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H N P D I S C U S S I O N P A P E R

# EFFECTIVE RESPONSES TO NON-COMMUNICABLE DISEASES

## Embracing Action Beyond the Health Sector

Montserrat Meiro-Lorenzo, Tonya L. Villafana, Margaret N. Harrit

September 2011





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## Health, Nutrition and Population (HNP) Discussion Paper

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# Health, Nutrition and Population (HNP) Discussion Paper

## Effective responses to non-communicable disease: *Embracing action beyond the health sector*

Paper prepared in support of The World Bank's work on non-communicable diseases in preparation for the United Nations General Assembly High Level Meeting on Non Communicable Diseases

**Abstract:** “Effective responses to non-communicable disease: Embracing action beyond the health sector” focuses on solutions, indicating opportunities for the prevention and control of non-communicable diseases and the kinds of actions that will achieve it.

NCDs exact a heavy toll on individuals and society. They cause disease, disability, and death, and reduce productivity which is vital for development. They also impose hefty costs on health services, particularly since NCDs frequently lead to ongoing disability and need for long-term care. Prevention that results in healthy aging and the reduction of morbidity is far more cost-effective and financially sustainable than treatment alone. A small number of proven prevention measures could stem the rise of the NCD epidemic. Data indicate the potential of affordable, potent, prevention tools focused on five key areas: tobacco, alcohol, diet, exercise and nutrition. Together, programs targeting these areas could reduce the burden of NCDs by more than half, while costing only a tiny fraction of current health spending.

NCDs arise from a complex combination of genetics, behavioral, and environmental factors, thus effective prevention efforts typically require the involvement of actors beyond the health sector, including from sectors such as education, agriculture, energy, and urban design among others. Successful prevention efforts – of which this paper profiles a cross-section – adopt a variety of “multi-sectoral” approaches, underpinned by a range of policy instruments. While the health sector has a critical stewardship role to play in bringing all key stakeholders together in addressing NCDs, it will also need to undergo adaptation to cope with the growing NCD challenge in both MICs and LICs.

Since successful prevention involves multiple sectors and actors, countries will need to adopt a framework that clearly sets out the different levels of accountability of each role player. Such a framework will require strong national buy-in, but there are tools, examples, and support agencies available to facilitate this. Middle- and low-income countries can seize the opportunity and act now to tackle NCDs and the underlying risk factors of these diseases. If they do so, these countries will greatly increase their prospects of reaping the full benefits of their demographic dividend, and of ensuring sustained economic development, greater equality, and a better quality of life for their people in the years ahead.

Key words: non-communicable diseases, noncommunicable diseases, chronic diseases, NCDs, prevention, multi-sectoral,

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## INTRODUCTION

This paper is the second in a series of World Bank knowledge products on the global epidemic of non-communicable diseases (NCDs). The first, “Chronic Emergency: Why NCDs Matter”, underlines the massive health and socio-economic impact that NCDs will bring if the epidemic is left unchecked, particularly for