond and tend to face a double burden of increasing NCD prevalence on top of high rates of infectious diseases — mainly HIV, tuberculosis (TB) and malaria [14]. Figure 1 (next page) demonstrates that, for both men and women, mortality from NCDs surpasses mortality from all other causes in all regions except Africa.

- 1 The terms 'multisectoral' and 'intersectoral' are used interchangeably in various forums. Some have suggested that they mean different things, with multi-sectoral referring to whole-of-government approaches, and intersectoral referring to whole-of-society. An equally viable distinction could be that intersectoral action is a subset of multisectoral action, referring to not just action across sectors that may or may not be coordinated but to action that is specifically joint and coordinated, taking advantage of potential synergies. This document tries to consistently use multisectoral as a more general term. Where intersectoral is used, it is generally with respect to official use in a particular forum or publication.
- 2 CVD includes atherosclerosis, stroke and rheumatic heart disease, but the largest contributor to global CVD burden is coronary heart disease and cerebrovascular disease [1].
- 3 The majority of diabetes cases are classified as Type 1 or Type 2 diabetes. The difference is the mechanism leading to insulin deficiency; Type 1 is characterized by autoimmune destruction of insulin-producing cells in the pancreas, whereas Type 2 occurs when cells develop resistance to insulin [2]. Type 1 diabetes accounts for 5–10 percent of cases, whereas Type 2 accounts for 80–95 percent, depending on the population [3]. This report refers mainly to Type 2.
- 4 NCDs are a large cluster of conditions and thus may be more accurately described as 'interlinked epidemics'. WHO names CVD, diabetes, cancer and chronic respiratory disease as the 'four main NCDs' [4]; other NCDs include mental and neurological disorders such as dementia and Alzheimer's disease; autoimmune disorders such as psoriasis; bone and joint conditions such as osteoporosis and arthritis; and renal, oral, eye and ear diseases [5]. Mental health and physical health can affect each other [6,7]. Poor mental health is a risk factor for heart disease [8,9] and also increases the risk of mortality for people already with coronary heart disease [10].
- 5 DALYs are the sum of years of life lost (YLLs) and years lived with disability (YLDs).

Figure 1. Global distribution of deaths by cause, by region and sex, 2010



Source: [4]

Future projections suggest an even greater NCD burden. The World Health Organization (WHO) estimates that by 2020 NCD-attributable deaths will have increased by 15 percent globally, with an increase of over 20 percent anticipated in the WHO regions of Africa, South-East Asia and the Eastern Mediterranean [4]. By 2030, NCDs are expected to be the major cause of death in all regions, including Africa, and to kill 52 million people per year, nearly five times more than communicable diseases [4,15]. Also by 2030, the proportion of DALYs attributed to NCDs in LMICs is projected to reach 45 percent, up from 33 percent in 2002 [16]. For further epidemiological information on NCDs, including global trends and distributions, see the Annex.

1.2 NCDs and development



NCDs impose several interrelated social and economic costs. Lost productivity due to illness, disability or death from NCDs can impede macroeconomic growth and shift public budgets from other important health and development objectives [4,17]. Likewise, NCDs place an enormous and growing burden on health systems [18-20]. Households face social and economic costs. NCDs — and poor health generally — can exacerbate poverty and insecurity, with the burden of care often falling on women and girls [21]. These costs, together, affect progress on each of the Millennium Development Goals (MDGs)(see Table 2).

NCDs also have human rights dimensions. The right to health is enshrined in numerous international legal instruments and in some national constitutions,⁶ and avoidable NCD morbidity and mortality jeopardize this right. NCDs and poor health generally may also impede other human rights, such as access to education and freedom from discrimina-

⁶ See Universal Declaration of Human Rights: <http://www.un.org/en/documents/udhr/>. Article 25 provides that, “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services.” See also the International Covenant on Economic, Social and Cultural Rights, Article 12: <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx>. For a detailed interpretation, see [22].

tion. In turn, human rights violations can put people at greater risk for NCDs. Underlying social exclusion, marginalization and discrimination can create conditions that increase vulnerability to risk behaviours for NCDs: high rates of NCDs in various indigenous communities that have faced land displacement and various forms of exclusion are a case in point [23].

Macroeconomic costs

NCDs pose significant macroeconomic costs. The four main NCDs and mental health are projected to cost the global economy US\$47 trillion over the next 20 years, a sum equivalent to eradicating \$2/day poverty in 2.5 billion people for the next 50 years [17]. For LMICs, economic costs from the four main NCDs are estimated to exceed US\$7 trillion between 2011 and 2025. This is roughly equivalent to US\$500 billion per year, or 4 percent of gross domestic product (GDP) for LMICs in 2010 [24]. Tobacco use alone costs the world 1–2 percent of its GDP each year [25].

For low- and middle-income countries, economic costs from the four main NCDs are estimated to exceed US\$7 trillion between 2011 and 2025.

NCDs constitute a larger share of lost output in higher-income countries because labour and health care costs are more expensive and not because the epidemiological burden is necessarily worse [17]. NCD mortality and disability have the potential for even greater negative impacts on development in LMICs, where NCDs kill at younger ages than in richer nations [4,13]. Consequently, health costs begin earlier, and productivity losses are felt during more economically productive, higher-earning years [4]. By 2020, two thirds of the expected 7.5 million global deaths from tobacco will occur in LMICs, and half will be among those in their economically productive middle years (35–69)[26,27]. Early mortality and morbidity from NCDs can prevent LMICs from fully reaping the social and economic benefits of the demographic dividend, wherein a country experiences a large and healthy population of working age and a low dependency ratio (ratio of dependents aged 0–14 and over 65 to the working population aged 15–64)[28]. Early NCD mortality and disability also negatively impact long-term labour supplies in sectors that require more experienced, skilled personnel, ultimately negatively impacting GDP [17]. Country-specific estimates underscore the macroeconomic burden of NCDs (see Box 1).

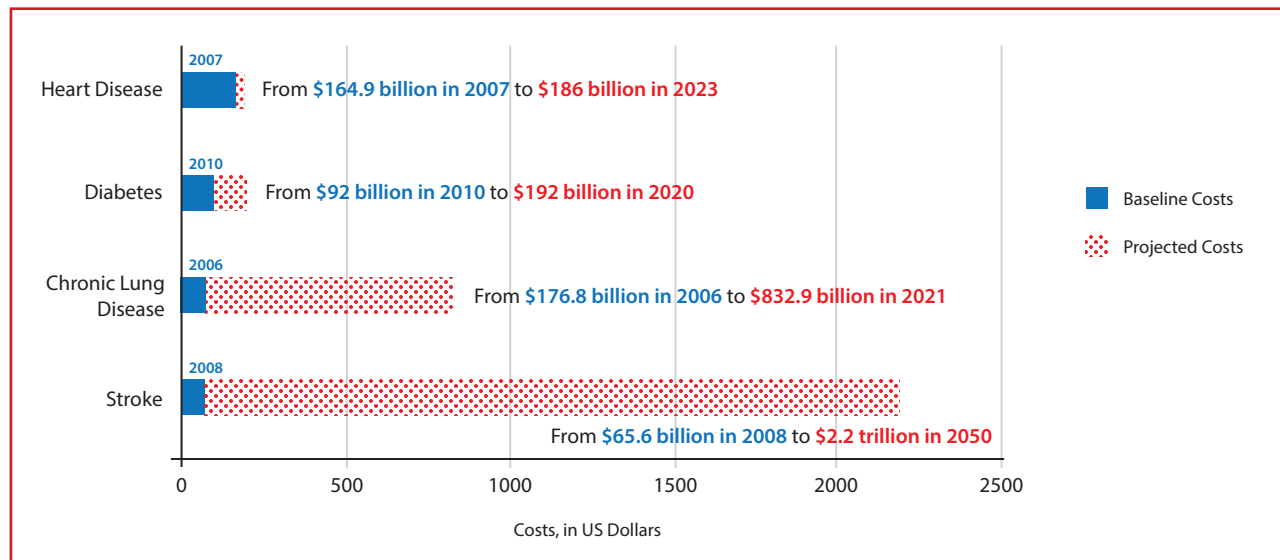
Box 1. Country-specific macroeconomic costs

China, India and the Russian Federation will forego on average US\$23–53 billion in national income between 2005 and 2015 due to mortality from heart disease, stroke and diabetes [29,30]. A 2011 World Bank study found that chronic conditions have depressed Egypt's labour supply nearly one fifth below its potential. As a result, GDP is estimated to be 12 percent below its potential [31]. In Namibia, a study of over 7000 workers from 2009–10 concluded that the greatest cause of absenteeism from the workplace was high blood glucose and diabetes [32]. Health-sector costs in the country had already been rapidly escalating due to HIV.

Health system costs

NCDs place an enormous burden on health systems, accounting for approximately 75 percent of global health care spending, a figure that is only expected to rise [33]. In 2011, diabetes alone cost health systems at least US\$465 billion, or 11 percent of global health care costs. By 2030, this number is projected to exceed US\$595 billion [20]. The NCD epidemic in the USA is a striking example of the expense of NCD care, raising questions of sustainability without concomitant changes in treatment technology and greater investments in prevention [18](see Figure 2).

Figure 2. Projected costs of chronic diseases in the USA



Source: [18]

Data on health system costs in LMICs are relatively sparse, largely due to limited NCD surveillance systems. In India, the four main NCDs together with mental and neurological disorders accounted for nearly 39 percent of total health expenditures in 2004, with CVD by itself accounting for 15.6 percent [19,34]. In 2007, the public sector in Thailand spent 21 percent of inpatient curative health expenditures on the four main NCDs and mental health [19]. Mexico spent 6.7 percent of total health expenditures on CVD, diabetes and obesity alone in 2006 [19,35]. Costs in lower-income settings are expected to rise rapidly, in some instances exceeding costs in higher-income countries [17].

Household-level social and economic impacts

Estimating the macroeconomic impacts of poor health is not always possible or reliable. Household-level analyses are useful in picking up microeconomic and distributional impacts, especially in the context of low-level epidemics, as illustrated by household impact studies in countries with low HIV prevalence [36]. The social and economic costs felt at household levels are especially severe among those already marginalized and vulnerable to shocks. Costs of medical care, which are often out-of-pocket expenses in LMICs, shift income from other important goals such as asset accumulation, education and food security. In the absence of effective and affordable health care and social protection, households can accumulate debt and/or liquidate income-generating assets to pay fees [4]. Globally, direct payments for health care impoverish up to 100 million people per year [37]. Evidence indicates that medical

costs for NCDs can be particularly devastating. In India, the odds of incurring catastrophic hospitalization expenditures are 160 percent higher for cancer than for a communicable disease [38]. Meanwhile, productivity losses from a sick, disabled or deceased family member impair the ability of a household to generate income, increasing the risk or severity of poverty. Children may drop out of school to care for a sick family member or to find work. Caregivers, often women and girls, may suffer from stress, further compounding family difficulties and increasing vulnerabilities [4,21]. In sum, NCDs, like poor health generally, can expand and deepen poverty, perpetuating intergenerational deprivation and reinforcing gender inequities among already vulnerable households.

Globally, direct payments for health care impoverish up to 100 million people per year.

NCDs and the MDGs

The impacts of NCDs on development are more than just economic or financial, as evidenced by their impacts on each of the MDGs. Some of the links between NCDs and the MDGs are highlighted in Table 2 (see next page).

1.3 NCD risk factors and the need for multisectoral action

NCDs have many risk factors. Four modifiable risk behaviours are key: tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet (see Table 1). These risk behaviours are prevalent worldwide and increasingly common in LMICs [4]. Tobacco use alone kills more than 6 million people each year, accounting for one in six deaths from NCDs [44]. Biological risk factors, such as raised blood pressure⁷ and overweight and obesity,⁸ arise in part from the four major risk behaviours and also contribute to the global NCD epidemic [44]. For further epidemiological information on NCD risk factors and their global distribution, see the Annex.

Table 1. The four main NCDs and their shared risk behaviours

		Common modifiable risk behaviours for NCDs			
		Tobacco use	Harmful use of alcohol	Physical inactivity	Unhealthy diet
NCDs	Cardiovascular disease	✓	✓	✓	✓
	Diabetes	✓	✓	✓	✓
	Cancer	✓	✓	✓	✓
	Chronic respiratory disease	✓			

Source: [4]

⁷ Raised blood pressure is defined as systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg, or using medication to lower blood pressure [4].

⁸ WHO defines overweight and obesity as abnormal or excessive fat accumulation that may impair health. Using body mass index (BMI), which is a person's weight in kilograms divided by the square of his or her height in metres, the WHO definition is: a BMI greater than or equal to 25 is overweight; a BMI greater than or equal to 30 is obesity [45]. In June 2013, the American Medical Association classified obesity as 'a disease' [46].

Table 2. NCDs and the MDGs

MDGs	Links to NCDs
	• Out-of-pocket medical costs and inability to work due to NCDs exacerbate poverty and often limit expenditures on other necessities, such as food [4,27]. • Household spending on NCD risk behaviours, such as tobacco and alcohol, also reduces money for food or shelter [4].
	• Sacrificing children's education is one possible consequence as families become burdened with NCDs [4].
	• Women are more likely to sacrifice work or education to care for a sick family member [21]. • Women bear the brunt of second-hand smoke and have difficulty negotiating smoke-free spaces for themselves or their children [21]. • Women are predisposed to certain NCDs, such as breast, ovarian and cervical cancers.
	• Half of annual tobacco-related deaths from second-hand smoke are among women, and a quarter are among children under five years old [5]. Pregnant women and their unborn children are at risk from second-hand smoke.
	• Overweight and obesity among women increases the risk of gestational diabetes (high blood sugar in pregnant women with no previous diagnosis of diabetes), which is a risk to the health of both mother and child during pregnancy and birth [3,39]. The child may be at greater risk for Type 2 diabetes and CVD in adult life [3].
	• Diabetes increases the risk of TB because it affects the body's ability to fight infection [40,41]. • Antiretroviral therapy for HIV can increase the risk of CVD by changing cholesterol levels, metabolism and deposition of body fat [41]. • One out of five TB deaths is related to smoking [5], and smoking also causes further illness in people living with HIV, including bacterial pneumonia and AIDS-related dementia [27].
	• Pesticide use and deforestation caused by tobacco farming and curing are detrimental to the environment [27].
	• The global political agenda recognizes the scope and magnitude of the NCD challenge as well as the need for a multisectoral response (see Chapter 1.4). • Multiple actors from governments, civil society, the private sector and philanthropic foundations are already taking action on NCDs. To promote coordination, WHO has developed an updated 'Global Action Plan 2013–2020' [42]. • Combating the NCD epidemic requires access to affordable and essential medicines, especially in developing countries [43].

NCDs, like many health issues, are unevenly distributed among and within countries, often patterned along various forms of disadvantage [4]. That NCDs disproportionately impact some LMICs and groups is partly due to greater exposure to the four main risk behaviours. In turn, differential exposures to NCD risk behaviours and access to health services can be traced to inequities in the conditions of daily life and further traced to underlying social, economic, political, environmental and cultural factors (and policy choices), broadly known as social determinants.⁹ NCDs, like HIV and other health issues, are not simply a matter of personal responsibility.¹⁰

Social determinants of health, broadly understood, are the conditions in which people are born, grow, live, work and age, and the systems put in place to prevent disease and treat illness when it occurs. The social determinants of health include the structural drivers of the conditions of daily life: the distribution of power, money and resources shaped by social, economic and political forces. The conditions of daily living include both material and psychosocial conditions — having control over one's life and participating in decisions that affect it [47].

“The notion that NCDs are primarily the result of behavior that can be changed by individuals is an erroneous yet widespread misperception that perpetuates the divide between rich and poor.”

— Benn Grover and Felicia Marie Knaul [49]

Multisectoral action is critical for effective, sustainable NCD responses globally, nationally and locally. The root factors that influence disease outcomes are neither inevitable nor immutable [47]. They are social, political and economic choices — choices that are sometimes unaware of their ultimate impacts on health and NCDs.¹¹ Effectively and sustainably addressing NCD burdens and inequities requires that different social, political and economic choices be made. Within these spheres, actors outside the health sector are uniquely positioned to take action.

⁹ The social determinants of NCDs are outlined in Chapter 2.

¹⁰ Transnational food, beverage and tobacco companies often prey on various disadvantages, invoking corporate tactics to deceive, control and addict vulnerable consumers [48].

¹¹ See Chapter 2 for examples.

1.4 Political context for addressing the social determinants of NCDs

Addressing NCDs and their social determinants through multisectoral action is now recognized at the highest political levels. In September 2011, the United Nations General Assembly held a ‘High-level Meeting on the Prevention and Control of Noncommunicable Diseases’ — only the second time in its history that the General Assembly convened on a health issue (the first being on AIDS in 2001). The resulting Political Declaration recognized NCDs as a global health concern and a threat to social and economic development, including the MDGs [50]. The Political Declaration committed the UN to five areas of action:

1. Reduce risk factors and create health-promoting environments;
2. Strengthen national policies and systems;
3. International cooperation, including collaborative partnerships;
4. Research and development; and
5. Monitoring and evaluation.

The Political Declaration called on countries to develop multisectoral national policies and plans on NCDs by the end of 2013 (article 45). It also stressed the need to adopt whole-of-government and whole-of-society approaches in the NCD response (articles 33–42).¹²

In October 2011, WHO convened the ‘World Conference on the Social Determinants of Health’, uniting partners to discuss action on the developmental drivers of health and health inequities, including NCDs. The resulting Rio Declaration expressed “determination to achieve social and health equity through action on social determinants of health and well-being by a comprehensive intersectoral approach.” The meeting drew explicit attention to the role of non-health-sector actors in improving health and reducing health inequities [51].

Subsequently, in May 2012, the World Health Assembly adopted a global target of a 25 percent reduction in NCD-associated premature mortality by 2025 [52].

In June 2012, the UN ‘Rio+20 Conference on Sustainable Development’ was unequivocal in its recognition for concerted action on NCDs, and stressed the importance of national policy and plan development:

“We acknowledge that the global burden and threat of non-communicable diseases constitutes one of the major challenges for sustainable development in the twenty-first century. We commit to strengthen health systems towards the provision of equitable, universal coverage and promote affordable access to prevention, treatment, care and support related to non-communicable diseases, especially cancer, cardiovascular diseases, chronic respiratory diseases and diabetes. We also commit to establish or strengthen multisectoral national policies for the prevention and control of non-communicable diseases. We recognize that reducing, *inter alia*, air, water and chemical pollution leads to positive effects on health.” — Article 141 [53]

¹² A whole-of-government approach to health is one in which all sectors of government — agriculture, trade, finance, communications, transportation etc. — develop policies that achieve their respective departments’ objectives while also benefiting health. A whole-of-society approach to health extends beyond government to also recognize the importance of families, communities, civil society, the private sector and other stakeholders on factors influencing health. Civil society plays key roles in implementation, bringing forward information and concerns of different constituencies, helping promote accountability and delivering needed services to hard-to-reach groups. Different elements of the private sector can play large roles, especially in how they produce, distribute and market different products. Communities themselves are crucial in communicating needs, contextualizing effective responses, holding people accountable for commitments and shaping norms.

In May 2013, the World Health Assembly endorsed the ‘WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020’, adopted the ‘Global Monitoring Framework on NCDs’ (GMF) and requested the development of a global coordination mechanism [54].

These recent high-level political commitments reinforce the principles underlying the 2003 ‘Framework Convention on Tobacco Control’ (FCTC), a ground-breaking international and legally binding treaty negotiated under the auspices of WHO. The FCTC, which has 177 country Parties,¹³ calls for a comprehensive, multisectoral approach to tobacco control that goes beyond health to encompass trade, tax, education, justice and law enforcement, environment and agriculture, for example [55].

Interference by various vested interests, lack of financial and technical resources and other barriers have contributed to under-implementation of the FCTC among Parties [56]. As such, accelerated implementation of the FCTC has been called for in the Political Declaration,¹⁴ ‘Rio Declaration on Social Determinants of Health’¹⁵ and in ‘The Future We Want’, the outcome document of the UN ‘Rio+20 Conference on Sustainable Development’.¹⁶

In response, a UN Economic and Social Council (ECOSOC) resolution of July 2012 emphasized the need for the UN to work across sectors to facilitate FCTC implementation, specifically encouraging;

“...integration of the World Health Organization Framework Convention on Tobacco Control implementation efforts within the United Nations Development Assistance Frameworks, where appropriate, in order to promote coordinated and complementary work among funds, programmes and specialized agencies.” — Article 1 [57]

Finally, NCDs and their social determinants feature in key intergovernmental processes on the post-2015 development agenda, especially with regard to how health is framed within the agenda. The UN Development Group has initiated a series of global, regional and national consultations on the post-2015 agenda [58]. The initial results have highlighted the prominence of NCDs within health and development more broadly. A high-level meeting of the global thematic consultation on health has listed ‘reducing NCDs and their risk factors’ as a health priority in the post-2015 era [59]. The global thematic consultation on health also drew attention to addressing health inequities and their underlying social determinants. Preventing ‘priority’ NCDs is a proposed target within an illustrative health goal in the report of the Secretary-General’s ‘High-Level Panel of Eminent Persons on the Post-2015 Development Agenda’, issued in May 2013 [60]. Targets for NCDs also appear in a subsequent report by the Sustainable Development Solutions Network, another advisory body to the Secretary-General on the post-2015 development agenda [61]. The Secretary-General incorporated these positions on NCDs in his July 2013 report to the General Assembly in which reductions in NCDs are highlighted as important for improving health in a post-2015 development agenda. How NCDs are ultimately framed in the post-2015 framework, including how NCDs and health are linked to other development goals outside the health sector, will have significant implications for the global response to NCDs and the governance of that response.

¹³ As of September 2013.

¹⁴ The 2011 Political Declaration called for accelerated FCTC implementation and for WHO, in coordination with other United Nations system agencies, to support national efforts on FCTC implementation.

¹⁵ Recognizing that “substantially reducing tobacco consumption is an important contribution to addressing social determinants of health and vice versa,” the ‘Rio Political Declaration on Social Determinants of Health’ paragraph 14 (iv) calls for accelerated implementation of the FCTC among Parties and encourages non-member countries to consider acceding.

¹⁶ As noted, Rio+20 Outcomes Declaration paragraph 141 states: “We also commit to establish or strengthen multisectoral national policies for the prevention and control of non-communicable diseases.”

CHAPTER 2

THE SOCIAL DETERMINANTS OF NCDs



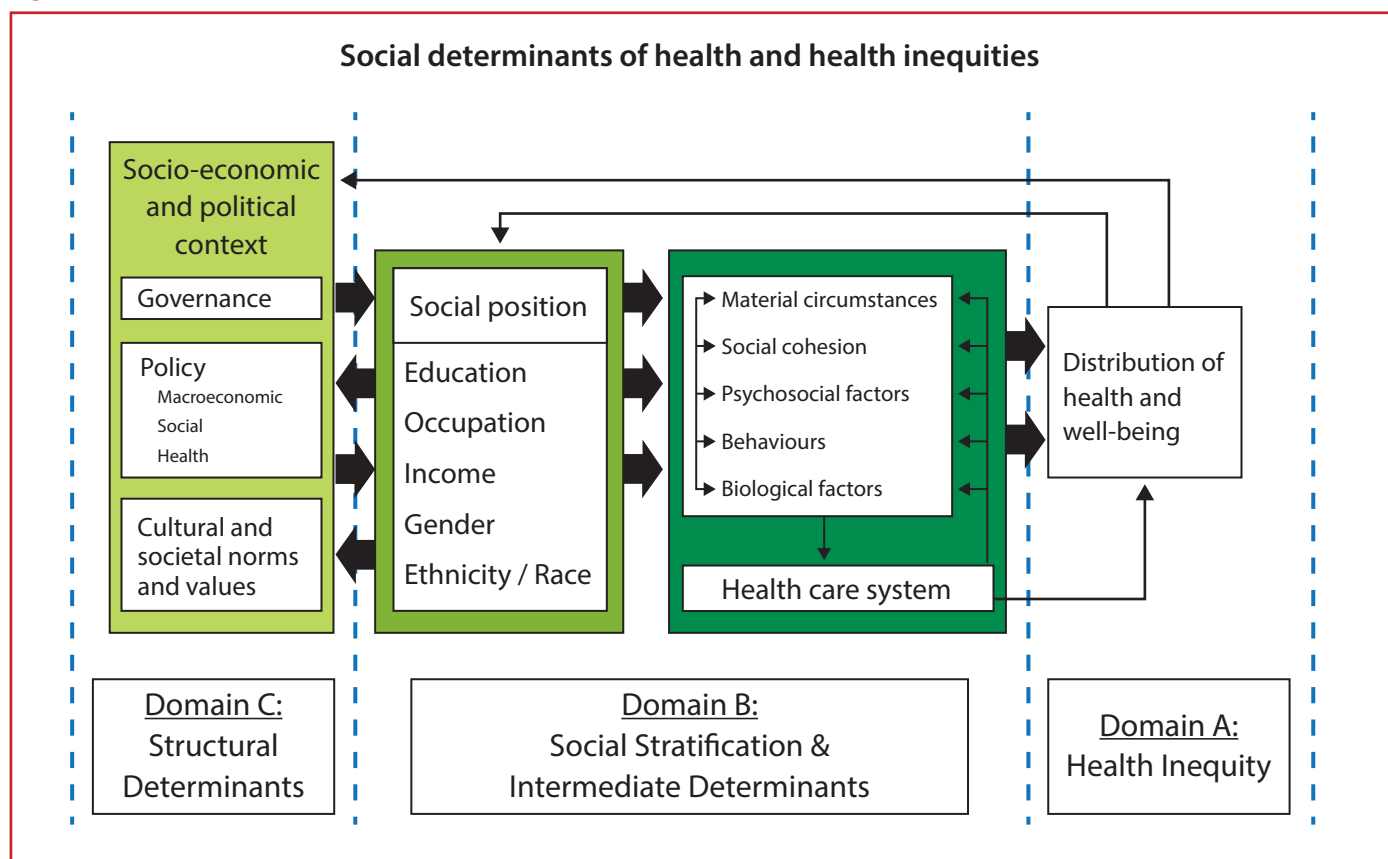
Purpose

This chapter highlights root causes of the level and distribution of NCDs. It has two parts. Chapter 2.1 presents a version of the pivotal framework on social determinants of health conceived by the Commission on Social Determinants of Health (CSDH). Chapter 2.2 applies the CSDH framework and its three interacting domains to NCD outcomes and risk factors.

2.1 A social determinants of health framework

In 2008, the CSDH formalized a social determinants of health framework to describe the relationships between macro-level socio-economic and political factors, social stratification and the resulting patterns, or inequities,¹ of disease risk factors and, ultimately, disease [47]. Figure 3 is one version of the framework.

Figure 3. Version of the CSDH framework



Source: adapted from [47]

¹ The CSDH emphasized that where inequalities related to health are avoidable, yet not avoided, such inequalities are inequitable. Taking action then becomes a matter of social justice. Because the inequalities detailed in this report are in fact avoidable, the term 'inequities' is used throughout.

The CSDH framework has three main, interacting domains. It is best explained from the far right (outcomes) to the far left ('causes of causes').

- **Domain A** represents the patterns or inequities observed in health outcomes and the social and economic impacts due to poor health. Differences among groups and within and across countries are partly mediated by the health care system but are primarily determined by intermediate factors. These intermediate factors are expressed in Domain B.
- **Domain B.** Exposure to intermediate factors, including material circumstance and behavioural, biological and psychosocial factors that determine health, are shaped by social stratification. Social stratification across intersecting dimensions of socio-economic status, gender and ethnicity or race creates a differential experience of, and vulnerability to, these intermediate factors, and is based on social position. In turn, social position is shaped by structural determinants, as represented in Domain C.
- **Domain C.** Structural determinants include systems of governance, economic policies and other government policies that shape and are shaped by society. National and local contexts influence and are influenced by global factors, including global and regional governance arrangements, trade regimes and treaties.

It is implicit in the CSDH framework that socio-economic and political contexts and policy choices exert the strongest influence on social position and stratification and, therefore, impact intermediate determinants and health outcomes. Health outcomes and inequities can, in turn, shape social position, policy choices and socio-economic and political contexts.

Systematic differences in health are observed along axes of socio-economic position, gender, race/ethnicity and geography, even when health care is universally available and free.

The CSDH emphasized that health inequities follow social gradients. Systematic differences in health are observed along axes of socio-economic position, gender, race/ethnicity and geography, even when health care is universally available and free. People experience different exposures and vulnerabilities to health-damaging conditions depending on these dimensions of social stratification. Underpinning the social determinants of health approach is the concept of empowerment, understood across three intersecting dimensions: material (having material conditions necessary for health), psychosocial (having control over one's life) and political (having a

political voice and participating in decision-making)[47]. A social determinants of health approach builds resilience through empowerment at individual, community and national levels.

Social determinants of health are not necessarily synonymous with social determinants of health inequities. Rather, social determinants of health become social determinants of health inequities if they are experienced differently, according to dimensions of social stratification. This distinction has significant policy implications. For example, a health-related behavioural policy that uses health messages to encourage fruit and vegetable consumption might impact groups differently based on their ability to access or afford fruits and vegetables. Social and cultural norms may affect tastes and preferences or other characteristics. Policies that reduce poor health in aggregate may do little to reduce relative inequities among groups, as shown in Box 2 (see next page).

Box 2. Social determinants of health inequities and the concept of ‘proportionate universalism’: tobacco control in England and the UK



Cigarette smoking is more prevalent among lower socio-economic groups in England, as it is elsewhere in the world. Smoking prevalence in manual and non-manual workers in England has declined at similar rates over the last 20 years such that the absolute difference in smoking prevalence between the two groups has remained the same, but the relative difference (ratio between prevalence rates) has risen.

In 2007, the UK, including England, introduced a ban on smoking in enclosed public spaces and workplaces. In the months after the ban, smoking prevalence followed similar proportionate reductions in both low and high socio-economic groups. Hence, the smoking ban had a beneficial effect in reducing smoking prevalence in all groups, and in reducing exposure of non-smokers to second-hand smoke, but it did not substantially close the gap on social inequities in smoking prevalence. To reduce inequities in smoking prevalence in England, measures are needed that influence smoking prevalence to a proportionately greater extent among the lower socio-economic groups.

Focusing on the most disadvantaged is not enough to sufficiently reduce health inequities. Marmot argues that to reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity proportionate to the level of disadvantage, and thus need, across society. This approach, ‘proportionate universalism’, strives to flatten the social gradient. Policies and programmes on NCDs and their risk factors should be enacted with this consideration in mind.

Source: [62]

Finally, the three domains in Figure 3 impact health throughout the life course [47,62]. A life-course perspective to health acknowledges that health risks tend to accumulate over time, beginning in the earliest years of life, even before birth, and continuing during childhood, adolescence and later stages of life [62]. A life-course perspective complements a social determinants of health approach, not only for understanding how social determinants shape disease risk factors, access to care and ultimately disease, but also for identifying potential entry points for action.²

2.2 Applying a social determinants of health framework to NCD outcomes and risk factors

The CSDH framework and its three domains — health inequity, intermediate determinants and structural determinants — help illuminate root causes in the level and distribution of NCDs. CVD and diabetes are used as illustrative examples given the wide scope of the NCD epidemic (and the reality of multiple, overlapping NCD epidemics).

² NCDs in particular tend to accumulate over time. For further discussion on a life-course perspective to NCDs, especially during the crucial early years, see Appendix 1.

Domain A: Health inequity

Health outcomes show significant social gradients or differences by socio-economic variables, for example occupation, income and education. Higher socio-economic status is generally associated with better overall health. Intersecting with socio-economic gradients are health inequities between men and women, by race/ethnicity and between geographical regions of residence, such as urban/rural [47]. There is variability within and among countries in the prevalence and patterning of NCD outcomes and risk factors.

Distribution of CVD and diabetes by sex

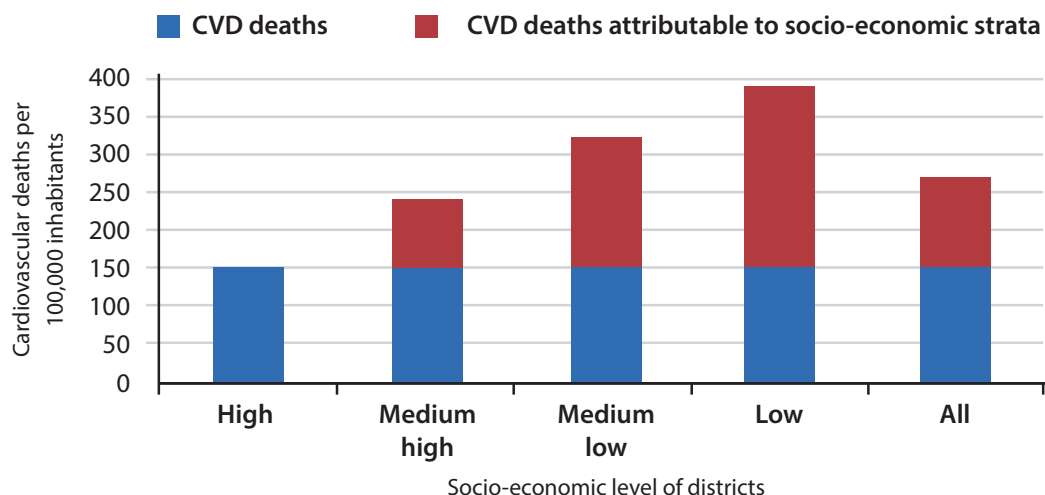
CVD is the leading cause of death globally among men and women. In all but the oldest age groups, men tend to have higher prevalence, incidence and mortality rates, a finding that has remained consistent historically and across countries and regions [63]. Women tend to lose fewer years of life due to CVD because they develop the disease about 7–10 years later than men [64,65].

Globally, diabetes prevalence shows little difference by sex (143 million women versus 142 million men in 2010), though the gap is expected to widen by 2030 (222 million women versus 216 million men)[66]. Sex differences are evident, however, at country and regional levels. In China, 50.2 million of all diabetics are men, whereas 42.2 million are women [67]. The reverse is true in the WHO African and Eastern Mediterranean Regions, where diabetes is more prevalent among women [4].

Distribution of CVD and diabetes by socio-economic status

In high-income countries, CVD and diabetes disproportionately affect lower socio-economic groups [68,69]. In lower-income countries, evidence is more limited. A 2008 study in Porto Alegre, Brazil, measured the relationship between CVD and socio-economic level by district, finding that the premature death rate for CVD was 2.6 times higher in poorer districts of the city (see Figure 4)[70].

Figure 4. Cardiovascular deaths of people aged 45–64 and social inequities: Porto Alegre, Brazil, 2008



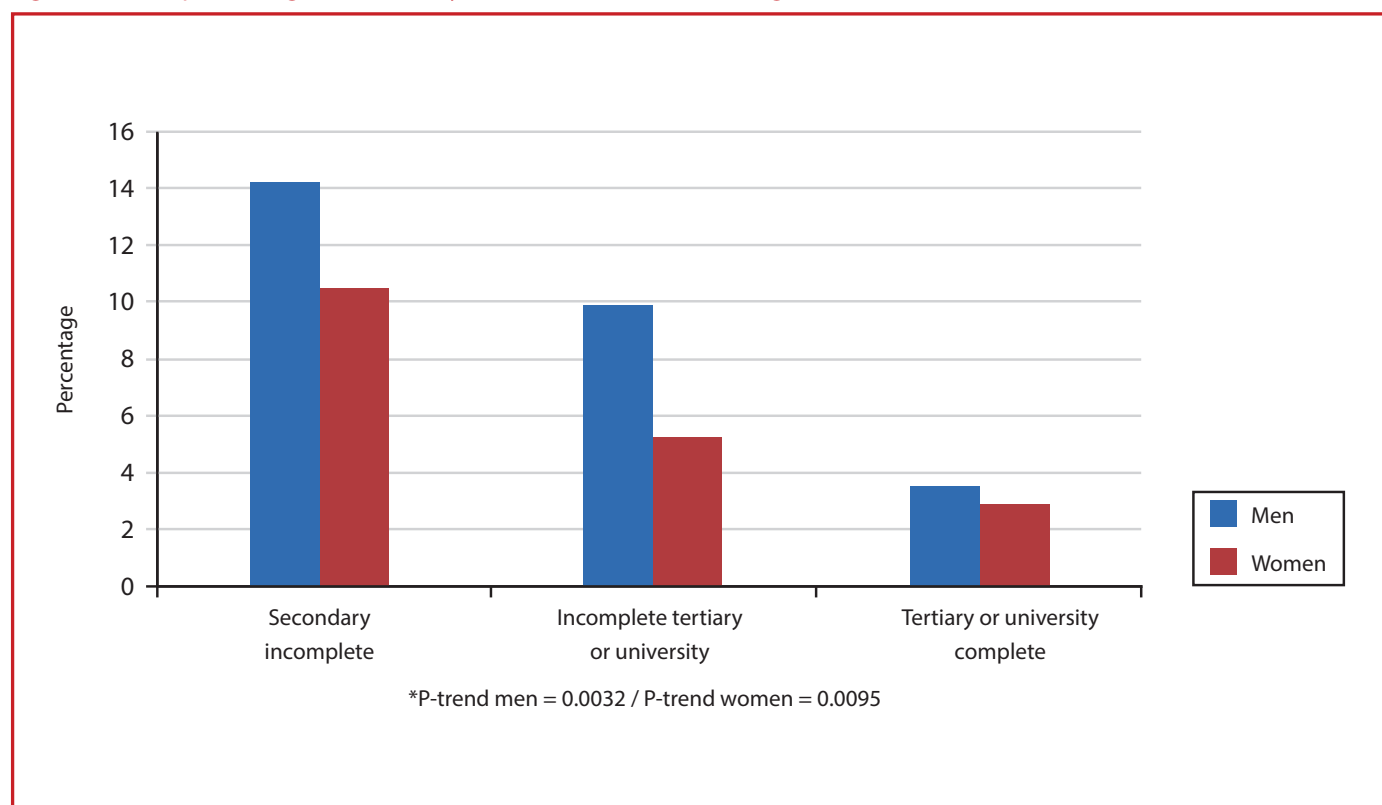
Source: [70]

Distribution of CVD and diabetes by educational attainment

In high-income countries, low education is associated with CVD, but the evidence is less clear in lower-income settings [71,72]. The 2009 INTERHEART study across 52 high-, middle- and low-income countries found that low education was consistently associated with increased risk of heart attacks in all regions, but most markedly in high-income countries [71]. Another study across 44 countries suggests that more education may have no protective effect on CVD in LMICs, particularly for women [72]. Evidence from rural Viet Nam suggests that the risk of dying from CVD among those with no formal education is 4.5 times higher than for those with primary and higher education [73].

Globally, diabetes prevalence is inversely associated with education [72]. Evidence from China [67] and Buenos Aires, Argentina, for example, shows that diabetes is associated with lower levels of education [74](see Figure 5).

Figure 5. Social patterning of diabetes by education, Buenos Aires, Argentina



Source: [74]

Domain B: Social stratification and intermediate social determinants of health

A strong evidence base causally links biological and behavioural risk factors to NCDs. Most, if not all, are preventable or modifiable in varying degrees. Within the CSDH framework, these biological and behavioural risk factors are considered intermediate social determinants. They are influenced by social position and directly impact disease incidence and outcomes [47].

The role of the health system is important, especially in helping to control biological risk factors, such as raised cholesterol, high fasting plasma glucose, raised blood pressure and overweight and obesity. Anti-hypertensive medicines can help control blood pressure [75], while statins are highly effective in controlling cholesterol [76]. Yet, even in contexts with universal health coverage, patients can face social and economic barriers to access [8,47,77,78]. For example, inequalities in access to diabetes care within countries are driven by several factors, such as the educational level of those who need care and the geographical distance needed to travel to access health services [3].

A social determinants approach to health should not be understood as separate from medical approaches; rather, a social determinants approach is integral and complementary, both in influencing service utilization and risk behaviours.

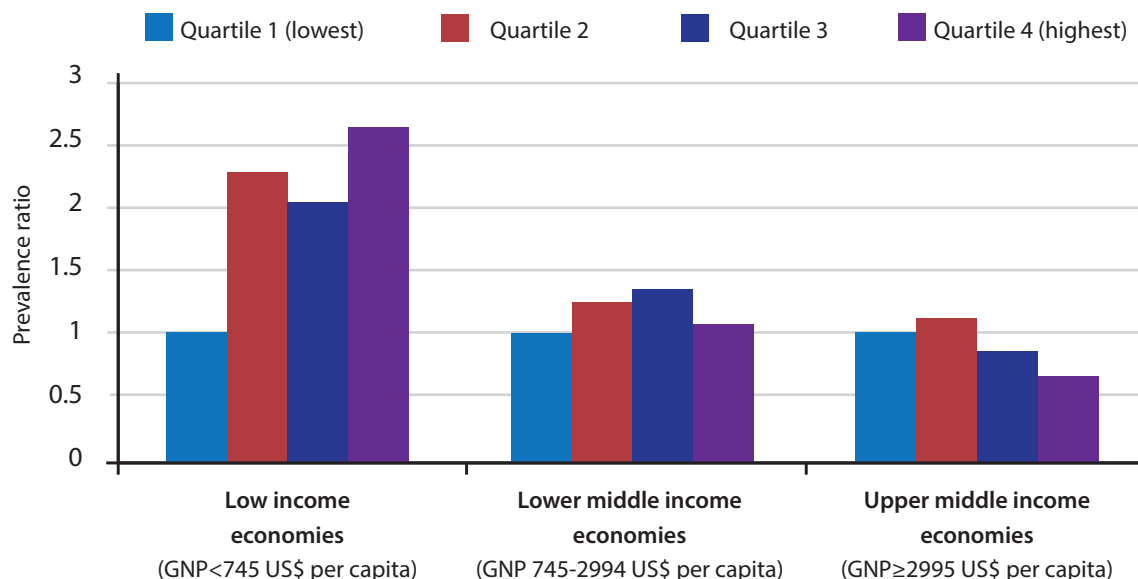
Many biological risk factors for NCDs are, in turn, driven by behavioural risk factors: tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet. While the health system can play a role, the effectiveness of most biomedical approaches will be enhanced when combined with multisectoral action on the social determinants that influence risk behaviours in the first place. A social determinants approach to health should not be understood as separate from medical approaches; rather, a social determinants approach is integral and complementary, both in influencing service utilization and risk behaviours.

Social stratifications: obesity

Obesity is an intermediate social determinant of NCDs. It is a major biological risk factor for CVD and diabetes, and its global prevalence is rising [1,3,44]. The obesity epidemic began in high-income countries in the 1970s and 1980s and has subsequently increased in LMICs [79]. One explanation for this trend is the nutrition transition, which posits that as countries develop economically, there is a shift, first among better-off groups, to unhealthy dietary habits and low levels of physical activity. Over time, as countries further develop economically and undergo urbanization, unhealthy diets and physical inactivity become increasingly prevalent among lower socio-economic groups and less prevalent among higher socio-economic groups [80,81].

In lower-income countries, obesity tends to affect those with higher incomes or education. The opposite is true in higher-income countries: obesity affects those with lower incomes or education. A 2004 study among women from 37 countries is a case in point. Obesity was more prevalent among more educated women in low-income countries but lower among more educated women in upper middle-income countries (see Figure 6, next page)[82]. Another major study among 54 LMICs showed a positive association between income and overweight/obesity among women [83].

Figure 6. Obesity prevalence in women, by education status in countries at different levels of economic development



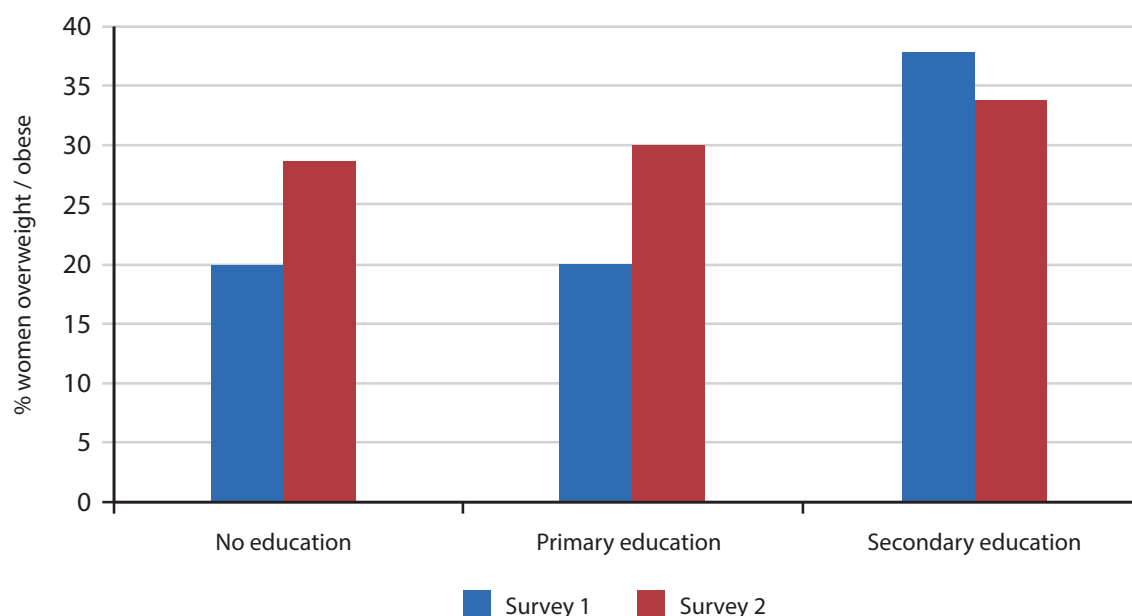
Source: [82]

Box 3. Social stratifications and obesity in Africa

Does education protect against obesity? The social complexity of the obesity epidemic is seen among urban women in Egypt. Between 1995 and 2008, obesity prevalence almost doubled among less educated urban women (from 24 percent to 45 percent), while rates among the most educated urban women also increased but at a slower rate (from 31 percent to 41 percent)[84].

A study of seven sub-Saharan African countries compared data from surveys carried out at least 10 years apart. Results showed that prevalence of obesity and overweight among women in urban areas increased by nearly 35 percent during the period covered. As in Egypt, the change was driven by an increase among the least educated women (a 45–50 percent increase). In sub-Saharan Africa, prevalence of obesity and overweight declined by 10 percent among women with secondary education or higher, though, at the time of the study, obesity and overweight were still more prevalent in richer and more educated groups [85] (see Figure 7, next page).

Figure 7. Trends in urban female overweight and obesity by education in seven sub-Saharan African countries



Source: [85]

Social stratifications: behavioural risk factors for NCDs

The four main behavioural risk factors for NCDs — tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet — are shaped by social position. Like obesity, they are intermediate social determinants of NCDs within the CSDH framework. In high-income countries, behavioural risk factors tend to be more prevalent among disadvantaged groups.

Tobacco use

Tobacco use is the only modifiable risk factor common to all four main NCDs [25]. Tobacco use and related mortality is increasingly concentrated in LMICs, and by 2030, 70 percent of tobacco-related deaths will be in LMICs [86]. In every region of the world, lower-income groups are more likely to use tobacco [7,64]. Generally, men are more likely than women to use tobacco, and, as a result, tobacco is a larger contributor to disease burden for men than for women [44]. However, women are taking up smoking at alarming rates,³ especially in LMICs, driven by the tobacco industry's aggressive marketing to new consumers. Increased efforts are needed to help women as well as men avoid smoking [25].

By 2030, 70 percent of tobacco-related deaths will be in LMICs. In every region of the world, lower-income groups are more likely to use tobacco.

³ The proportion of females who smoke is expected to rise from 12 percent in 2010 to 20 percent by 2025 [21].

Harmful use of alcohol

Regular consumption of excessive amounts of alcohol (binge drinking) is not only associated with CVD but also other health risks, including HIV and other sexually transmitted infections, domestic violence, TB and road traffic accidents [4,44,87-89]. Evidence is limited on the distribution of harmful use of alcohol in low-income countries. What evidence does exist suggests that it is more prevalent among lower socio-economic groups and more prevalent among men than among women [90]. In 2010, alcohol use was the third leading risk factor for overall disease burden among men (7.4 percent) versus the eighth leading risk factor among women (3 percent)[44].

Physical inactivity

Regular physical activity has been shown to lower the risk of coronary heart disease and stroke, diabetes, hypertension, certain cancers and depression [91]. An imbalance between too much energy input from dietary intake and insufficient energy expenditure through physical activity is associated with increased risk of overweight and obesity. Sufficient moderate physical activity (the equivalent of 150 minutes per week) improves cardiovascular fitness. Individuals in higher-income countries tend to have lower overall levels of physical activity [4]. Within higher-income countries, however, people with higher incomes tend to be more physically active [92-97]. There are also differences in physical inactivity by sex, as women are less likely than men to be physically active across all regions and in nearly every country [4,98]. Women may perceive certain neighbourhoods as unsafe for walking or jogging. Gender norms or concerns about safety may also discourage girls and women from playing outside, walking to and from school and engaging in sports [99,100].

Unhealthy diet

Consumption of high levels of trans-fats, saturated fats, processed and refined foods, sugar, salt and sugary drinks is associated with increased risk of CVD and diabetes, while adequate consumption of fruits and vegetables is associated with reduced risk of coronary heart disease and stroke [4,101,102]. Unhealthy diet tends to follow a socio-economic gradient. Higher-quality diets are associated with persons of greater affluence, while energy-dense diets that are nutrient-poor are associated with persons of more limited economic means [1,103]. Education and sex also impact diet. Unhealthy diets are associated with lower levels of education [104]. Low fruit intake represented a 50 percent greater share of disease burden among men than among women in 2010 [44].

Material circumstance as an intermediate social determinant of NCDs

Within the CSDH framework, material circumstance is another intermediate social determinant of health. For NCDs, community or neighbourhood environments largely define the conditions in which people live and have a large influence on the risk of obesity and diabetes. A randomized control study in which mothers and families were given the opportunity to move from a neighbourhood with a high level of poverty to a neighbourhood with a lower level of poverty found that moving to a better-off neighbourhood was associated with reductions in obesity and diabetes [105]. Multiple mechanisms have been proposed whereby neighbourhood environment affects the risk of obesity, including through interrelated material mechanisms. These material mechanisms include the nature of the built environment, such as proximity to food outlets selling processed foods, as well as psychosocial mechanisms, such as conforming to social norms of behaviour. For example, one study found that US children living in unfavourable social conditions — unsafe surroundings, poor housing and no access to sidewalks, parks and recreation centres — were 20–60 percent more likely to be overweight or obese compared with children not facing such conditions [103].

Box 4. Social stratifications and material circumstance in India



India has a vast and heterogeneous population that faces a growing risk of CVD and diabetes, especially among socially deprived groups. A study that compared CVD risk by educational level in populations from highly urban and peri-urban industrialized regions of India found that prevalence of tobacco use, hypertension (high blood pressure), diabetes and overweight was higher among less educated groups. Conversely, in less urbanized areas, prevalence of tobacco use and hypertension, but not overweight and diabetes, was higher among less educated groups. Increased urbanization was associated with increased prevalence of risks for CVD and diabetes among socially disadvantaged groups. Hence, to reduce the spread of CVD and diabetes in India, strategies should focus on disadvantaged groups (with a scale and intensity proportionate to levels of disadvantage).

Source: [106]



Domain C: Structural determinants of health

Structural determinants of health refer to macro-level socio-economic, political and cultural factors, policy choices and contexts. These factors, which shape and are shaped by society, include government and economic policies, urbanization, cultural norms and others. National and local contexts influence and are influenced by global factors, including global and regional governance arrangements, trade regimes and treaties [47].

Structural factors matter in their own right, above and beyond health. They generate social stratifications of individuals and groups, including by income, education and occupation. As expressed in the CSDH framework, social stratifications (Domain B) ultimately result in health inequities (Domain A). Thus, structural determinants also matter greatly for NCD prevention and development.

Because structural determinants of NCDs are macro-level, root causes, their exact impacts on NCD outcomes are sometimes difficult to determine. Nevertheless, a wealth of evidence shows that policies (and policy changes) do have certain or probable impacts on NCD dynamics and risk factors. Tobacco use provides a comprehensive example.

Box 5. Tobacco use and the structural determinants of health

The shifting global patterns of tobacco consumption and mortality provide a snapshot of how various structural determinants impact NCD risk factors, disease and, ultimately, death. Tobacco consumption is declining in high-income countries because people in those countries increasingly understand the dangers of smoking, while governments continue to implement tobacco control laws and policies in line with the FCTC, such as legislating for smoke-free public places or work environments [25]. Canada and Australia have made efforts to de-glamourize tobacco use by posting graphic health warnings on cigarette boxes and/or requiring that cigarettes be sold in plain, olive-coloured packages [25,107,108]. Tobacco-related mortality is declining in high-income countries due to lower consumption patterns but also due to the success of population-wide primary prevention and individual health-care interventions in reducing NCD mortality in general [4]. The situation is different in LMICs, where globalization of trade, targeted marketing, population increases, increased social acceptability of smoking and continued economic development have all contributed to the rise of tobacco consumption. One particular concern is tobacco companies' marketing directly to women, often using campaigns centred on creating an association between smoking and gender equality [25].

Case studies on the structural determinants of health and NCD dynamics

Trends in regional tobacco consumption and mortality tell the broad story. The case studies that follow provide further insight into how specific structural determinants can impact NCD dynamics.

Trade liberalization and foreign direct investment in Mexico

In Mexico, the availability of unhealthy food and drink products has increased significantly. Globalization, trade liberalization⁴ and foreign direct investment⁵ have been contributors. The 1994 North American Free Trade Agreement (NAFTA) among the USA, Canada and Mexico has contributed to the nutrition transition in Mexico. By opening trade, NAFTA paved the way for

⁴ Trade liberalization is the reduction and elimination of tariff and non-tariff barriers to trade such that products can be more easily imported and exported among countries. Trade liberalization has been posed as a means to reduce poverty and improve food security and health equity in developing countries, by facilitating greater transfer of capital, technology, knowledge and people [109,110].

⁵ Foreign direct investment is the investment by a company or entity in one country into an entity or company based in another country.

rapid increases in foreign direct investment, which drove expansion of the food processing industry and with it the distribution, marketing and retailing of processed foods within Mexico [111]. Other factors influencing the availability and affordability of unhealthy foods in Mexico include urbanization and food and agricultural subsidies affecting global commodity prices [111,112].

Data on total energy intake among Mexicans before and after NAFTA demonstrate the impact. Between 1988 and 1999, the percentage of total energy intake from fat among Mexicans increased from 23.5 percent to 30.3 percent. Purchases of refined carbohydrates increased by 37.2 percent over the same period. Absolute increases of energy intake from fat were higher in the wealthier north and in Mexico City (30–32 percent) than in the poorer southern region (22 percent). Increases were significant, however, throughout the country [111]. Today, over 8 percent of Mexicans have diabetes, which costs the country US\$15 billion each year according to WHO estimates [113]. The situation in Mexico demonstrates the long causal chain linking structural determinants to NCDs and development — from trade liberalization and foreign direct investment to unhealthy diets to disease outcomes to developmental impacts.



Intellectual property laws in India

Access to medicines for NCDs is critical for secondary and tertiary prevention,⁶ but financial constraints can impede access, particularly in lower-income settings⁷ [115]. Intellectual property laws are a significant determinant of the cost of medicines. Newly developed and patented⁸ NCD medicines often face no competition from generic medicines and are thus costly. The high price of some NCD medicines, together with the growing burden of NCDs, could make offering universal health coverage in some countries less effective, sustainable or otherwise financially viable [43].

The high price of some NCD medicines could make universal health coverage less effective or sustainable. Intellectual property laws are a significant determinant of the cost of medicines.

Legal debates are taking place in India on the association between intellectual property laws and access to medicines for NCDs. Some cases have made NCD medicines far more affordable. Novartis, a large pharmaceutical company, was recently refused a patent in India for its new drug to treat chronic myeloid leukaemia because the Indian Patent Office deemed the drug too similar to its old form. The ruling allowed Indian generic companies to supply the drug at US\$124–174 per month, compared with the branded price of US\$2478 per month. Another example is Nexavar,

a drug patented by Bayer and used to treat renal and hepatocellular carcinoma. In 2012, the Indian government issued a compulsory licence allowing an Indian company to produce a copy of Nexavar, arguing that Bayer had not priced the drug at an affordable level for all Indian patients, nor had it ensured sufficient availability in India. The decision resulted in a price

⁶ Secondary and tertiary prevention involve providing treatment and medicines that can detect disease early, halt disease progression, including recurrent adverse effects, and/or manage disease over the long term.

⁷ The likelihood of a patient in a low-income country receiving one or more medicines for secondary prevention of CVD is only 19.8 percent, compared to 54.9 percent in an upper middle-income country [114].

⁸ Patents are a legally binding arrangement that allows inventors — in this case, pharmaceutical companies — the exclusive rights to produce their invented products — in this case, drugs — for a set duration. Maintaining sole production usually enables the patent-holder to set a higher price than would otherwise be the case.

drop of the drug from more than US\$5500 per month to, ultimately, US\$125 per month. At the time of writing, Bayer is appealing the ruling. The outcome of these cases is of global relevance for NCDs and health more generally, since the Indian pharmaceutical industry supplies many medicines to LMICs and is referred to as the pharmacy of the developing world [43].

Trade in the Asia-Pacific region

NCDs are a tremendous burden in Pacific Island Countries (PICs), accounting for roughly 60–77 percent of total deaths in 2008 [116]. These countries experience some of the highest rates of diabetes and obesity in the world, with diabetes prevalence in some PICs as high as 47 percent and obesity as high as 75 percent [117]. Risk behaviours and dietary imbalances are intermediate causes, but structural factors are also shaping the epidemic.

Trade liberalization in the Asia-Pacific region, as in Mexico and elsewhere, has increased the availability of sugary, high-fat, highly processed and nutrient-poor foods, which are linked directly to obesity [109,118]. Between 1963 and 2000, the total fat supply in PICs increased by 5–80 percent, with the largest increases in higher-income islands (80 percent in French Polynesia, 65 percent in Fiji)[109]. Foreign direct investment has similarly contributed to the availability of unhealthy foods in the wider Asia-Pacific region. Transnational food companies now have an established presence in the region; in 2003, the top 30 global food retailers had 19 percent of the market in Asia and Oceania. By choosing which products to sell, setting retail prices and labelling and promoting certain goods through marketing, these retailers have strongly shifted regional eating preferences towards cheap, processed and refined foods. Over the coming years, Viet Nam, China and Indonesia are expected to be the fastest-growing markets for packaged food retail sales. Korea, Thailand, India and the Philippines will all rank among the top 10 [109,119].

Trade liberalization in the Asia-Pacific region, as in Mexico and elsewhere, has increased the availability of sugary, high-fat, highly processed and nutrient-poor foods, which are linked directly to obesity.

Trade liberalization need not lead inevitably to worse health outcomes; or negative impacts can be reduced. In February 2013, UNDP, the Pacific Research Centre for the Prevention of Obesity and Non-Communicable Diseases (C-POND),⁹ the Secretariat of the Pacific Community (SPC)¹⁰ and WHO held a workshop in Fiji on strengthening capacity for multisectoral collaboration (focusing on the health and trade sectors) to facilitate trade policies that support a health-promoting environment, including access to affordable health care¹¹ [120]. The current 'WTO Agreement on Sanitary and Phytosanitary Measures' [121] provides a mechanism by which countries can implement — and have implemented — various limitations on trade to protect public health. The use of flexibilities within TRIPS agreements has allowed countries, including Brazil, Thailand, South Africa and Indonesia, to issue compulsory licences to ensure access to essential medicines such as antiretrovirals for HIV¹² [123]. For NCD medicines, the full use of TRIPS flexibilities was affirmed in the 'High-level Political Declaration on NCDs' [50] and reaffirmed in the Rio+20 outcome document [53]. It is important to preserve such flexibilities in domestic policy space as part of future negotiations of global, regional and bilateral trade regimes.

9 The Pacific Research Centre for the Prevention of Obesity and Non-Communicable Diseases (C-POND) is a partnership between the Fiji School of Medicine and Deakin University, Melbourne, Australia.

10 The Secretariat of the Pacific Community (SPC) is an international organization that works in various disciplines, including public health, to help PICs achieve sustainable development.

11 Specific workshop objectives included: encouraging a shared understanding between health, trade, planning and civil society on the health implications of trade agreements in the Pacific; identifying tools and systems for assessing the potential impact of trade agreements on health, and health policy on trade; and drafting country strategies for developing trade policies that support health, and health policies that are trade compliant.

12 The 2001 'Doha Declaration on the TRIPS Agreement and Public Health' affirmed that TRIPS "can and should be interpreted and implemented in a manner supportive of WTO members' right to protect public health and, in particular, to promote access to medicines for all" [122].

Food policy in the USA

In 2007–2008, the adult age-adjusted prevalence of obesity in the USA was 33.8 percent [124]. Childhood obesity in America is growing three times faster than adult obesity. These health trends are accompanied by tremendous economic costs. In 2008, the USA spent US\$147 billion on obesity-related illness [125].

America's obesity epidemic is connected to agricultural policies dating back to the 1960s, when the US government promoted cheaply grown commodity crops (e.g. corn, wheat, rice and milk) to provide Americans with inexpensive and calorie-dense meals. Today, this same 'cheap food policy' is believed to contribute to the supply of nutrient-poor snacks, sugary beverages and foods high in saturated fats. In the face of high obesity rates, US farmers continue to receive support from the government for the production of certain commodities. In 2001, when declining crop prices threatened farmers' business, farmers received government payments totaling US\$20 billion [125]. Many of these subsidies are permissible under WTO rules, illustrating again the ways in which trade agreements can ultimately influence health, including NCDs.

Social policy in the USA might also contribute to the country's obesity rates. The USA spends billions of dollars a year on food assistance through its Supplemental Nutrition Assistance Program (formerly food stamps). The programme, run by the United States Department of Agriculture, provides meals and subsidizes food purchases for participants [126]. However, some studies show that participants are more likely to be obese than income-eligible non-participants [127]. This relationship holds across all age groups and is more consistent among long-term users of the programme [127,128]. Even where studies do not show such a link, experts agree that the programme is missing an opportunity to improve

diets among low-income Americans. State and local efforts to restrict what beneficiaries can buy (e.g. limiting the purchase of sodas) have thus far been denied by the federal government [129]. Social policies that inadvertently promote consumption of energy-dense, nutrient-poor foods and drinks may serve to maintain and worsen inequities in NCD risk factors and outcomes. Social protection instruments thus have the potential to either alleviate or worsen NCD epidemics.

Social protection instruments have the potential to either alleviate or worsen NCD epidemics.

Food subsidies in Egypt

Food subsidies in Egypt may unintentionally contribute to the risk of CVD and diabetes. Specifically, government policies in Egypt to address undernutrition — namely, providing subsidized food to the population after the Second World War — have been linked to the country's rapid rise in obesity over the last 30 years. Since 1981, Egypt has been subsidizing bread, wheat flour, sugar and cooking oil on a large scale (at a cost of US\$1.1 billion in 1997). These energy-dense foods have become relatively cheap and have fuelled the country's obesity epidemic. The Egyptian government, like governments in many other LMICs, has been slow in responding to the challenge of obesity, partly because of the simultaneous and continuing challenge of undernutrition in the country [130].

Former Soviet Union, Cuba and political and economic crises

The political collapse of the Soviet Union in 1991 and the ensuing economic and social turmoil was followed by a mortality crisis in Central and Eastern Europe. Harmful use of alcohol, tobacco use, unhealthy diet and poor control of high blood pressure have all contributed to increases in CVD mortality in the region [131]. CVD (in addition to violence/

injury) contributed significantly to fluctuations in mortality in Russia, where the least educated men were most affected [132,133]. Despite recent improvements, life expectancy for men in Russia was 63.1 years in 2010, nearly 20 years less than the highest in Europe [134,135].

The economic fallout from the collapse of the Soviet Union extended to Cuba, a long-time economic partner. In Cuba, however, vastly different impacts on mortality rates were observed — namely, marked and rapid reductions in mortality from diabetes and coronary heart disease in 1996. In the aftermath of the dissolution of the former Soviet Union and the tightening US embargo, the Cuban economy struggled to provide food and mass transportation. Food and fuel shortages resulted in less energy intake from diet and more energy expenditure (walking and cycling were alternatives to mechanized transportation). Between 1991 and 1995, the average Cuban adult lost 4–5 kg, which may have contributed to the observed reductions in diabetes and coronary heart disease [136]. That the same event — the collapse of the former Soviet Union — may have led to different health outcomes in Cuba than in Central and Eastern Europe reinforces how unique contextual factors and transmission mechanisms can shape disease.

Urbanization and urban development policy in Cameroon

Urbanization, associated with increased prevalence of NCD risk behaviours, is occurring at a rapid rate [4]. More than half of the global population lived in cities in 2010, a proportion expected to reach 60 percent in 2030 and 70 percent in 2050. In countries where rural-to-urban migration is commonplace, urban life may be less conducive to physical activity than life in rural areas. As countries develop, the sprawling nature of urban expansion and increased disposable income encourages mechanized transport and discourages walking and cycling. The nature of work available in urban areas may require less energy expenditure than subsistence farming in rural areas. Those in urban settings may also experience greater access to unhealthy foods and reduced access to healthy ones [137].

A study of physical activity in relation to hypertension, obesity and diabetes in Cameroon found that physical activity was lower among urban than rural dwellers. The prevalence of obesity, diabetes and hypertension was thus higher among the urban population, and physical inactivity among urban groups was associated with higher BMI, blood pressure and fasting blood glucose levels [138]. NCD prevention and control may require that cities adopt models of urbanization that address the health impacts and inequities associated with city living.

Cultural norms

Beliefs and norms among some social groups may include preferences for foods high in animal fat. Overweight or obesity may be socially acceptable or perceived as a sign of good health [139-141]. Ethnographic studies have found that among Arabs in Niger, groups in rural Jamaica, Puerto Ricans in Philadelphia and members of a Fijian village, big body size and fatness reflect wealth and prosperity, beauty, marriageability, attractiveness, fertility and ‘closeness to God’ [142-147]. In contrast, much of the industrial West associates fatness with ugliness, undesirability and lack of self-control, while associating slimness with health, beauty, intelligence, wealth, self-discipline and ‘goodness’. There is some evidence that the Western slim-body ideal is becoming globalized. Thinness is now desired in many places where fatness was previously preferred [142,148]. Moreover, the beliefs among those who idealize fatness may be altered when health risks are explained. When told of obesity-related health risks, the majority of Ghanaian women in one survey (305 women in total) said they would reduce their current ‘body image’ preference if it meant an overall healthier life [149].

CHAPTER 3

ACTION ON THE SOCIAL DETERMINANTS OF NCDs



Purpose

This chapter demonstrates that successful multisectoral action on the social determinants of NCDs is possible. Chapter 3.1 provides an overview of some existing frameworks for action on NCDs and their social determinants. Chapter 3.2 outlines key enablers required for successful multisectoral action on NCDs, drawing on lessons from the field, including lessons from the AIDS response. Chapter 3.3 introduces a typology of multisectoral action on NCDs, with three general categories of possible action outside the health sector. These are supported by country examples.

3.1 Existing frameworks for multisectoral action on NCDs

Several global frameworks already exist to guide multisectoral action on NCDs (see Timeline on next page). These are often supported by regional frameworks (e.g. 2006 African Diabetes Declaration and Strategy).¹

The WHO FCTC is noteworthy among global frameworks for action on NCDs for several reasons. First, the FCTC is the only legally binding treaty directly linked to NCDs and the first global health treaty negotiated under the auspices of WHO. It has been broadly ratified, with 177 Parties.² Second, the FCTC is wide in its scope. It takes a multisectoral approach to addressing the supply- and demand-side measures of tobacco use and emphasizes several, overlapping social determinants. Third, the FCTC incorporates a life-course perspective through provisions related to the sale of tobacco products to minors, recognizing the unique vulnerabilities of young people to nicotine addiction, marketing and advertising. Finally, the FCTC underscores the gender dimensions in the supply and consumption of tobacco and calls for women to participate fully in policymaking and implementation. Governance issues are formally addressed in Article 5 of the FCTC, which calls for multisectoral national plans, coordination structures and policymaking that is independent from tobacco-industry interests. In mitigating power differentials in decision-making, governance issues are critical to a social determinants approach. Box 6 describes UNDP's support to FCTC implementation.

Box 6. UNDP's roles in supporting FCTC implementation

The Conference of the Parties to the FCTC, UN General Assembly, UN Economic and Social Council and the 'UN Secretary-General's Report on the Meeting of the Ad Hoc Inter-agency Task Force on Tobacco Control' (2012) have recognized the urgent need to integrate the FCTC into countries' health and development plans and called upon UN agencies, programmes and funds to provide coordinated support in the pursuit thereof [50,57,150,151]. UNDP has begun this work. Together with the Convention Secretariat to the FCTC, UNDP recently conducted a study on 48 countries to: monitor progress on FCTC integration into national development plans and the United Nations Development Assistance Frameworks (UNDAFs) that support them; capture emerging lessons from practical experience; and provide recommendations for further action [152]. UNDP has also participated in FCTC country needs assessments. UNDP's role in supporting FCTC implementation builds on its work in governance and in HIV and health, particularly its experience in supporting governments to mainstream the health MDGs, especially HIV, into national development planning processes [153,154].

¹ Developed by the International Diabetes Federation in collaboration with WHO-AFRO and the African Union, http://www.idf.org/webdata/docs/Diabetes%20Declaration%20&%20Strategy%20for%20Africa_full.pdf.

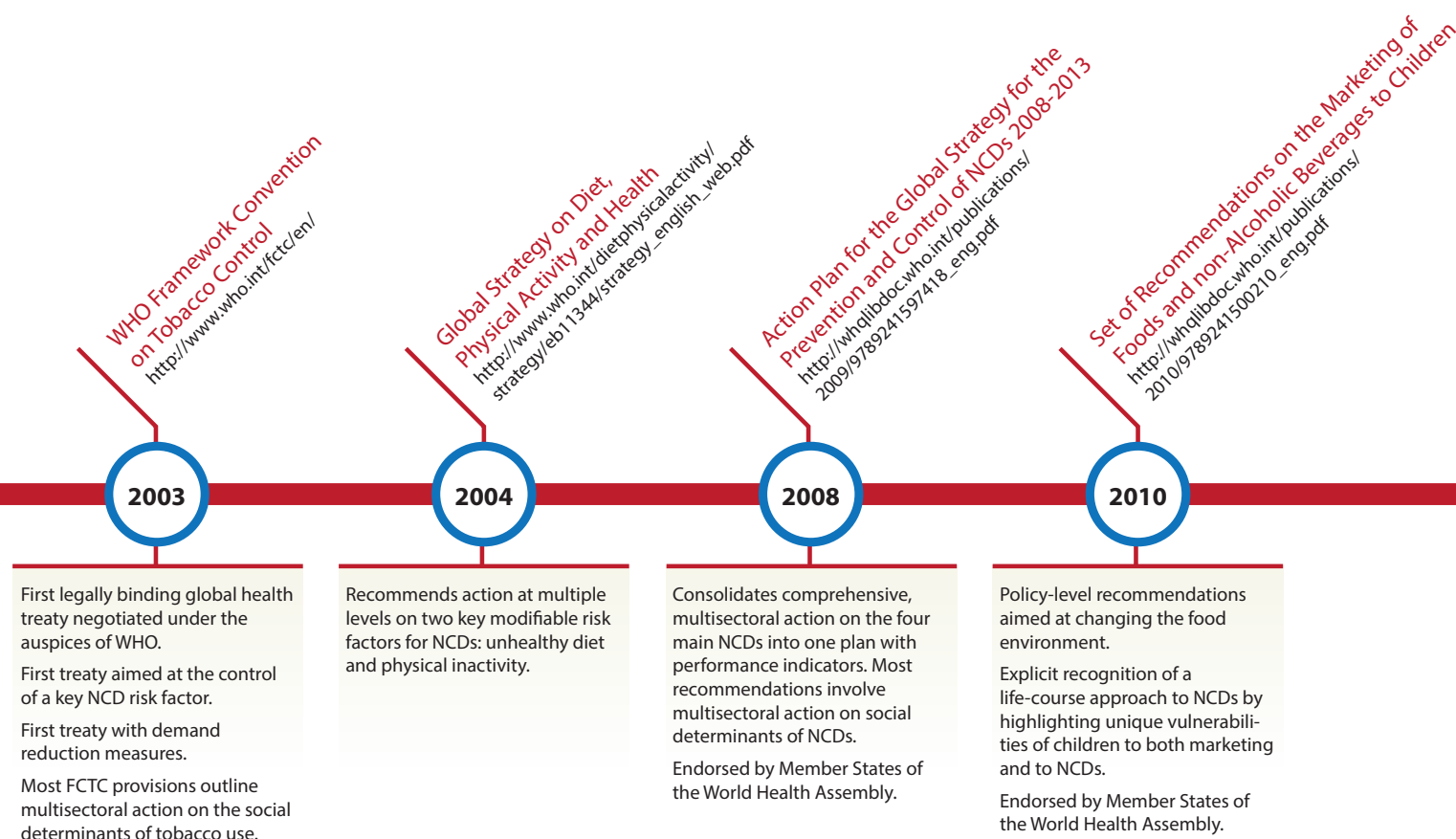
² As of September 2013.

The FCTC and the other global frameworks shown in the Timeline are highlighted because of their attention to concrete, multi-sectoral actions to prevent and control NCDs. Many other global frameworks on social determinants exist that do not explicitly mention NCDs. These frameworks are important for two key reasons: social determinants often matter in their own right for reasons beyond NCDs or health; and even if a global framework does not specifically intend to prevent or control NCDs, it may nonetheless do so by addressing social determinants or human rights more broadly. The 1979 'Convention on the Elimination of all Forms of Discrimination against Women' (CEDAW) [155] and the 2004 'United Nations Convention against Corruption' [156], both important conventions, were not developed or ratified with NCDs in mind. Nevertheless, some of their provisions are directly relevant to action on the social determinants of NCDs, especially where the provisions address ingrained structural inequities that drive inequities in the distribution of NCDs. These and other conventions, declarations and frameworks provide additional political support, intellectual depth and innovative ideas for addressing the social determinants of NCDs.

3.2 Key enablers of action on the social determinants of NCDs

Although multisectoral action can take many forms and often depends on context, some key enablers or principles are clear: high-level political commitment, governance mechanisms to facilitate and coordinate multisectoral responses, and robust structures for monitoring, evaluation and accountability. While these key enablers are insufficient on their own for successful multisectoral action, they are often necessary prerequisites. They are reflected in many of the global frameworks for action on NCDs and have been illustrated extensively in practice with respect to NCDs and other health challenges, such as HIV.

Timeline. Key global frameworks for action on NCDs



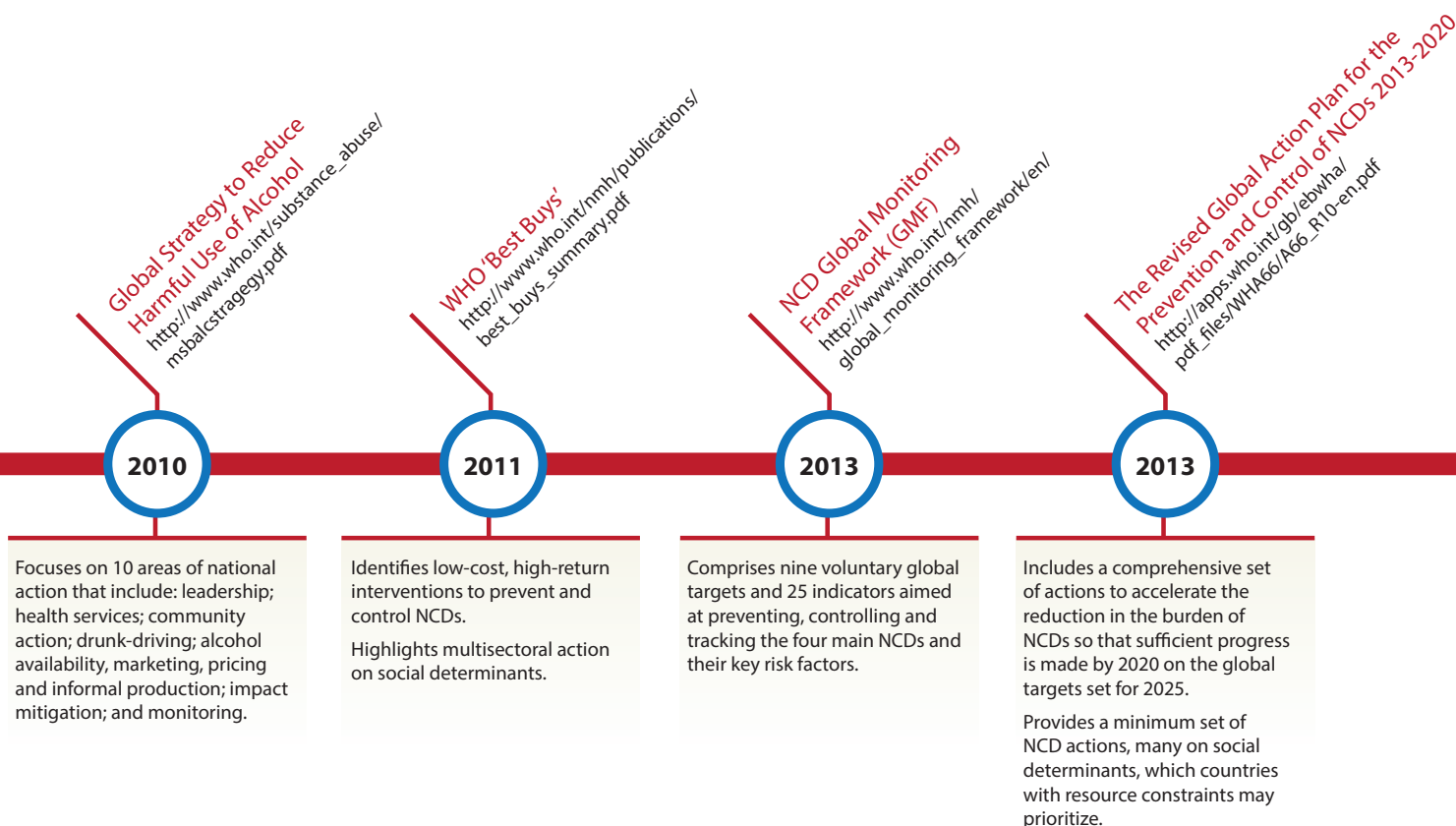
Political will

Countries that have succeeded in developing coherent action on the social determinants of health have done so with political will at the highest levels of government. Building support for coherent action requires evidence and arguments that improving social conditions can improve population health, reduce health inequities and support other national development objectives. Building such support can be challenging, especially when navigating the interests of powerful lobbies, such as tobacco, pharmaceutical, food and beverage companies. Analysis of the social costs of health inequities, such as that carried out by the Marmot Review in England [62], provides persuasive arguments that inaction on social determinants of health is less cost-effective than action.

Governance mechanisms

All areas of public policy affect health and health equity to varying degrees. Three key elements of health-promoting public policies are:

- a coherent approach across government to ensure that policies in one arm of government do not counteract policies in another;
- joint action across distinct departments to achieve specific objectives; and
- engagement with stakeholders outside government [47].



Experience has shown that health-promoting public policies can be achieved with strong management oriented towards clearly identified and accepted objectives, with mechanisms for accountability, transparency and stakeholder participation [157]. More specific guidelines have been developed through collaborative research. The 'Adelaide Statement', for example, that resulted from a joint initiative between WHO and the government of South Australia, proposed tools and instruments to support governments in building 'health in all policies' with a focus on equity (see Box 7). In addition, the Secretariat to the WHO Commission on Social Determinants of Health and the Public Health Agency of Canada (PHAC) compiled 18 case studies from countries of all income levels on how action in different sectors can positively influence health and health equity. For WHO and PHAC key themes and lessons, see Appendix 2.

Box 7. Highlights from the 'Adelaide Statement'

- **Interministerial and interdepartmental committees** are fundamental to ensure cross-fertilization of diverse stakeholder interest.
- **Cross-sectoral action teams** ensure a multidisciplinary approach to reduce the potential disruption caused by entrenched positions.
- **Integrated budgets and accounting** incentivize teams and stakeholders to work towards unified objectives.
- **Cross-cutting information and evaluation systems** provide a coercive availability of information and accepted evaluation methodology for cross-sectional action teams, which, in the absence of such information, could seek to act on a non-unified basis.
- **Joined-up workforce development** provides an accepted basis for the development of stakeholders and ideas.
- **Community consultations and Citizens' Juries** widen the base of information from diverse actors or stakeholders and strengthen ownership and transparency of the policy process.
- **Partnership platforms** create a forum in which stakeholders can propose and debate divergent views on a non-confrontational basis.
- **Health Lens Analysis** is a formalized five-step process to ensure that different agencies achieve mutually beneficial outcomes. Leadership from the cabinet or premier level initiates the process by inviting the lead agency to undertake the analysis. Step 1 involves establishing good working relationships among agencies in diverse sectors and agreeing to the joint policy focus. Step 2 is an evidence-gathering exercise, during which mutually beneficial impacts between policy areas and health are identified and evidence-based policy options are reviewed. Step 3 asks partner agencies to jointly produce a report that sets out policy recommendations. Step 4 involves partners steering the recommendations through the decision-making process. The fifth and final step is for partners to evaluate the effectiveness of the process.
- **Impact assessments** are tools that can be used to assess the health or health equity impacts of policies and projects in diverse sectors. They may use a mixture of quantitative, qualitative and participatory techniques. Impact assessments are used by policymakers and planners across government departments at national and local levels. At national level, for example, they may be used to assess the impact of trade policy on health and health equity. At local level, for example, they may be used to assess the impact of new roads or the location of fast-food outlets on health and health equity.
- **Legislative frameworks** are a means of establishing prioritized policies or reforms for health and other desirable social outcomes within a set of enforceable, agreed regulations.

Source: [157]

Vanuatu is an example of a government that created a multisectoral NCD committee to take action on worrying trends in NCDs and related risk factors, especially among urban youth. Through the Pacific Action for Health Project, Vanuatu recognized that NCD risk factors are rooted in wider social conditions and that explicit focus should be placed on poverty and youth unemployment (see Box 8).

Box 8. A multisectoral NCD committee and national NCD policies in Vanuatu



Vanuatu is experiencing rapid social change and urbanization, with internal migration of young people towards urban centres in pursuit of material gains and employment. Use and abuse of alcohol in this subpopulation has become a concern. Diabetes prevalence is 22 percent among 20–79 year-olds.

The Pacific Action for Health Project, 2002–2007, involved two levels of interventions:

- implementation of national NCD policies, including the establishment of a multisectoral NCD committee to oversee legislative updates covering the sale of tobacco and alcohol products and development of chronic disease strategies; and
- community-based activities (e.g. sport, drama, music) to promote a healthy lifestyle, coupled with small grants to support activities developed by youth groups. The multisectoral committee comprised: Health, Education, Youth & Sports, Trade & Industry, Customs & Quarantine, Women's Affairs, Strategic Management, Social & Economic Development and Statistic Office and National Broadcasting & Television Corporation.

Data obtained from programme and policy documents, stakeholder interviews and participant observation revealed some progress: self-empowerment of youth; unemployment and poverty explicitly addressed through the grants scheme; improved status of marginalized youth within the community; development of a national NCD strategy; ratification of the FCTC and drafting of legislative changes for liquor licensing.

Source: [158]

Vanuatu's approach is only illustrative. The exact structures and processes will vary to achieve multisectoral coordination and participatory decision-making. The governance of national AIDS responses is an example of how governance structures have varied over time and across countries (see Box 9, next page).

Box 9. Lessons from the governance of AIDS responses

In the earlier years of the AIDS epidemic, many structures responsible for national AIDS responses were housed within ministries of health. The corresponding entity at global level was WHO. At the time, many health-sector structures were not equipped to respond on their own to the multidimensional AIDS epidemic, which contributed to the creation of UNAIDS at the global level. At national level, especially in countries with generalized epidemics, national AIDS commissions (NACs) or programmes (NAPs) became common. Many NACs have been housed outside ministries of health, in some cases within offices of Presidents and Prime Ministers, affording them a high degree of political cachet.

Building structures for multisectoral coordination of the AIDS response has not been without challenges. Some evidence suggests that some countries with NACs have not necessarily succeeded in achieving multisectoral coordination any better than countries in which AIDS responses remain housed in ministries of health. Many explanations could be put forward. One is that effective coordination across sectors may have less to do with organizational structures and more to do with effective leadership, whether that leadership is from an official multisectoral coordination structure or from a particular line ministry, such as a health ministry.

Other lessons from AIDS responses are pertinent. NACs can be expensive and largely donor-financed, raising questions of sustainability. Moreover, their effectiveness can be hampered by the creation of partially parallel structures, such as Country Coordinating Mechanisms as required for Global Fund grants. Global and national AIDS governance continues to adapt as lessons are learned and context changes. Increasingly, countries are moving their NACs back into ministries of health. It remains to be seen whether ministries of health are now better equipped to implement strategic multisectoral AIDS responses than they were 15 or 20 years ago.

The governance of the AIDS responses offers opportunities as well as relevant lessons for NCDs. It may be beneficial for governance models for both AIDS and NCDs to evolve in synergy. Biomedical responses to AIDS could remain squarely under the remit of ministries of health, but NACs could shift their focus to social determinants, not just in relation to AIDS but also to health outcomes more broadly, including other communicable and noncommunicable diseases. NACs would then focus on the social determinants of health, rather than on any disease in isolation, and coordinate multisectoral action accordingly. Rather than repeat steps of the past, it may be that multisectoral responses to AIDS and those for NCDs — and the governance mechanisms that support both — should join forces.

Monitoring progress and achieving accountability

A monitoring and accountability framework for NCD responses is critical, especially for ensuring effective multisectoral action on the social determinants of NCDs. WHO has developed a global monitoring framework for the prevention and control of NCDs, which was adopted by the World Health Assembly in May 2013. The GMF contains nine voluntary global targets with 25 indicators — all aligned with the global target of a 25 percent reduction in NCD-associated premature mortality by 2025³ (see also Timeline).

³ This target, adopted at the 65th session of the World Health Assembly in 2012, is central to the 'WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020'.

The GMF is intended to enable worldwide tracking of the four main NCDs and their key risk factors as well as to promote action [159]. A separate set of process-oriented ‘action plan indicators’ will also be agreed by May 2014, to help monitor countries’ progress in implementing the ‘WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020’ [160].

The GMF offers a foundation on which countries can build an NCD monitoring system that is tailored to their contexts. One key opportunity for governments is to build on the GMF by establishing national NCD targets and indicators related to the social determinants of health and health inequities. Often, information systems are geared to track disease outcomes and trends rather than social determinants, even where information systems are strong. Tools and processes must be developed that gather information on the underlying factors that contribute to poor health.

“Changing what we measure can lead to new directions in how we act.”
— Howard K. Koh [161]

Other examples and tools may help governments build their NCD monitoring systems. The Marmot Review in England, for example, proposed a set of NCD-related indicators to support monitoring of strategies to reduce health inequities across the life course⁴ [62]. The London Health Observatory and the Institute of Health Equity published baseline data for these indicators in 2011, using data available from authorities at the local level, and updated the initial data in 2012 as part of an ongoing monitoring process in England [162]. Mechanisms for monitoring inequities at municipal level have been developed and might be leveraged for improving monitoring systems at national level. The ‘Urban Health Equity Assessment and Response Tool’, developed by WHO in collaboration with partners, is a tool to aid decision-making in urban areas and includes indicators of health outcomes and social determinants [163]. Data can be gathered from surveys in cities. The social determinant indicators are in the domains of the physical environment and infrastructure, social and human development, economics and governance.

Accountability for meeting the targets and other goals within the GMF and ‘Global Action Plan’ may be promoted through two additional measures. These measures might help address challenges in reporting systems based on mutual accountability, which risks each party evaluating the other less rigorously to alleviate its own commitments. The first measure is the establishment of an independent, third-party accountability mechanism. Such a mechanism could gather accurate, transparent measurements of progress, reporting results and recommendations to the highest possible multilateral authority [164]. The second measure is to open the stream of data collection and interpretation to civil society — for example, by accepting shadow reports. UNAIDS has employed such a strategy in monitoring the AIDS response. Such reporting can be particularly useful in providing additional insights on progress in marginalized groups.

⁴ For example, one policy recommendation was to improve programmes to address the causes of obesity across the social gradient. One process indicator for this recommendation was the percentage of children identifying their usual mode of travel to school as being by bicycle or walking.

3.3 Typology of multisectoral action

Most documented examples of multisectoral action on the social determinants of NCDs are from high- and middle-income countries. Even so, action is possible and necessary within countries of all income levels. Countries across the income spectrum have partnered with the CSDH and are implementing the social determinants of health approach in ways tailored to national and local contexts [165]. Many LMICs have already successfully implemented various provisions of the FCTC, though much work remains [152].

The examples below further demonstrate that multisectoral action on social determinants of NCDs is possible and can be effective in multiple contexts. They illustrate a typology of action outside the health sector that falls within three general categories:

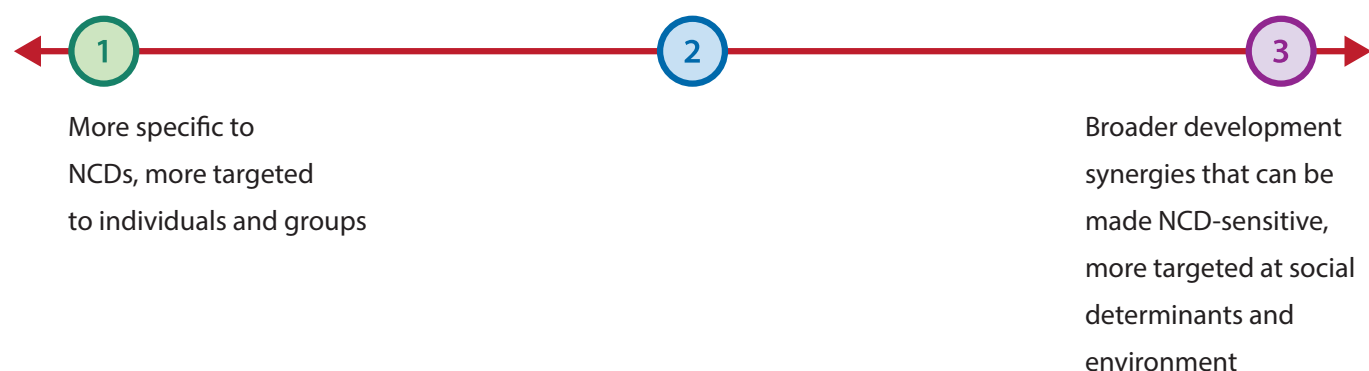
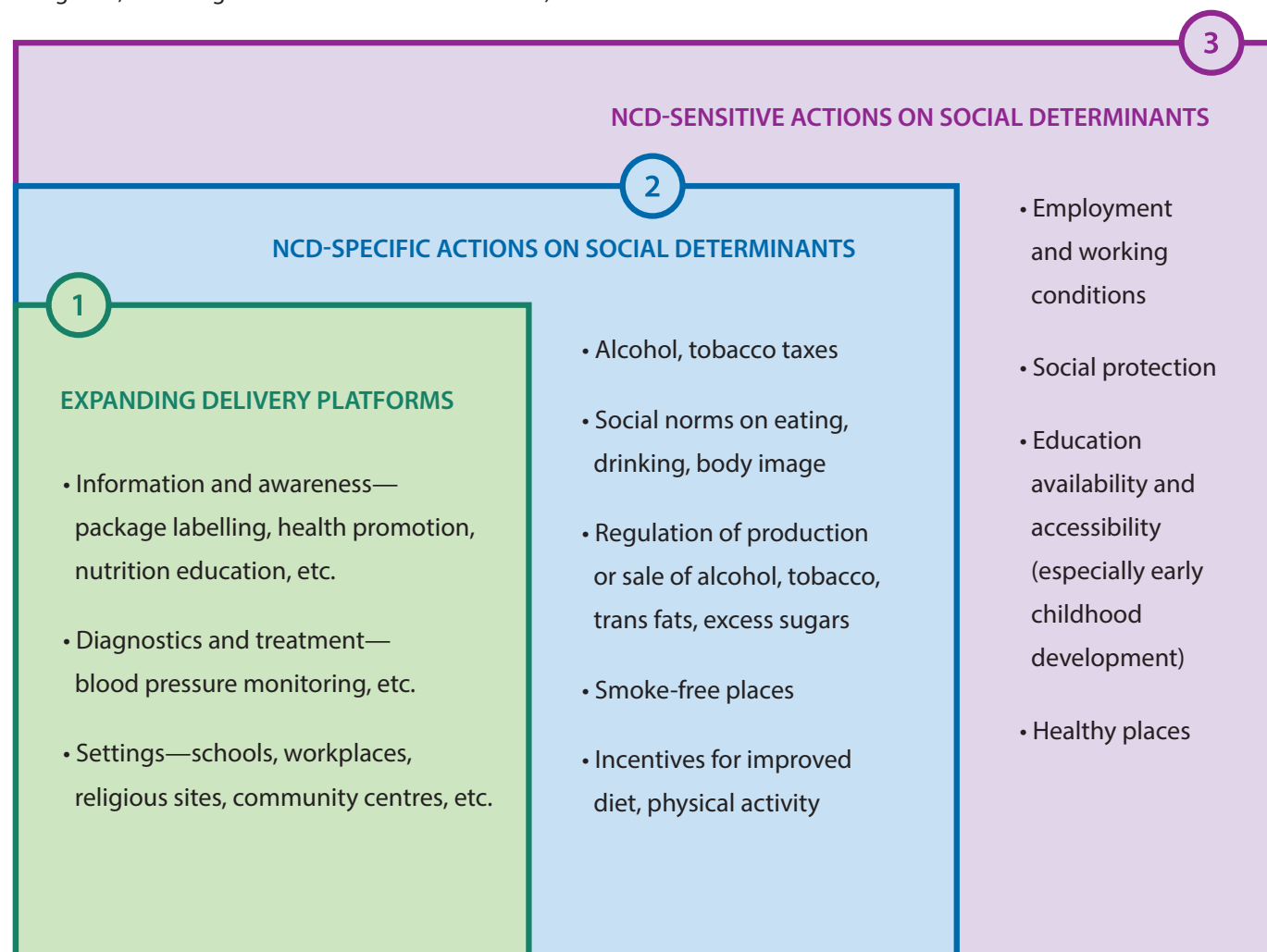
- 1 Expanding delivery platforms;
- 2 NCD-specific actions on social determinants; and
- 3 NCD-sensitive actions on social determinants (see Figure 8, next page).

Expanding delivery platforms involves using settings outside the health system — schools, workplaces, public-sector institutions — to deliver conventional biomedical and behavioural interventions to individuals and/or groups. A common example is the promotion of healthy diets and physical activity in schools and workplaces. While such approaches may extend the reach of health-related information and services to vulnerable and marginalized groups, they tend not to address social determinants per se. They focus more on individual decision-making and less on the contexts in which decisions are made. The second and third categories are about addressing social determinants, or the larger environment. Some actions are **NCD-specific**, such as laws and policy changes on tobacco use. Others are **NCD-sensitive**. NCD-sensitive actions are not typically implemented for NCD prevention or control; instead, they are the core business of other sectors outside health. Since their core business can ultimately impact NCDs, it can be made NCD-sensitive such that positive impacts on NCDs are maximized and negative impacts minimized.

The typology and examples are intended to catalyse discussion and innovation in other contexts and across other sectors. For each example, key considerations for actors outside the health sector are provided. The examples are only illustrative. More are provided in Appendix 3, and there are numerous others. Some examples include outcome evaluations on diseases or risk factors, while others are descriptions of interventions.⁵ NCD-sensitive actions, in particular, often do not track NCD outcomes, as they are not carried out with NCDs explicitly in mind. Finally, effective action may involve combination approaches that cut across different levels of this typology, as illustrated by some examples below.

⁵ This is because intervention research on social determinants is often more difficult than research on biomedical factors, for example. Randomized control trials, the gold standard of medical intervention research, can be more costly and time-consuming (and sometimes unethical or otherwise impossible) when examining social and economic interventions as opposed to biological ones. Different, methodologically diverse approaches to evidence for social interventions are needed [166].

Figure 8. Typology of multisectoral action on NCDs (many real-world examples use combination approaches of one or more categories, including action within the health sector).



1 Expanding delivery platforms

Expanding delivery platforms involves using settings outside the health system — schools, workplaces, religious and community centres etc. — to deliver conventional biomedical and behavioural interventions to individuals and/or groups. These interventions include various diagnostics and treatments as well as information intended to raise awareness and change behaviour. Delivering biomedical and behavioural interventions outside the health system can expand the reach of these interventions, especially for remote and otherwise marginalized populations.

Expanding delivery platforms involves using settings outside the health system — schools, workplaces, religious and community centres etc. — to deliver conventional biomedical and behavioural interventions to individuals and/or groups.

Specific examples of expanding delivery platforms include the monitoring of blood pressure, glucose and insulin in schools and workplaces, food package labelling for nutritional content (e.g. calories and fats) and caloric postings at restaurants. Religious and community leaders are well positioned to deliver compelling messages. School-based approaches, such as health promotion and nutrition education to support the adoption of healthy diets and physical activity, have been widely introduced. Effective school-based interventions include lessons on diet and/or physical activity delivered by trained teachers, supportive school policies, physical activity programmes, a parent/family component and healthy food options through school services. School gardens to provide healthy food for school meals are part of a wider strategy to improve nutrition in many countries [167].

The following three country examples (Boxes 10–12) illustrate some ways in which actors outside the health sector can expand delivery platforms for NCD prevention and control. Two additional examples of expanding delivery platforms — from Brazil and Canada — are provided in Appendix 3.

Box 10. Know Your Body (adapted) school health promotion programme for primary-school children in Greece



The Cretan Health and Nutrition Education programme, initiated in 1992 with the approval of the Greek Ministry of Education, followed the same children from the first to the sixth grade (a six-year duration). The intervention group comprised the total number of children registered in the first grade in two counties of the island of Crete. Those registered in a third county served as the control group. Using a primary-school setting, the programme aimed to promote healthy lifestyle habits among participants to minimize their risk of developing CVD in adulthood. The curriculum included classes on health and nutrition and physical fitness. The programme also had a parent component, with biannual meetings on the programme held for parents to share information and receive advice.

Outcomes of interest included long-term effects on BMI and the prevalence of overweight. For evaluation, a representative sample was examined at baseline (1992), immediately following the six-year intervention (1998) and four years after the end of the programme (2002). Full anthropometric data were collected for 284 pupils from the intervention group and 257 from the control group on all three occasions.

Intervention-group pupils had statistically significant lower average BMI (by 0.7 kg/m²) than control-group pupils at the 10-year follow-up, while no differences were detected in the prevalence of obesity between the two groups. Findings indicate that the programme's beneficial effects on pupils' BMI continue, to an extent, four years after its cessation. However, the lack of significant differences in the prevalence of overweight indicates that the effects of the intervention may not be equally distributed in the population, with greater effects in certain subgroups and less or none in others.

Considerations for actors outside the health sector: The Cretan Health and Nutrition Education programme is an example of multisectoral collaboration between the health and education sectors wherein children were accessed during their crucial early years, when habits that may persist through life are often developed (i.e. a life-course approach).

Source: [168–170]

Box 11. Worksite intervention programme on cardiovascular risk factors in India



India is experiencing an accelerated epidemiological transition with a consequent increase in CVD risk factors in community-based studies and industrial populations. To reduce CVD risk factors, a comprehensive programme was developed using existing infrastructure in participating industries. The programme included: a multi-pronged strategy of health promotion; high-risk primary prevention; and policy-level or environmental changes.

The programme ran from 2003 to 2007 and was administered with project health care personnel working alongside employees in industrial sites throughout various regions of India, identified through randomized treatment allocation. Its primary objectives were to: increase the consumption of locally available fruits and vegetables and elicit healthier diets overall; stimulate increases in physical activity; promote avoidance of tobacco products; and help programme beneficiaries maintain a healthy weight. Individuals were also sensitized to the need for recognizing and treating high blood pressure and diabetes.

Population-based strategies in the form of banners, posters, hand-outs, booklets and real-time videos were developed, translated into seven Indian languages and displayed at strategic locations at the sites. They were based on an understanding of various scientific theories of behaviour change, literature on cardiovascular risk factors and interventions, cultural and contextual inputs, and known techniques for designing effective tools. Furthermore, worksite managers (together with health care personnel) developed healthier lunchtime menus at the industrial sites. Managers also banned on-site use of tobacco. Finally, group and one-on-one interactions took place between trained health project personnel, employees and employees' families.

Aside from triglycerides, all biological and behavioural risk factors studied — weight, waist circumference, blood pressure, plasma glucose, total cholesterol, tobacco use and extra salt use — showed favourable changes in the intervention population. All risk factors studied worsened in the control population, except for high-density lipoprotein (HDL) cholesterol.

Considerations for actors outside the health sector: The worksite intervention programme sought to influence behaviours at the individual level, interpersonal level (family and workplace-related peers) and environmental/macro level (social norms at the worksite and home).

Source: [171]



Box 12. Mobilizing people as agents of change in communities in Ghana

In 2007, the Ministry of Health in Ghana decided to emphasize improving 'lifestyles, health promotion, disease prevention and restoration of life'. It initiated the Regenerative Health and Nutrition Programme (RHN), aimed at creating awareness and encouraging behaviour change towards healthier lifestyles, including healthy diet and exercise. The programme operates at both national and community levels.

The RHN established a network of 'change agents' who receive intensive week-long training in areas such as nutrition, exercise and maternal and child health practices. Change agents come from a range of public services including education, health and communication, as well as from community organizations such as markets and keep-fit clubs.

At national scale, healthy lifestyle messages were conveyed through advertising media such as billboards and television, and manuals were developed for use in schools. Analysis of the programme in the pilot stage showed that programme slogans such as 'Food is medicine' did not resonate with lived experience. Initial analysis also highlighted the importance of addressing the availability and affordability of healthy foods such as fruit and vegetables as well as the cultural acceptability within communities of eating less meat. The study underscored the importance of raising awareness in schools, churches, mosques, keep-fit clubs and workplaces. The Church is not only a source of information in Ghana (where 65 percent of the population is Christian), it also provides psychosocial support and facilitates health promotion activities such as health walks, screening and expert talks on health-related matters.

No baseline data were collected on health knowledge or status before the intervention, making evaluation of the programme difficult. Programmes such as the RHN have a role to play within a multisectoral national strategy on NCDs, but progress requires a comprehensive and integrated approach that addresses the social determinants of NCDs.

Considerations for actors outside the health sector: The RHN demonstrates a combination approach wherein multisectoral efforts were made to address social norms around food consumption in addition to delivering more traditional behaviour change interventions in non-health settings.

Source: [172-174]

2 NCD-specific actions on social determinants

NCD-specific actions on social determinants are laws, policies and programmes whose primary purpose is action on the social determinants of NCDs. Tobacco taxes, for example, make tobacco products more costly for everyone⁶ but disproportionately deter youth, minorities and smokers of lower socio-economic status (a tax represents a greater proportion of income for these persons)[25]. Because minority and low socio-economic status are positively associated with tobacco consumption [175], tobacco taxes might reduce aggregate levels of, and inequities in, tobacco use. Higher taxes on tobacco and other unhealthy products might also mitigate the sometimes harmful impact of trade liberalization on NCDs, particularly when combined with reduced taxes on healthier items. The Government of Tonga recently increased import duties on tobacco, lard and fizzy drinks, and decreased import duties on fresh fish [176]. Other examples of NCD-specific actions on social determinants are zoning laws that restrict the density of fast-food restaurants in a particular geographical area [177] or policies that incentivize street vendors to sell fruit rather than less healthy foods, particularly in lower-income urban areas [178]. Some actions can have multiple mechanisms of impact. For instance, graphic health warnings on cigarette boxes not only raise awareness of health harms but also shape social and cultural norms [107].

Boxes 13–16 illustrate various NCD-specific actions on social determinants: taxes on sugary beverages in Nauru and French Polynesia; national alcohol policies in sub-Saharan Africa; graphic warning labels on cigarettes in Canada and plain packaging in Australia; and bicycle programmes that encourage physical activity in Colombia. Appendix 3 provides additional examples of NCD-specific actions from the USA and Denmark.

Box 13. Taxes on sugary beverages in Nauru and French Polynesia



Sugar-sweetened beverages contain added, naturally derived caloric sweeteners such as sucrose (table sugar), high-fructose corn syrup and fruit-juice concentrates. They have been linked to risks for overweight and obesity, diabetes, CVD and other NCDs [179]. Consumption of these beverages is rising, particularly in developing countries, prompting concern over the public health implications. The Pacific Island Countries of Nauru and French Polynesia have recently instituted taxes on sugar-sweetened beverages to combat poor nutrition, diabetes and other chronic diseases [180].

In 2007, to 'discourage excessive consumption of sugar' and prompted by the Minister for Health, the Government of Nauru implemented a 'sugar levy' of 30 percent on imported sugar, confectionery, carbonated soft drinks, cordials, flavoured milks and drink mixes. It had already implemented similar taxes on alcohol and tobacco. In 2002, the French Polynesian government introduced a range of taxes, including taxes on sugar-sweetened beverages, to fund the establishment of the Etablissement pour la prevention, a prevention fund. The taxes gained widespread support from government ministers in French Polynesia because activities undertaken by the fund included public health, education, youth and culture, sport, family and road safety, and benefited seven out of the 17 ministries. The taxes in Nauru and French Polynesia have raised significant revenue since their introduction [180].

Considerations for actors outside the health sector: Taxing unhealthy products could positively impact NCDs in several ways. By increasing price, taxes on harmful products serve as an economic disincentive to consumers, while possibly increasing their incentive to select a healthier, cheaper replacement. Taxes might also signal to consumers that the product is unhealthy or of low quality. Taxes have the simultaneous benefit of generating revenue for the government, which can be used to offset rising NCD health costs or to fund health promotion programmes and other non-health endeavours.

⁶ A 10 percent increase in cigarette prices reduces demand by 2–6 percent in HICs and by 2–8 percent in LMICs [25].

Box 14. National alcohol policies in sub-Saharan Africa

Harmful use of alcohol is a major risk factor for NCDs worldwide. It also contributes to (gender-based) violence and crimes, injuries/accidents, HIV and family disruptions, among other harmful effects [44,88,181]. Heavy alcohol consumption is prevalent in Eastern Europe and becoming increasingly problematic and deadly in sub-Saharan Africa, especially among youth. Many countries are experiencing marked economic growth along with increased alcohol consumption and related harms. In 2010, alcohol use was the leading risk factor for overall disease in southern Africa [44].

Some countries have responded by beginning to develop national alcohol policies [182]. In Malawi, various stakeholders have worked in concert to propose a national alcohol policy to the Ministry of Health. These stakeholders include: government ministries and agencies; civil society networks (e.g. teachers, religious and community leaders); international organizations (WHO); NGOs (e.g. FORUT, Drug Fight Malawi); and local health professionals. Notably, a National Alcohol Taskforce Committee (NATC) was created early in the process to support policy development. It comprised key representatives from government ministries such as Home Affairs and National Defence, Education, Trade, Youth, Health, Gender and Local Government. Also represented were government agencies such as the Police, Malawi Revenue Authority, Road Traffic and the National AIDS Commission. The final alcohol policy was proposed in 2011 and is currently under review [181].

In 2012, Zambia enacted an immediate ban on the manufacture, sale and consumption of strong liquor 'sachets', small plastic containers typically containing a high percentage of alcohol. These sachets, commonly known as *tujilijili*, are sold at very low prices, often in unlicensed bars and often to minors. Their portability, easy access and affordability make sachets popular among youth, including those in school who have been noted to sip from them during lessons. As per the Zambian ban, which is on the packaging rather than the alcohol itself, violators are liable for a fine or term of imprisonment not exceeding two years [181,183,184].

Qualitative evidence from Zambia already points to possible positive health results from the ban. The number of people with alcohol intoxication admitted to Lusaka's Chainama Hills hospital seems to have dropped, for example, since the ban was enacted [185]. Rigorous evaluation is necessary to demonstrate whether the observed impacts are real and significant, as well as to determine attribution.

Considerations for actors outside the health sector: The policy development process in Malawi is exemplary, as it was evidence-based and inclusive of virtually all stakeholders. The NATC included actors not primarily concerned with alcohol issues, thereby ensuring a broader technical and political perspective in the drafting process and facilitating integration of alcohol issues with other key development concerns in the country [181]. The ban on sachets in Zambia is a creative policy intervention. Realizing that banning alcohol per se would contravene existing regulations, Zambian leaders chose instead to ban one of the most popular and affordable vehicles of alcohol delivery in the form of sachet packaging [185].

*Special thanks to FORUT for its contribution to this box.



Box 15. Graphic warning labels on cigarettes in Canada and plain packaging in Australia



The tobacco industry routinely attempts to glorify smoking through marketing and advertisements. In adverts targeted at men, smoking is associated with masculinity and virility. In the growing proportion targeted at women, smoking is associated with glamour, independence and gender equality [25]. However, countries have responded: in 2001, Canada introduced strong graphic health warnings on the outside of cigarette boxes. One evaluation found that Canadian smokers who had read, thought about and discussed the new labels at baseline (91 percent of those surveyed) were more likely to have stopped, made an attempt to stop or reduced their smoking three months later, after adjusting for intentions to stop and smoking status at baseline [107]. Similar pictorial warnings have been adopted by about a quarter of countries worldwide. Article 11 of the FCTC compels Parties, within three years of acceding, to require tobacco product health warnings that cover at least 30 percent, and preferably 50 percent, of the visible area on a cigarette pack [25].

In Australia, the 'Tobacco Plain Packaging Act 2011' and the 'Tobacco Plain Packaging Regulations 2011' together require that cigarettes in Australia be packaged in plain, olive-coloured containers that are labelled with expanded health warnings [108]. This standard packaging is to be devoid of advertising colours, logos and brand imagery. Australia's intervention has fostered opposition from the tobacco industry, including legal threats [25]. Someone who smokes a pack per day is exposed to a cigarette container over 7000 times annually. Thus, posting graphic warnings and/or removing advertising imagery on packaging could potentially have a significant public health impact [107].

Considerations for actors outside the health sector: Graphic warning labels and plain-packaging counteract pervasive tobacco product advertising and marketing. To elicit behaviour change, they not only raise awareness of health effects but also impact social and cultural norms around smoking.

Box 16. Urban interventions and physical activity promotion; the *Ciclovía* and *CicloRuta* programmes in Bogotá, Colombia



As elsewhere, NCDs account for a growing burden of disease in Colombia, with chronic and degenerative diseases accounting for eight of the country's 10 leading causes of mortality in 2010 [186]. Urbanization has contributed to the NCD epidemic in part by leading to reduced physical activity. In recent years, interventions to encourage physical activity, such as building bicycle paths, have gained momentum and proved to be promising globally [187]. Such policies have the capacity to change the physical environment to increase access to recreational activities and promote active commuting [188].

Two programmes in Bogotá are illustrative. The *Ciclovía* programme is a community-based programme in which streets are temporarily closed to motorized vehicles to allow exclusive access for pedestrians, cyclists, skaters and others for active recreation. *Ciclovía* currently involves a circuit of 121 kilometres of main avenues which are closed every Sunday and holiday (72 events per year, from 7 a.m. to 2 p.m.) [188]. It has been replicated in numerous other countries since its inception in 1976. The *CicloRuta* programme, meanwhile, is one of the most extensive bicycle paths in the world, built over the course of seven years beginning in 1996. It covers over 340 kilometres and connects citizens of Bogotá to major bus routes, parks and community centres [189].

One study compared participants from *Ciclovía* (streets closed) with those from *CicloRuta* (bike path) to assess associations of programme participation with physical activity, safety, social capital and equity. Most *Ciclovía* participants met the physical activity recommendation in leisure time (59.5 percent), and most *CicloRuta* participants met it by cycling for transportation (70.5 percent). *Ciclovía* participants reported a higher perception of safety and social capital than did *CicloRuta* users. Most *CicloRuta* users reported living in low socio-economic status categories (53.1 percent), had lower educational attainment (27 percent) and did not own cars (82.9 percent). Most *Ciclovía* participants reported living in middle socio-economic status categories (64 percent), had low-to-middle educational attainment (51.1 percent) and did not own cars (66.1 percent) [188].

Considerations for actors outside the health sector: Developed to improve quality of life and overcome inequities, bicycle programmes are an effective way to increase physical activity by addressing its social determinants. They require health sectors to work in concert with ministries of transportation, among other sectors, to arrive at a mutually beneficial result.

3 NCD-sensitive actions on social determinants

Some of the most powerful determinants of NCDs and their distribution lie at the macro level, where overarching laws, policies and social structures reflect and shape the distribution of power and other resources throughout society. These determinants include, among others, employment and working conditions, social protection, education (especially early childhood development) and healthy, safe living conditions. Some of the earliest, ground-breaking work on the social determinants of health was centred on employment and working conditions. The Whitehall studies in the UK demonstrated that, despite universal free health coverage through a national health service, gradients in cardiovascular mortality persisted along gradients in employment. Those in lower rungs of the hierarchy with less autonomy over their work had higher levels of mortality than those at higher rungs. Similarly, shift work is associated with higher rates of NCD morbidity and mortality [190].

Action in these areas generally matters in its own right and for a suite of other health, human rights and development objectives. Early childhood development is a case in point. Gestational diabetes may lead to perinatal complications. Medical interventions that target gestational diabetes, such as dietary advice and blood glucose monitoring, reduce the risk of serious perinatal complications [191]. Investing in early childhood development, however, matters beyond diabetes or NCDs. Recent research in LMICs provides strong evidence that effective programmes, policies and other interventions in the early years “can protect children from the negative consequences of poverty”. Such programmes include pre-school services for young children and parental support to improve the home learning environment. Early child development services can be integrated with services to support parental needs, such as education, vocational training and improved employment opportunities and conditions. Investments in early child development are cost-effective; models of long-term economic benefits of investing in early child development show a cost/benefit ratio of 6.4 to 17.6 [192].

Because broader social and economic policies and programmes matter for reasons beyond NCDs — and because they are often the core business of actors outside the health sector — the challenge is to make these policies and programmes NCD-sensitive.

Because broader social and economic policies and programmes matter for reasons beyond NCDs — and because they are often the core business of actors outside the health sector — the challenge is to make these policies and programmes NCD-sensitive. Doing so involves understanding the ways in which broader efforts impact positively and negatively on NCD prevention and control and, once understood, working across sectors to maximize the positive impacts and minimize unintended negative ones.

Shifting how payments are used from various social protection programmes, including cash transfers and public works schemes, away from harmful items such as alcohol, tobacco and processed foods towards healthier items such as fruits and vegetables is an attractive opportunity for making social protection NCD-sensitive. One recent example is in New York City, where the municipal government tried to limit the use of food stamps for purchasing junk foods [193].

The following examples from the USA, Chile and Brazil (Boxes 17–19) demonstrate overarching social and economic policies and programmes that address root causes of NCDs. They indicate how policies and programmes can be NCD-sensitive and suggest opportunities for making them more so. The US example is a social experiment linked to a national housing programme. The intervention, which was a large-scale randomized control trial, explicitly tracked biological outcomes and provides strong evidence for the hypothesis that neighbourhood characteristics are important determinants of health. The final example from Brazil is an illustration of a comprehensive combination approach. It involves health care, NCD-specific measures such as tobacco control and NCD-sensitive measures such as conditional cash transfers to reduce inequities.

Box 17. Moving to Opportunity programme among low-income urban populations in the USA

A social determinants approach to improving the health of low-income urban populations in poor neighbourhoods involves creating employment opportunities and improving employability through skills training as well as improving conditions in the neighbourhood by: reducing poverty; bettering the physical environment; improving the quality of schooling (especially for early child development); improving housing; developing amenities and safe green spaces; improving access to health services; and building social cohesion through community projects [47].

In 2000, 3.5 million poor people across the USA lived in neighbourhoods with poverty concentrations in excess of 40 percent. A growing evidence base suggests that such concentration has a variety of detrimental effects on the current well-being and future opportunities of the residents of these areas. The harmful effects of high-poverty areas are thought to be especially severe for children, whose behaviour and prospects may be particularly susceptible to a number of neighbourhood characteristics, such as peer group influences, school quality and the availability of supervised after-school activities [194,195].

To reduce vulnerabilities of disadvantaged groups, a national initiative from the US Department of Housing and Urban Development (HUD) provided randomized, tenant-based conditional housing vouchers with location restrictions and housing counselling. Between 1994 and 1998, the housing authorities in five demonstration sites — Baltimore, Boston, Chicago, Los Angeles and New York — worked in partnership with local non-profit counselling organizations to recruit about 4600 very low-income families for the Moving to Opportunity (MTO) programme. The families, all of which lived in public housing or private-assisted housing projects in the poorest parts of these cities, responded to outreach that offered them a chance to move with housing vouchers from their current homes and neighbourhoods [194,195].

The demonstration sites shared some characteristics, including the presence of large, distressed public housing developments in concentrated poverty neighbourhoods (where more than 40 percent of the population lived below the poverty line). The cities differed in other ways: in the racial and ethnic composition of their eligible populations and in the nature of their housing markets. Despite these differences, the demonstration was implemented with considerable uniformity, particularly with respect to recruitment, informed consent of participants, issuance of vouchers, and the rules governing their use. Through joint training, central oversight and regular monitoring and data collection, the HUD ensured that the procedures developed for the MTO programme were carefully followed [194,195].

At four to seven years, improvements were observed on multiple health and socio-economic indicators, including a significant decrease in the prevalence of obesity among adults in experimental versus control groups [194]. At 10–15 years, there was no longer a statistically significant programme impact on obesity, but MTO participants remained five percentage points less likely to be extremely obese ($\text{BMI} \geq 35 \text{ kg/m}^2$) compared with control groups. The MTO programme also generated declines in the prevalence of diabetes of up to six percentage points for the experimental group and reduced the likelihood of having high-risk levels ($>4 \text{ mg/l}$) of high-sensitivity C-reactive protein (a measure of inflammation), which have been shown to be predictive of risk of CVD. There were positive impacts on mental health in virtually all indicators for both adults and youth [195].

Considerations for actors outside the health sector: MTO is a rare example that directly links action on root social determinants of health such as poverty with ultimate NCD health outcomes. Other actions to address poverty and inequality should also consider impacts on NCDs and, if possible, monitor outcomes.



Box 18. Chile Crece Contigo programme (Chile grows along with you)



In Chile, children born in poor neighbourhoods are more likely to have developmental delays and fewer years of education and to perform poorly in school. Subsequently, when these children reach adulthood, they are more likely to have lower incomes, high fertility rates at earlier ages and provide poor health care and nutrition to their own children, thereby contributing to the intergenerational transmission of disadvantage. At aggregate level, these impacts can impede national social and economic development.

To reduce social and economic inequities (and thus invest in development), the Chile Crece Contigo programme is a form of social protection that provides equal opportunities for all Chilean children in their first eight years of life, independent of social status, gender, geographic origin, family structure or any other factors that might cause inequity. The programme involves a comprehensive network of services across sectors, such as education, labour and health. Specific components include education programmes for all citizens, legislation that creates stronger maternity and paternity rights (e.g. extension of prenatal leave to one year when a child is born with a disability), improved care for children (e.g. friendly hospital paediatric services) and skills development programmes (e.g. parental skills workshops).

Considerations for actors outside the health sector: Chile Crece Contigo takes a multisectoral approach to creating equal opportunities for children. Investing in early childhood development is critical for social and economic development in its own right. It also has implications for NCDs: social and economic inequities lead to inequities in NCDs. Programmes that are broad in scope, such as the Chilean programme, should evaluate impacts on NCDs, if possible, and be tailored to achieve maximum positive benefit.

Source: [196]

Box 19. Taking a social determinants approach to CVD and diabetes in Brazil



In Brazil, there has been a 20 percent decline in age-standardized mortality from NCDs (mainly CVD and respiratory diseases) since 1996. This decline has been attributed to health policies, such as tobacco control policies, that have contributed to a decrease in smoking while increasing access to primary health care [197].

Even so, CVD, diabetes and other NCDs remain a major public health concern in Brazil, responsible for 72 percent of annual deaths. Three facts in Brazil are particularly worrying: there are unfavourable trends in a number of risk factors; prevalence of overweight and obesity and diabetes is rising; and morbidity and mortality from CVD, diabetes and other NCDs are greatest among poor people. The persistent rising trends in obesity are occurring despite recent interventions, including free professionally supervised physical activity classes in several cities, national legislation to ensure that a minimum of 30 percent of the national school lunch budget is spent on fresh foods from local agriculture, and national regulation of marketing of foods high in sugar, salt or unhealthy fats. Brazil's successful legislative and regulatory measures for tobacco control could be used to guide measures that promote healthy diet and physical activity [197].

A major part of the problem in Brazil, as in many countries, is social inequity, which shapes the distribution of health-related behaviours. A key programme to address social inequity in Brazil is Bolsa Família, Brazil's conditional cash transfer system. Bolsa Família covers roughly 52 million people (about 25 percent of the Brazilian population) and is targeted at poor families with children. Almost 25 percent of the fall in the Gini coefficient measure of income inequality in Brazil since 2001 is attributable to Bolsa Família. Other programme impacts include increased food security, improved nutritional outcomes among children aged 12–59 months and reduced school absence and child labour among older children [198].

Considerations for actors outside the health sector: Cash transfer programmes such as Bolsa Família have the potential to positively impact NCD outcomes on multiple levels — specifically, by reducing inequities such as poverty and inequality that ultimately contribute to poor health. In the future, health outcomes should be tracked, if possible.

CHAPTER 4

ROLES FOR ACTORS OUTSIDE THE HEALTH SECTOR



“Chronic noncommunicable diseases have overtaken infectious diseases as the leading cause of mortality worldwide. Health has moved into a new political space in which the main causes of ill-health and premature death have their roots in non-health sectors beyond the direct purview of the health officials.”

— Margaret Chan, Director-General of WHO, 14 December 2012

Purpose

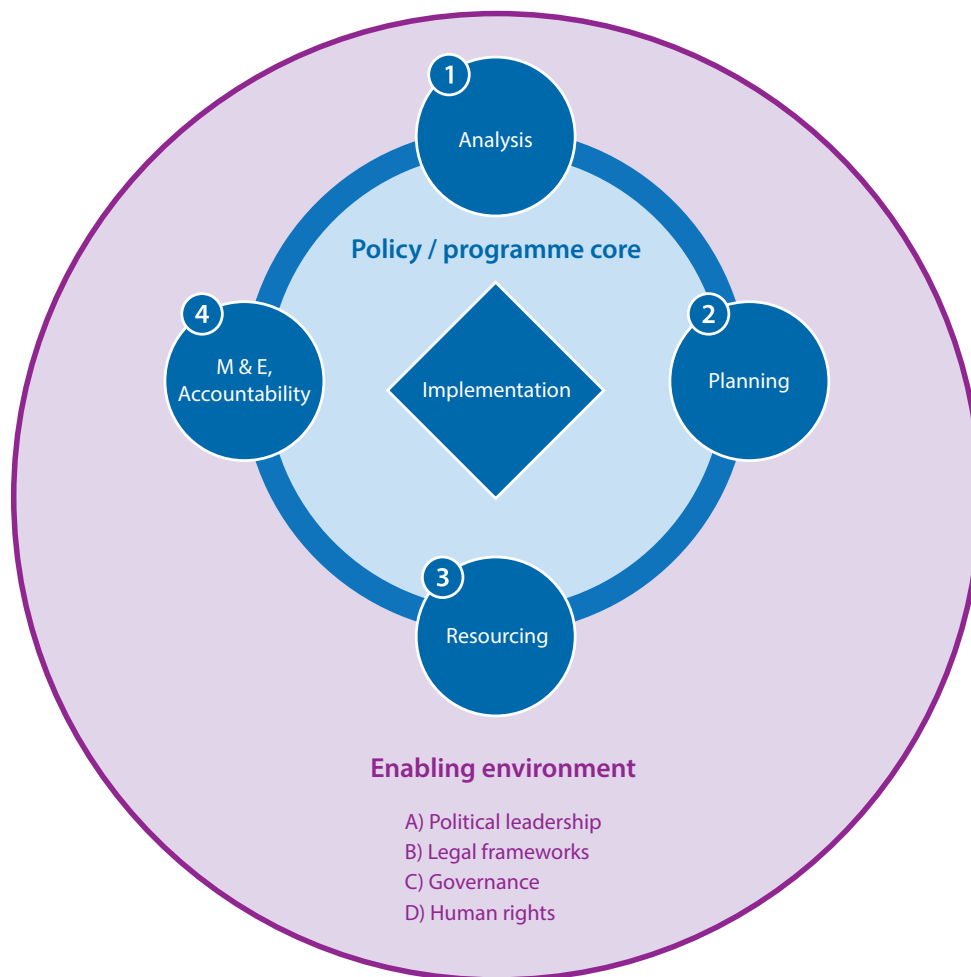
The case is compelling: NCD responses require a multisectoral and coordinated approach wherein actors outside the health sector work alongside specialist health partners. This chapter looks more closely at opportunities for NCD-specific and NCD-sensitive action on social determinants, as outlined in the typology. It presents a framework of suggested action outside the health sector, with illustrative examples.

The framework has two parts. The first relates to building/implementing NCD-specific and NCD-sensitive actions across the policy and programme lifecycle — from analysis and planning to resourcing to monitoring, evaluation and accountability. The second part involves the enabling environment within which actors outside the health sector tend to have unique competencies and wherein multisectoral policy and programmes can be realized. Specific opportunities are described for building political will and enabling legal frameworks, enforcement mechanisms and effective governance structures that are multisectoral and participatory — all anchored in a human-rights-based approach.

The framework is meant to describe opportunities for a wide variety of actors, including, among others: ministries of finance and planning; other line ministries; local governments; international financing institutions; UN agencies, funds and programmes; civil society; academia; and the private sector. Not all options or roles are meant to apply to all actors equally. Some actors will be suited for some of the elements and, within each element, may have very specific contributions to make tailored to their interests, mandates, capacities and available resources. Opportunities will be highly context-specific.

Many of the opportunities for action are not necessarily unique to NCDs. In many cases, it will be more useful and practical for actors outside the health sector to examine the ways in which their core business impacts on a broader variety of health outcomes and health inequities. Ministries of transportation are an example: they will play varying roles not just related to NCDs but also to HIV, maternal health and other conditions. For NCDs, the ministry may focus on safe, affordable and effective forms of transportation infrastructure and services that encourage physical activity (Box 16). Ministries of transportation may also focus on cleaner forms of public transportation that reduce air pollution and respiratory-related NCDs. For HIV, the ministry may focus on how new transport networks may facilitate the spread of HIV and what measures can be taken to reduce this spread (e.g. distribution of condoms at truck stops). For maternal health, the ministry will be concerned with designing transportation infrastructure and services that provide speedy access for women to health facilities, especially in the case of emergency obstetric complications. While further unpacking of specific opportunities sector by sector or actor by actor is beyond the scope of this paper, it would be a useful exercise during in-country planning.

Figure 9. Framework of suggested action



Policy/programme core

1 Analysis

- Identify various social determinants and how they impact the level and distribution of NCD outcomes and risk factors. Various entry points could include:
 - the direct impacts of social stratification on health (e.g. psychosocial stress and coping mechanisms, such as smoking and alcohol);
 - the specific exposures and vulnerabilities that marginalized groups experience uniquely or disproportionately (e.g. environmental pollution and respiratory ailments); and
 - the ways in which social determinants create inequities in access to health care, even in situations where it is universal and affordable [199].

- Investigate the social and economic impacts of NCDs at macro and micro levels, including through analysis of existing data (e.g. demographic and health surveys, household income and expenditure surveys etc.). Identify especially those impacts that impede the social and economic objectives of possible partners outside the health sector.
- Identify inequities in the NCD burden, especially in terms of sex, gender, race, ethnicity, and socio-economic status and economic lines. Identify the underlying processes giving rise to these inequities.
- Examine the impacts of specific policy measures (e.g. impacts of tobacco taxes on tobacco use).
- Examine the impacts of various development interventions (e.g. social protection) on reducing overall burden and distribution of NCDs and associated risk factors. A critical first step is to examine how existing policies and programmes outside the health sector can be made NCD-sensitive.
- Develop rapid assessment tools and approaches to assist policymakers and planners. These include tools for situation analysis, national strategic planning and costing.
- Use Health Impact Assessments and other tools to prospectively understand how developmental projects and policies might impact NCDs, both positively and negatively [200].

2 Planning

- Ensure appropriate attention to social determinants and multisectoral action in national plans for NCD prevention and control.
- Integrate NCDs into poverty reduction strategies and national and local development plans, highlighting the developmental dimensions of NCDs.
- Integrate NCDs into relevant sector plans and sector-wide approaches.
- Include NCDs in the negotiation of UN Development Assistance Frameworks and Country Programme Documents.
- Identify opportunities for whole-of-society responses that include civil society, the private sector and academia.

3 Resourcing

- Develop sustainable, multisectoral financing mechanisms for international assistance (e.g. multipartner trust funds for technical support and grants, rapid financing facility for loans and investment support).
- Establish multisectoral budget lines for action on NCDs.
- Consider dedicating personnel or departmental units to policy or programme implementation related to NCDs and health more broadly.

4 Monitoring, evaluation and accountability

- Establish indicators across planning and implementation to measure progress towards multisectoral engagement and impacts on NCDs and their risk factors.
- Develop a multisectoral monitoring framework that is aligned with the recently approved GMF and perhaps adapting instruments used for the UN General Assembly Special Session on AIDS.
- Develop indicators for policy, law, governance, human rights and political leadership on NCDs, perhaps building on the UNAIDS National Commitment and Policy Instrument.
- Report on social determinants of health indicators, including those for NCDs, in various global development reports.
- Develop capacity to monitor progress in equity in terms of NCD outcomes, risk factors, health service access and in key social determinants, such as levels of education and income.
- Ensure that progress is tracked among most affected groups.
- Leverage existing data and surveys to capture and understand progress on NCDs, risk factors and social determinants.
- Consider creating an independent mechanism or group that assesses progress on commitments and reports findings and recommendations to the highest possible multilateral authority [164].
- Consider leveraging civil society assessments as part of monitoring and reporting systems at national and global levels.
- Develop spending assessment techniques, perhaps building on existing tools (e.g. National AIDS Spending Assessment).

Enabling environment

A) Political leadership

- Mobilize attention to social determinants of health and NCDs, especially in achieving the MDGs and in developing the post-2015 development agenda.
- Build capacities of civil society organizations to advocate for action on the social determinants of NCDs and to promote accountability.
- Ensure sufficiently high political representation and leadership in multisectoral coordination bodies for NCDs.

B) Legal frameworks

- Review and refine laws that act as direct or indirect barriers to access to health care, especially NCD-related care.
- Maximize use of flexibilities within multilateral and bilateral trade agreements to access essential medicines for NCD care and to implement policies that reduce risk behaviours, particularly among youth and adolescents.
- Pass laws and policies that safeguard the rights of people living with NCDs. These could be non-discrimination laws that include reference to specific NCDs or to real or perceived health status more generally.

- Use the law to maximize safe and healthy environments, such as improving the food environment and safe recreation spaces.
- Consider laws and policies that promote consumer awareness, such as through nutrition labelling.
- Implement fully the provisions of the FCTC, as well as the legal aspects of other recommended approaches (e.g. MPOWER, Global NCD Action Plan 2013–2020, etc.).

C) Governance

- Develop effective multisectoral coordination structures for NCDs (and possibly other diseases, such as HIV).
- Ensure meaningful participation of communities, especially networks of affected and vulnerable groups.
- Safeguard the independence of regulatory authorities and reduce corruption in the development of public health programmes and the protection of public health interests [201]. Article 5 of the FCTC provides a useful example, particularly in terms of limiting interference by the tobacco industry.
- Examine thoroughly potential public health impacts of free trade negotiations to ensure that the sovereign right of the State to take public health measures, such as tobacco control and access to affordable medicines, is not compromised.
- Assess policy gaps and institutional capacities. These may include, among others, elements of the legal framework that: limit the scope of action and tools of national public health agencies; permit undue influence of industry and special interest groups on the independence of regulatory authorities; or unduly increase the price of essential diagnostics and medicines.

D) Human rights

- Emphasize NCD prevention and control as important to achieving the right to health.
- Promote universal health coverage, such that all groups have guaranteed equal access to a defined minimum set of health promotion, prevention, curative and rehabilitative services.
- Address the multiple social impacts of NCD-related illness, impacts which can infringe on achieving a number of other human rights, such as education.
- Highlight persistent inequities in NCD-related outcomes, risk factors and access to care, especially where these are linked to infringements of human rights and exclusion.
- Consider using NCDs as an entry point for action on human-rights-related issues.

CONCLUSION



NCDs are a health, development and human rights issue. They have been recognized as such at the highest global political levels and are already reflected in various intergovernmental processes related to the post-2015 development agenda. NCDs are an enormous and growing strain on health systems worldwide and exact social and economic costs at national and household levels. LMICs face daunting NCD burdens, a situation that is likely to worsen without concerted, whole-of-society prevention efforts. Inequities are apparent within countries, where NCD outcomes and risk factors are patterned along various socio-economic gradients.

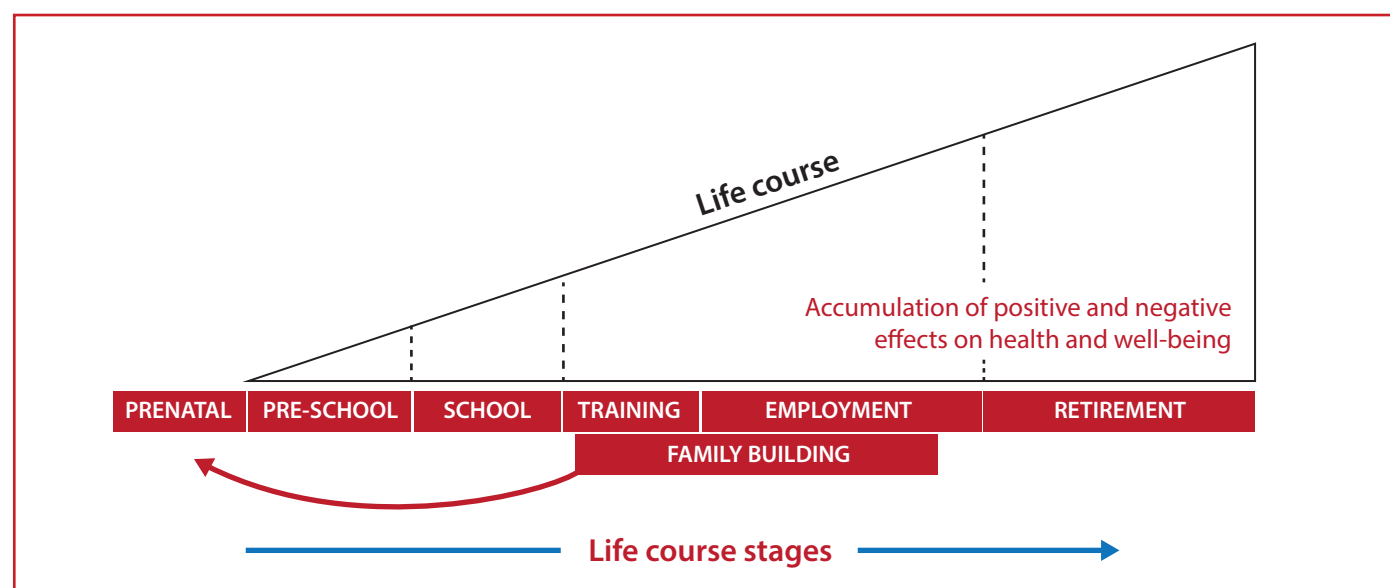
Addressing the global NCD epidemic will require leadership from the health sector. The health sector, however, cannot meet the challenge alone. Multisectoral responses that tackle the underlying, overlapping and interacting social determinants of NCDs will be required. WHO's 'Global Action Plan for the Prevention and Control of NCDs 2013–2020', the GMF and various other strategies already point the way forward for whole-of-government and whole-of-society responses. This paper complements these existing strategies by synthesizing available evidence on why and how social determinants matter for NCDs, by providing case examples of action outside the health sector and by suggesting a framework for future multisectoral action.

This paper is only a starting point. Future work can and should explore in more depth many of this paper's key themes. Such work may include sector-specific case examples of and guidance for action on NCDs. It may also include, among others, topics such as effective governance structures for multisectoral coordination and participation, transparency and accountability mechanisms, human-rights-based approaches to NCDs, municipal and decentralized responses, and the role of the law. Tools will also be needed to facilitate critical functions, such as planning, costing, financing, monitoring and evaluation. A suite of cutting-edge knowledge should help ensure that the world is able to respond to one of the most significant threats to human development in the 21st century.

Appendix 1: Life-course perspective for NCDs

A life-course perspective is integral to the social determinants of health framework when understanding risks, inequities and potential entry points for action on NCDs and health generally. Health risks, especially NCD risks, tend to accumulate over time, beginning in the earliest years of life, even before birth (in the womb). These health risks also tend to manifest differently, both in substance and in influence, during crucial early years — before birth, during childhood and adolescence — as well as in other stages of life. Understanding and addressing the ways in which social determinants influence health across the life course, especially in the early years, can significantly influence health outcomes and health inequities across society for decades [47,62]. This appendix focuses on the crucial earlier years of life.

Figure 10. Life course stages and entry points for impacting health



Source: adapted from [62]

The early years of life are a key determinant of health at older ages [202]. Early disadvantage has lifelong effects on many aspects of life that impact health and well-being and, more narrowly, impact NCDs. These aspects include educational attainment and behavioural choices made in adolescence as well as the ability to earn a living and achieve financial security during adult life. Hence, NCD approaches that focus on the period before birth and early life have the potential to reduce health inequities in later life.

Evidence is accumulating that two interrelated mechanisms link foetal and early childhood experiences with adult health: cumulative damage over time, and the biological embedding of adversities during sensitive developmental periods [203]. An important point for NCDs is that genes are not solely responsible for genetic predisposition to disease; differential epigenetic regulation of genes occurring during foetal and early postnatal development also plays a role¹ [205]. Social determinants of epigenetic modification may include differential treatments of mothers during pregnancy, including differential food intake, as well as possible treatments available to the infant after delivery.

¹ Such epigenetic processes induce inherited changes in phenotype without changing the DNA sequence [204].

Undernutrition during pregnancy, widespread among women in low-income settings, is an example. Epigenetic changes in individuals whose mothers were exposed to famine during the Dutch Hunger Winter led to increased levels of CVD, insulin resistance, obesity and hypertension during adulthood [205]. Undernutrition during pregnancy also increases the risk of slow foetal growth and low birth weight in babies, which has been associated with metabolic changes that can increase the risk of CVD, diabetes and obesity in later life [206]. Women who are overweight and obese during pregnancy, with consequent increased risk of metabolic syndrome and maternal diabetes, tend to produce larger babies with neonatal metabolic changes [207]. Increased risk of metabolic syndrome and Type 2 diabetes among such infants has been shown in longitudinal studies [208]. Interventions shortly after birth could reverse some of these epigenetic and metabolic risks [204]. Breastfeeding and positive nutrition during infancy has beneficial effects across the life course. It has been shown to reduce the risk of childhood obesity and adiposity in later life [209,210].

Adolescence — the transition from youth to adulthood, accompanied by physical and cognitive changes — is another important phase in the early years of life that can have significant impacts on NCDs later in life. Many of the behavioural risk factors that contribute to CVD and diabetes start in childhood and adolescence [211]. An adverse global trend is the increase in obesity among children and young people [4].

Appendix 2: WHO and PHAC key themes and lessons for intersectoral action

The Secretariat to the WHO Commission on Social Determinants of Health and the Public Health Agency of Canada compiled 18 case studies from countries of all income levels on how action in different sectors can positively influence health and health equity. The following key themes and lessons were reported:

- The goals of intersectoral action vary. Not all case studies defined the issue as one of inequities in health among population groups. Instead, some conceptualized their goal as the improvement of health among a particular disadvantaged group or population.
- Intersectoral action looks different at different levels of decision-making. Initiatives were planned and implemented at national, regional and local levels.
- Building a strong case for intersectoral action is vital. Successful action warranted consistent use of the following strategies:
 - building on public concern for the health and well-being of a disadvantaged group;
 - using political champions to advocate for intersectoral action;
 - framing the issue such that all sectors could relate;
 - building on international leadership;
 - creating a platform for researchers;
 - building on concerns about the need to use scarce resources more efficiently;
 - acknowledging the limitations of previous approaches, especially those that involved sectors working alone;
 - taking advantage of political transitions to reassess roles and begin working together better; and
 - building consensus via shared gatherings, such as conferences or community meetings.
- Building and nurturing trust among all partners is key to developing and maintaining intersectoral action. This has been a challenging and time-consuming task in many countries, but it has also ensured a strong foundation for effective working relationships.
- Models and structures to organize intersectoral action take a variety of forms.
- Monitoring the processes and outcomes of intersectoral work is challenging. The role of the health sector must be flexible, depending on its degree of knowledge, experience and control.
- When dealing with issues in which the health sector has the greatest degree of knowledge, experience and control over the strategies to improve health equity, it is reasonable for the health sector to take the lead role.
- When an initiative focuses on issues where the health sector has knowledge about effective measures to improve health equity but does not control the arena or means to implement those measures, the health sector may take a lead role in promoting strategies but should ensure close cooperation and ownership of the initiative with other sectors.
- When the initiative is attempting to directly address core social determinants of health beyond those directly related to the health system, such as education and poverty, the primary role for the health sector is to be a policy partner in the initiative's development and implementation. In these circumstances, the health sector on its own neither controls the means to implement strategies nor has the greatest knowledge in how activities should be framed [212].

Appendix 3: Additional examples of multisectoral action on NCDs

The typology of multisectoral action in Chapter 3.3 outlined three general categories of possible action outside the health sector on NCDs: expanding delivery platforms; NCD-specific actions on social determinants; and NCD-sensitive actions on social determinants. This appendix provides additional examples of expanding delivery platforms and NCD-specific actions. The examples are mainly from high-income countries.

1 Expanding delivery platforms

Box 20. A multi-level, community-wide programme to increase physical activity in São Paulo, Brazil



Agita São Paulo was introduced in 1996 to increase knowledge about the importance of physical activity and levels of physical activity among the population in the state of São Paulo, Brazil. The programme involved community-level deployments targeted at school students, local municipalities, workers and elderly people. It encouraged activity in three settings: home, transport and leisure time.

Agita São Paulo was launched by the state health ministry and coordinated by the Centre of Studies of Physical Fitness Research Laboratory from São Caetano do Sul. The programme design was grounded in social theory, and development and implementation of the programme involved multiple partnerships across governmental and non-governmental organizations and across different sectors, such as education, sports, health, industry and commerce. The programme featured annual ‘mega events’ for each target group, free coverage by mass media, special promotional material and giveaways, improvements in physical environments and prescriptions of ‘doses’ of physical activity by medical professionals.

Cross-sectional surveys among the population revealed that knowledge about the programme and its main messages increased from 37 percent to 60 percent between 2002 and 2008. At the same time, the proportion of the population reporting no physical activity fell from nearly 10 percent to less than 3 percent. The proportion of residents reporting less than 150 minutes of activity per week (the recommended level) fell from 43.7 percent to 11.6 percent. Limited data available in Brazil more broadly use the same instrument and indicate opposite trends, making it likely that the observed positive outcomes are attributable to Agita São Paulo.

Considerations for actors outside the health sector: Agita São Paulo involved the coordination of multiple sectors to access its target population in a suite of non-health settings. Medical professionals worked alongside actors outside the health sector to instil awareness and knowledge, and to elicit behaviour change.

Source: [213-215]

Box 21. Prevention programme in Calgary, Canada, for Indo-Asian women with a history of gestational diabetes



Based on 2006 Census data, approximately 5 percent of Calgary's population is South-East Asian. Some ethnic groups — Canadians of South-East Asian, Hispanic and African origin — are three to four times more likely to develop diabetes than the general population. The incidence of gestational diabetes mellitus (GDM) is higher among Indo-Asian women than among women of European or North American origin. It is estimated that approximately 50 percent of Indo-Asian women with GDM will develop Type 2 diabetes within five years post-partum.

The goal of the Culturally Sensitive Diabetes Prevention Program was to develop an effective, community-based, culturally sensitive and sustainable post-partum diabetes prevention programme for Indo-Asian women with a history of GDM. Culturally specific materials were developed and distributed, including posters, brochures, articles and television and radio segments in English and Punjabi. These materials were displayed in locations (e.g. temples, community pharmacies) and through media (e.g. an Alberta cable channel, an Indo-Asian radio programme) accessed by the target population. Three Indo-Asian women with a history of gestational diabetes were recruited and trained as community workers to assist the programme team. In addition, five two-hour educational classes were held with Indo-Asian women, followed later by a second meeting. The programme was offered in Hindi, Punjabi and Urdu. Content focused on nutrition and exercise and was tailored to the participants' culture. Strategies included: modifying food preparation techniques; altering culturally based meal habits that may hinder blood glucose regulation (e.g. eating the first and last meals of the day earlier); and providing recipes based on culturally relevant foods and food preparation methods.

Seventeen out of the 23 women who participated in the diabetes prevention educational programme completed a pre- and post-education survey. Survey results revealed: an increase in the perception of the seriousness of diabetes; an increase in the awareness of risk factors for diabetes; an increased perception of personal risk for diabetes; and that women were less likely to see lack of knowledge, time and social support as barriers to healthy eating and exercise. After attending the educational programme, women self-reported: an increased compliance with oral glucose tolerance testing; improvement in nutrition; and an increase in exercise.

Considerations for actors outside the health sector: The Culturally Sensitive Diabetes Prevention Program occurred outside traditional health settings and accessed its target population where they work and live, delivering messages through trusted outlets, including trained fellow Indo-Asian women. It provided knowledge and awareness and attempted to change cultural norms around food.

Source: [216]

2 NCD-specific actions on social determinants

Box 22. Comprehensive tobacco control in the USA



Smoking is a well-established cause of NCDs such as CVD, lung cancer and respiratory disease, in addition to other health risks [217]. Exposure to environmental tobacco smoke among non-smokers increases their risk of acute myocardial infarction (AMI) by about 30 percent compared with no exposure and, in the USA, is associated with an estimated 35,000 deaths a year from coronary heart disease [218].

In 1964, the Surgeon General of the United States — the government's leading spokesperson on matters of public health — issued a landmark report warning Americans of the harmful effects of tobacco use. In response, Congress adopted the 'Federal Cigarette Labeling and Advertising Act' of 1965 and the 'Public Health Smoking Act' of 1969. Together, these laws required a health warning on cigarette packages, banned cigarette advertising in the broadcasting media and called for an annual report on the health consequences of smoking [219]. This early legislation was followed by several other tobacco control measures, and, beginning with California in 1989, states began adopting comprehensive state-wide tobacco control programmes [220]. Comprehensive programmes include mass media campaigns, increased cigarette excise taxes, telephone helplines, reduced out-of-pocket costs for treatment to stop smoking, health care provider assistance for stopping smoking, and restrictions on second-hand smoke in public places. In the 1990s, multistate tobacco control interventions began receiving substantial financial support from the US government. Examples include the Centers for Disease Control's Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT) and the National Cancer Institute's Americans Stop Smoking Intervention Study (ASSIST)[221].

Extensive research shows that tobacco control programmes in the USA have been very successful in reducing tobacco use and associated health outcomes, an impact observed among both adolescents and adults. Following a large increase in adolescent smoking during the mid-1990s, national prevalence among high school students who smoked cigarettes at least once in the previous 30 days dropped from 36.4 percent in 1997 to 18.1 percent in 2011 [222]. From 1985 to 2003, national adult smoking prevalence declined from 29.5 percent to 18.6 percent [221]. With regard to NCD outcomes, one study found that 795,000 US deaths from lung cancer were averted due to changes in smoking behaviour from tobacco control programmes between 1975 and 2000 [223]. In the year after New York's 2003 comprehensive tobacco control programme was introduced, there were 3813 fewer hospital admissions for AMI than would have been expected in the absence of the comprehensive smoking programme. Direct health care cost savings of US\$56 million were realized in 2004 [218].

Considerations for actors outside the health sector: Comprehensive smoking bans require the collaboration of multiple sectors — for example, the tax component involves the Ministry of Finance — and reduces exposure to a major behavioural NCD risk factor through numerous actions on social determinants.



Box 23. Regulation of trans-fats in Denmark

Trans-fatty acid (trans-fat, or TFA) and saturated fatty acid (saturated fat) both increase the risk of CVD, but the relative effect of trans-fat is worse. An increase of just 2 percent of total energy intake from trans-fat increases the incidence of coronary heart disease by as much as 23 percent [224]. Trans-fats have also been linked to diabetes and some cancers, among other diseases [225].

The Danish Institute for Food and Veterinary Research (before 1 January 2003, a part of the Danish Veterinary and Food Administration) has monitored the trans-fat content in Danish foods for the last 30 years [226]. Various options are available to policy-makers wishing to regulate trans-fat consumption, including product labelling and voluntary self-regulation for food producers [225]. However, with Danish Order no. 160 of March 2003, Denmark became the first country to introduce regulatory limits on the trans-fat content of foods sold. The Order imposed a maximum of 2 percent TFA in oils and fats destined for human consumption. Labelling was deemed insufficient to protect consumers, especially children or those regularly consuming fast foods [226].

One study found that, after the regulation, the TFA content had been reduced or removed from the products with high TFA content originally, such as French fries [226]. A 2013 systematic review on trans-fats regulations worldwide concluded that national bans, such as that of Denmark, “virtually eliminated TFAs from the food supply” [225].

Considerations for actors outside the health sector: Regulation of trans-fat is a simple and effective strategy to combat the components of unhealthy diet by changing the food environment. The strategy in Denmark is effective because it almost completely removes the harmful substance.

Box 24. Walt Disney Company ban on junk food marketing targeted at children

Seventeen percent of American children — 12.5 million in total — are obese [227]. As the epidemic has grown exponentially, food advertising, the large majority of which centres on candy, soda, fast food and cereal, has reached children with unprecedented intensity and frequency [228]. Often using psychological and neurological research, food companies target children through not just television but also magazines, sponsorship of schools, and ‘new media’, such as children’s websites, Internet games, email and text messaging [229]. Food marketing to children influences their consumption choices, and young children do not (and cannot) comprehend that advertising is intended to persuade them [230,231]. In 2011, the Interagency Working Group on Food Marketed to Children, comprising members from the Federal Trade Commission, the Centers for Disease Control and Prevention, the Food and Drug Administration, and the US Department of Agriculture, submitted to Congress a preliminary set of nutritional guidelines for children-focused advertising. The voluntary guidelines set limits for added sugars, fats and sodium in advertised foods, and promote fruits, vegetables and foods high in whole grains and protein [232]. The guidelines, though voluntary, have generally been met with a strong industry backlash [233].

However, in 2012, the Walt Disney Company committed to phasing out the advertising, promotion and sponsorship of junk food targeted at children under 12 from its TV and radio programming as well as its website [233]. The company’s self-imposed restrictions, to be implemented globally, will take full effect in 2015 and eliminate the marketing of a wide range of candy, sugared cereal and fast food [234,235]. Disney is the first company to take such a step against the marketing of unhealthy foods to children. The company has publicly stated that it can use the emotional connection children have with Disney characters and stories to promote healthier lifestyles [233].

Considerations for actors outside the health sector: The Walt Disney Company’s self-imposed restrictions are an example of a whole-of-society approach to the social determinants of NCDs wherein multiple governmental sectors work in concert with each other and the private sector to produce a win-win result.

Box 25. Healthy food access policies in the USA and New York City

A lack of healthy food options can lead to unhealthy diet, obesity and ultimately CVD and diabetes. Some neighbourhoods in the USA, as in other countries, have been classified as ‘food deserts’ because they are devoid of supermarkets or other food retailers that carry affordable and nutritious food. Residents of these neighbourhoods, which are typically low-income, often lack transportation and must rely on smaller neighbourhood stores that either do not carry healthy foods or, if they do, offer them at higher prices. In the USA, about 23.5 million people, or 8.4 percent of the population, live in low-income neighbourhoods that are more than a mile from a supermarket [236].

Policies addressing food deserts in the USA have been introduced at multiple levels of government. In 2010, the Obama Administration introduced a US\$400 million, multi-year Healthy Food Financing Initiative that, in part, encourages food retailers that offer a wider range of healthier choices to move to underserved urban and rural communities; the initiative directly cites the prevalence of food deserts as its motivation. Several states have also launched policy efforts aimed at increasing access to healthy food [237]. At the municipal level, in 2005, New York City implemented the Healthy Bodegas Initiative, which recruits bodegas or small corner stores in nutritionally vulnerable areas to increase their offerings of low-fat milk, fruit and vegetables. The city also implemented the Health Bucks Program, which offers \$2 coupons to people in vulnerable areas for the purchase of fresh fruit and vegetables at participating farmers’ markets [236]. These programmes not only increase access to healthy foods but also incentivize residents to make healthy food choices.

Considerations for actors outside the health sector: Food access policies can improve health outcomes by changing material circumstances. Through both reduced price and increased availability, they can increase access to healthy foods in the lived environment.

NCDs and their risk factors: epidemiological contexts and trends

This annex provides definitions and epidemiological data, including global distributions, on the four main noncommunicable diseases (NCDs) and their shared risk factors. It is meant to supplement ‘Discussion Paper: Addressing the Social Determinants of Noncommunicable Diseases’. Overall, the data indicate that NCDs impact all regions but strike especially hard in low- and middle-income countries (LMICs). Thus, the evidence reinforces the notion that NCDs are inequitably distributed among and between countries.

The four ‘main’ NCDs defined

NCDs are a large cluster of conditions that include mental and neurological disorders such as dementia and Alzheimer’s disease; autoimmune disorders such as psoriasis; bone and joint conditions such as osteoporosis and arthritis; and renal, oral, eye and ear diseases [5]. But, according to the World Health Organization (WHO), the four main NCDs are cardiovascular disease (CVD), diabetes, cancer and chronic respiratory disease [4]. These four NCD groups are described below.

- **Cardiovascular disease** “refers to a group of diseases that affect the heart, blood vessels, or the sequelae of poor blood supply due to a diseased vascular supply” [17]. They include atherosclerosis, stroke and rheumatic heart disease, but the largest contributor to global CVD burden is coronary heart disease and cerebrovascular disease [1].
- **Diabetes** “is a metabolic disorder in which the body is unable to appropriately regulate the level of sugar, specifically glucose, in the blood, either by poor sensitivity to the protein insulin or due to inadequate production of insulin by the pancreas” [17]. Type 2 diabetes accounts for 80–95 percent of cases, depending on the population [3].
- **Cancer** “refers to the rapid growth and division of abnormal cells in a part of the body. These cells outlive normal cells and have the ability to metastasize or invade parts of the body and spread to other organs” [17]. There are more than 100 types of cancer, but the greatest contributor to the global NCD burden is cancer of the lung [11].
- **Chronic respiratory diseases** “refer to chronic diseases of the airways and other structures of the lung. Some of the most common are asthma, chronic obstructive pulmonary disease (COPD), respiratory allergies, occupational lung diseases and pulmonary hypertension. COPD refers to a group of progressive lung diseases that make it difficult to breathe — including chronic bronchitis and emphysema” [17].

NCD health burden and global distribution

NCDs are by far the world’s leading killer, accounting for more deaths than all other causes combined [4]. In 2010, they were responsible for nearly 35 million (two thirds) of the 53 million global deaths [11]. The NCD epidemic is global in scope but strikes hardest in LMICs. These already resource-constrained countries account for 80 percent of NCD deaths and 90 percent of those occurring before the age of 60 [4,13]. LMICs also contend with high rates of infectious diseases [14]. If not urgently addressed, NCDs are expected to exact an even greater toll on human life. By 2030, NCDs are projected to kill 52 million people per year, nearly five times more than communicable diseases [15]. They will be the major cause of death in all regions, including Africa [4].

In 2008, the leading causes of NCD deaths were CVD, cancer and respiratory diseases, including asthma and COPD¹ (see Figure A1). CVD was the main cause of NCD-attributable deaths in 2008, responsible for nearly half (over 17 million NCD deaths). Some 80 percent of CVD deaths occur in LMICs. Diabetes caused relatively fewer deaths than the other main NCDs in 2008, but, as explained below, its large impact is best measured in morbidity [4].

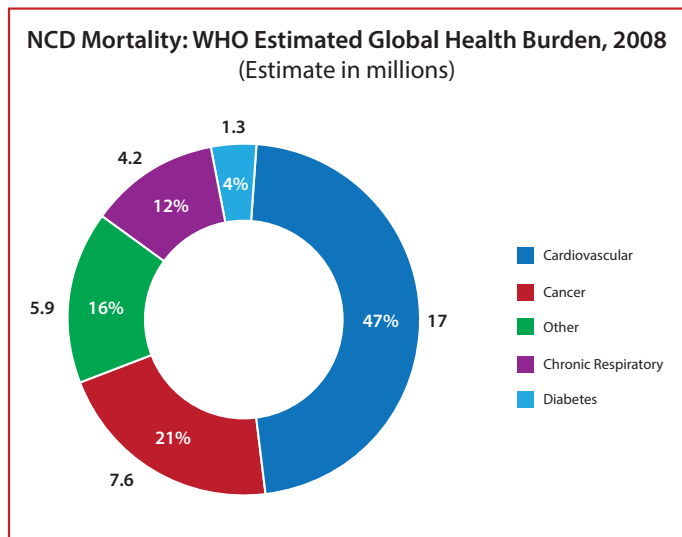
CVD and diabetes

CVD and diabetes share many underlying risk factors, including all four main behavioural risk factors: tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet [4]. In 2010, CVD and diabetes combined to account for nearly 17 percent of global DALYs [12]. Ischemic heart disease and stroke alone killed 12.9 million people in 2010 and accounted for one in four deaths worldwide (up from one in five in 1990). As in 2008, diabetes accounted for 1.3 million deaths in 2010, twice as many as in 1990 [11]. The burden of CVD and diabetes varies considerably across countries and regions (see Figure A2, next page), but the problem is global in scope. A granular review of NCD death rates among 23 countries with the highest reported NCD mortality demonstrates that CVD and diabetes together are consistently driving death rates in all countries assessed [238].

While the importance of CVD within the suite of common NCDs is clear, the data obscure the significant contribution of diabetes to NCD-related mortality. Over time, diabetes can affect circulation and damage limbs and organs, contributing to CVD and a host of other ailments that are more proximal causes of mortality. Morbidity due to diabetes is also significant. If not managed, diabetes contributes to a variety of ailments, such as foot amputations and kidney and eye impairment, with attendant impacts on people's ability to lead productive lives and provide for their households [4]. Unmanaged diabetes is of particular concern, considering that half of people with diabetes are undiagnosed [240].

The rapid global progression of diabetes may actually reflect the NCD crisis most acutely. In 2010, global prevalence among adults was estimated at 6.4 percent, or 285 million adults. By 2030, this number is expected to rise to 7.7 percent, or 439 million adults [241]. In comparison, around 34 million people are currently living with HIV [242]. Like other NCDs, diabetes strikes hard in LMICs, as four out of five people with diabetes live in these countries. Over the next 20 years, diabetes is expected to rise most in Africa, the Middle East and North Africa (see Figure A3, pg. 75); however, the number of people with diabetes is increasing in every country [240]. Some projections indicate that by 2050 one third of American adults will be diabetic [243].

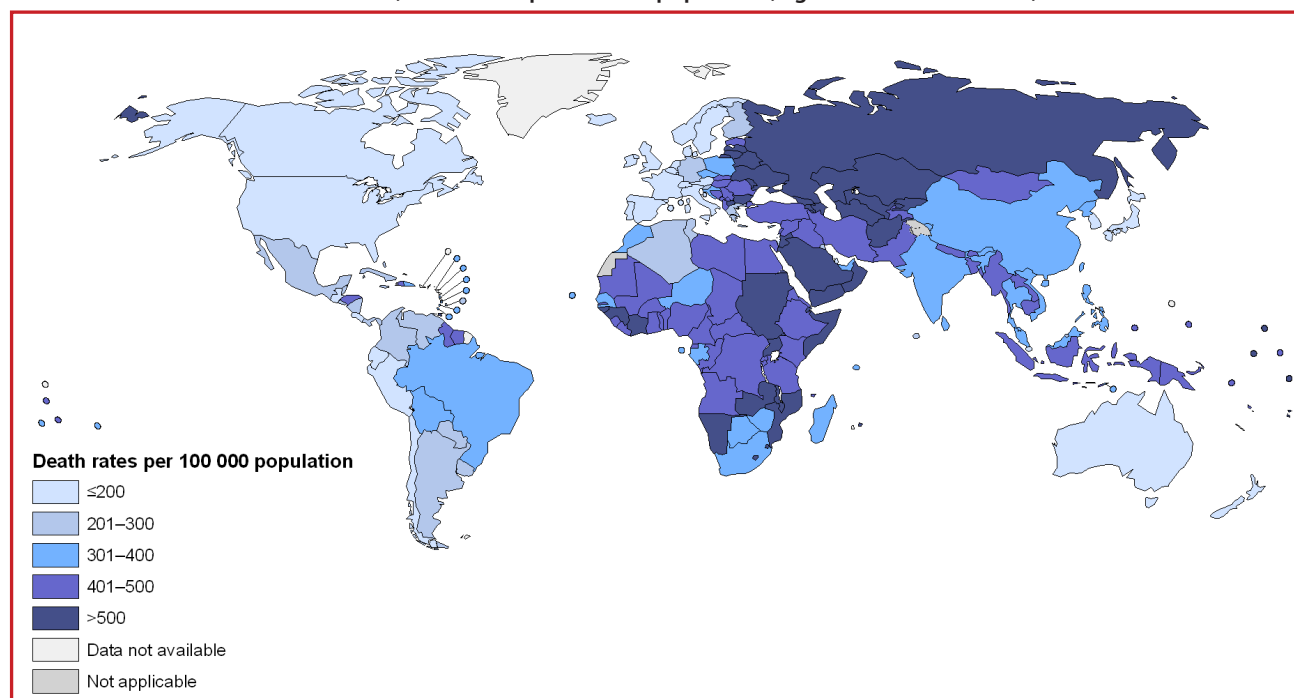
Figure A1. Distribution of global NCD deaths by cause in both sexes at all ages



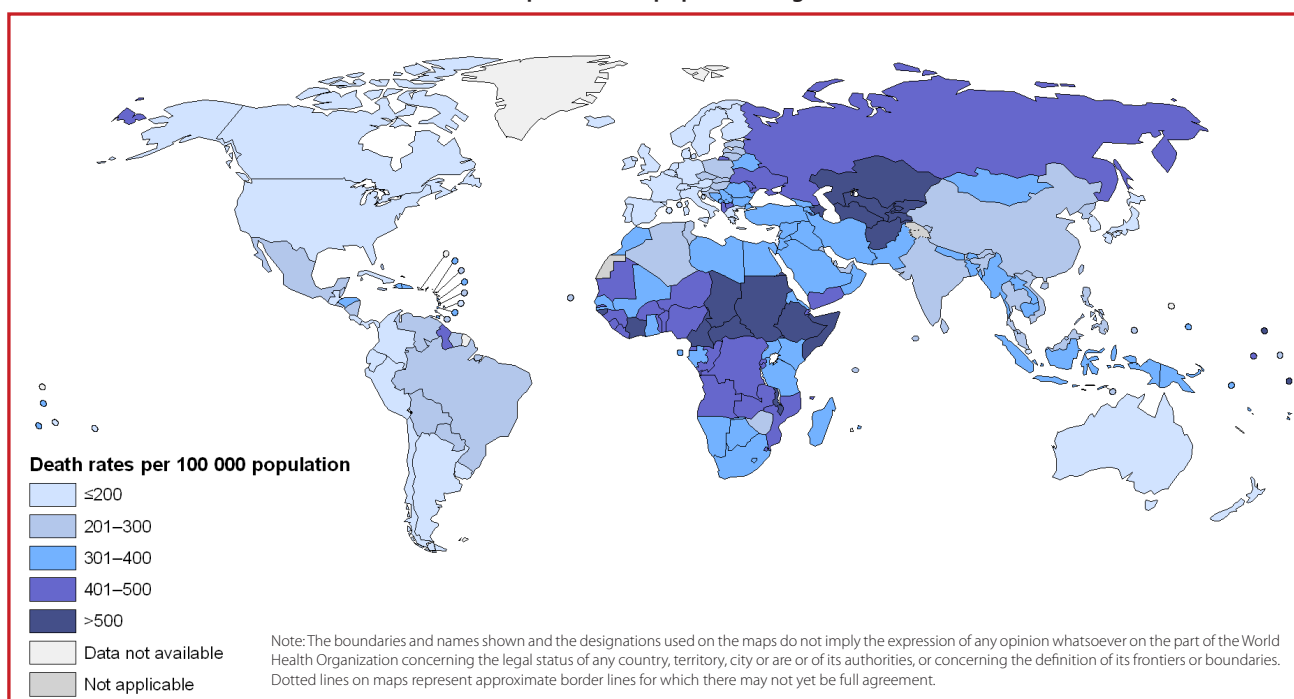
¹ This 2008 figure provides a simple display of the contribution made by the four main NCDs to NCD mortality overall. Data exist for 2010, but they are more granular, making the calculation more difficult. There is little difference between 2008 and 2010 data.

Figure A2. Global distribution of CVD and diabetes mortality, males (above) and females (below), 2008

Cardiovascular diseases and diabetes, death rates per 100 000 population, age standardized. Males, 2008

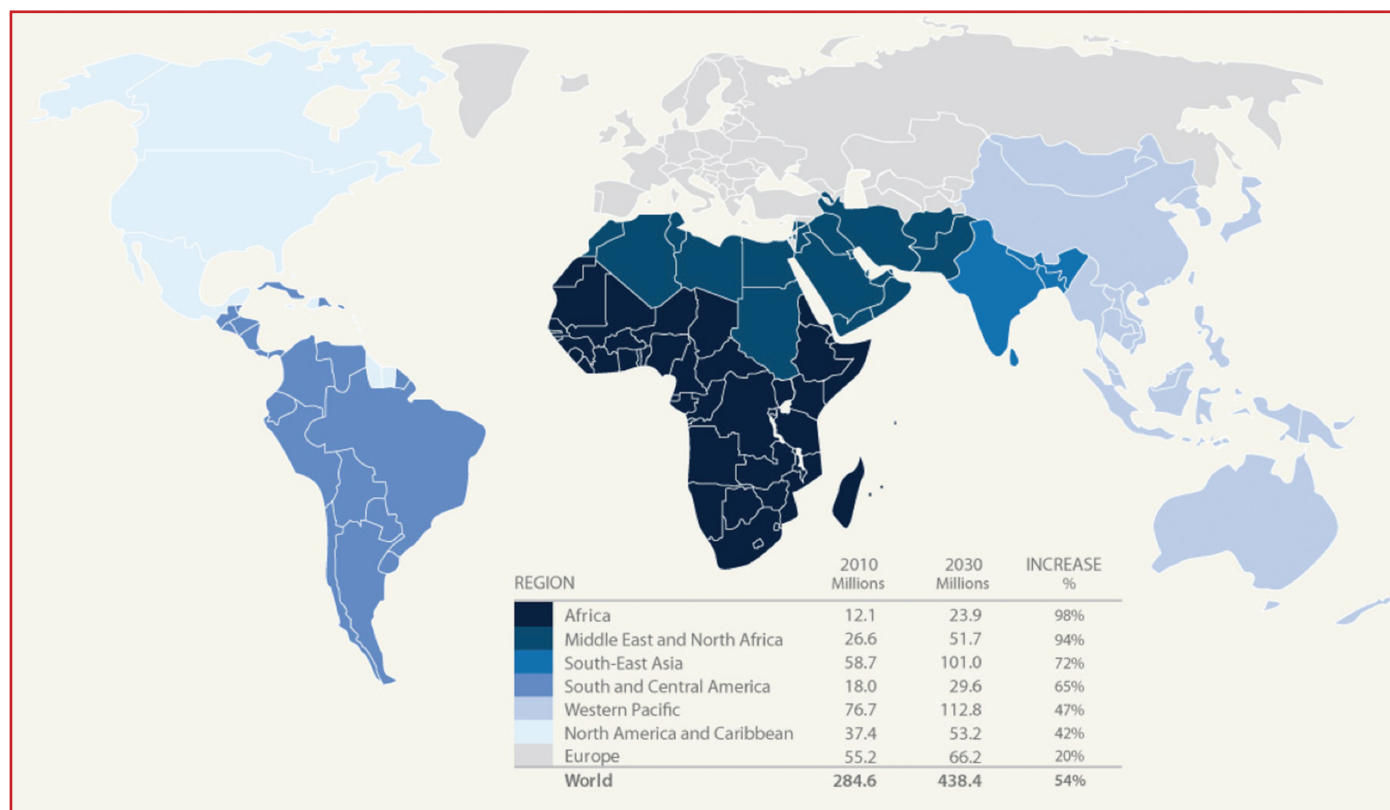


Cardiovascular diseases and diabetes, death rates per 100 000 population, age standardized. Females, 2008



Source: [239]

Figure A3. Estimates of diabetes prevalence in 2010 and 2030



Source: [66]

Cancer

Cancer is the second largest cause of death worldwide after CVD. It accounted for 8 million deaths in 2010, a 38 percent increase from 1990; of these, 1.5 million (19 percent) were from trachea, bronchus and lung cancer [11]. Stomach cancer and liver cancer, the next two most common sites for cancer mortality in 2010, each caused more than 15 million DALYs [12]. Two thirds of cancer cases occur in LMICs [4]. Mortality and morbidity from cancer are expected to increase dramatically in all regions of the world, but more so in lower-income countries. One study estimates global cancer incidence to reach 17 million by 2020, up from 12.9 million in 2009 [244]. WHO estimates that by 2030, compared with 2008 figures, cancer incidence will increase by 82 percent in low-income countries, 70 percent in lower middle-income countries and 58 percent in high-income countries [4].

Generally, DALYs from cancer increase with the demographic and epidemiological transition; for the most part, cancer rates rise with increasing levels of country income. In 2008, the WHO Regions of Europe and the Americas had the highest incidence of all types of cancer combined for both sexes. The Eastern Mediterranean Region had the lowest incidence rates [4]. Where cancer occurs in the body also varies substantially by region [12]. For example, higher-income countries tend to be particularly burdened with lung and prostate cancers among men and breast cancers among women, whereas lower-income countries, such as those in sub-Saharan Africa, experience more cervical cancers [4,12].

Chronic respiratory disease

In 2010, chronic respiratory diseases accounted for 4.7 percent of global DALYs, with COPD comprising two thirds of the total, and asthma nearly a fifth [12]. Like other NCDs, chronic respiratory disease is global in scope but hits LMICs hard. One study found that COPD alone affects more than 210 million people worldwide, accounting for 3–8 percent of total deaths in high-income countries and 4–9 percent of total deaths in LMICs [245]. In 2008, 90 percent of COPD deaths occurred in LMICs [4].

NCD risk factors: burden and global distribution

Four major risk behaviours drive NCD occurrence: tobacco consumption, harmful use of alcohol, physical inactivity and unhealthy diet [4]. These behavioural risk factors, for example, explain nearly 80 percent of CVD burden [246]. NCD risk behaviours are prevalent worldwide but increasingly so in LMICs. Differential exposures to NCD risk behaviours are rooted in underlying social, economic, political, environmental and cultural factors (and policy choices), known broadly as social determinants (see Chapter 2).

In 2010, two of the top three leading risk factors for global disease burden were tobacco smoking, including second-hand smoke (6.3 percent of DALYs), and alcohol use (5.5 percent of DALYs). Insufficient physical activity and unhealthy diet combined to account for 10 percent of global DALYs in 2010, with the most prominent dietary risks being low fruit consumption and high sodium intake. Biological risk factors, such as raised blood pressure and overweight and obesity, arise in part from the four major risk behaviours and also significantly contribute to the NCD burden.² Raised blood pressure was the leading risk factor for disease in 2010 (7 percent of DALYs), while overweight and obesity accounted for 3.8 percent of DALYs [44].

Tobacco consumption

Consumption of tobacco is the only modifiable risk behaviour common to all four ‘main’ NCD categories [5]. It is responsible for more than 6 million deaths each year globally (6.3 million in 2010), or one in six NCD deaths [44]. Approximately 600,000 of these deaths are from second-hand smoke [4]. By 2020, global deaths from tobacco will increase to 7.5 million, accounting for 10 percent of all deaths [4]. It is expected that tobacco use will kill 1 billion people in the 21st century if unabated [25].

The global distribution of tobacco mortality and consumption parallels the broader NCD epidemic. Tobacco use and related deaths are declining in high-income countries (HICs) but rising rapidly in LMICs, where 82 percent of smokers now reside [247]. If current trends continue, deaths from tobacco are projected to decrease by 9 percent between 2002 and 2030 in HICs, yet double from 3.4 million to 6.8 million per year in LMICs over the same period³ [5]. Even with these projections, in 2010, tobacco smoking, including second-hand smoke, remained the leading risk for disease in high-income North America and Western Europe [44].

Harmful use of alcohol

Alcohol use accounted for 4.9 million global deaths in 2010 and was the second leading behavioural risk factor for disease, surpassed only by tobacco consumption. Among 15–49 year-olds specifically, alcohol use was the leading risk factor for disease in 2010 [44]. There is great regional variation in alcohol consumption and disease burden. In 2008, adult per capita consumption of alcohol was highest in the European Region (12.2 litres) and lowest in the Eastern Mediterranean Region (0.6 litres) [4].

² Raised blood pressure and overweight and obesity are not the only biological risk factors for NCDs; they were selected as prominent examples. High cholesterol, high fasting plasma glucose and other biological risk factors also contribute to NCDs [44].

³ An explanation for this trend is provided in Chapter 2, The Social Determinants of NCDs.

In 2004, alcohol-attributable deaths accounted for 10–14 percent of all deaths in Russia, and 5–9.9 percent in South America, South-East Asia and some East European nations [248]. More recently, in 2010, alcohol use was found to be the leading risk factor for overall disease in Eastern Europe, most of Latin America, and southern sub-Saharan Africa. Alcohol use now accounts for almost a quarter of disease burden in Eastern Europe [44].

Physical inactivity

Physical inactivity and low physical activity accounted for 2.8 percent of DALYs and 3.2 million deaths in 2010 [44]. Compared to those who partake in 30 minutes of moderate intensity physical activity on most days, insufficiently active persons are at 20–30 percent increased risk of all-cause mortality [91]. Insufficiently active individuals are 27 percent more likely to become diabetic and 30 percent more likely to experience ischemic heart disease [4,91]. Globally, physical inactivity increases as national wealth increases. In 2008, physical inactivity was most prevalent in the WHO Regions of the Americas and the Eastern Mediterranean.⁴ Physical inactivity is also significant in developing countries that are experiencing rapid, unplanned urbanization, possibly due to the increased automation of work in more affluent nations and/or less physical space in urban settings [4,249].

Unhealthy diet

A precise calculation of DALYs and deaths attributable to unhealthy diet is difficult due to varying sources and types of data; however, it is clear that insufficient fruit and vegetable consumption along with increased consumption of foods high in fats, sugars and salts contributes significantly to the NCD burden, perhaps even more so than any other risk behaviour [4,44]. In 2010, diets low in fruits were responsible for 4.9 million global deaths and 4.2 percent of global DALYs; diets high in sodium caused 4 million global deaths and 2.5 percent of global DALYs [44]. Such eating patterns are considered ‘Western’ and have historically been more closely associated with high-income nations. However, globalization, urbanization and other processes have steadily increased energy from fat in global food supplies over the past four decades, particularly in LMICs [4,249]. The availability of total fat increases with country income level, but harmful saturated fatty acids **as a percentage** of total fat is now highest in lower-income settings [4].

Raised blood pressure⁵

High blood pressure was the leading risk factor for disease in 2010, accounting for 9.4 million deaths and 7 percent of global DALYs [44]. It is a major contributor to stroke and coronary heart disease [4,250]. The relationship between raised blood pressure and NCDs is also progressive. In some age groups, the risk of CVD doubles for each increment of 20/10 mmHg of blood pressure, starting as low as 115/75 mmHg [251,252]. In 2008, approximately 40 percent of adults aged 25 and over had raised blood pressure, which is generally more common among men and less common in high-income countries. The global prevalence of raised blood pressure in 2008 was highest in the African Region (46 percent for both sexes) and lowest in the WHO Region of the Americas (35 percent for both sexes)[4]. In 2010, high blood pressure was the leading risk for health in high-income Asia Pacific (accounting for 8.5 percent of disease burden) and Central Europe (18.9 percent of disease burden), trends likely driven in part by high salt consumption in these regions [44].

4 Almost 50 percent of women in these regions were insufficiently physically active in 2008, compared to 40 percent of men in the Americas and 36 percent in the Eastern Mediterranean Region. For more on the sex gap in physical inactivity, see Chapter 2, The Social Determinants of NCDs.

5 Raised blood pressure is defined as systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg, or using medication to lower blood pressure [4].

Overweight and obesity⁶

Overweight and obesity is an intermediate biological risk factor for CVD and diabetes, arising in part from a combination of risk behaviours, especially physical inactivity and unhealthy diet. In 2010, high body-mass index (BMI) was responsible for 3.4 million deaths and 3.8 percent of DALYs. Between 1990 and 2010, the global disease burden attributable to high BMI increased from 52 million to 94 million DALYs. In 2010, high BMI was the leading risk factor for disease in Australasia and southern Latin America, also ranking high in other high-income regions, North Africa and Middle East and Oceania. High BMI accounted for almost 10 percent of overall disease burden in southern Latin America [44].

Despite the high prevalence of overweight and obesity in high-income regions, trend data since the 1990s identifies infants and young children in lower middle-income countries as experiencing the greatest increase in overweight status. These children face increased NCD risks as they grow and reach adulthood. There is a genetic component to obesity, as children born to overweight or obese parents will themselves be disadvantaged during early childhood development, resulting in higher genetic propensity to obesity in their adolescence and adulthood. But obesity is also determined by socio-economic factors. Genetic factors may combine powerfully with socio-economic factors, resulting in 'intergenerational transmission of obesity' and its associated adverse health outcomes (see Appendix 1, Life-course perspective for NCDs)[4].

⁶ WHO defines overweight and obesity as abnormal or excessive fat accumulation that may impair health. Using BMI, which is a person's weight in kilograms divided by the square of his height in metres, the WHO definition is: a BMI greater than or equal to 25 is overweight; a BMI greater than or equal to 30 is obesity [45].

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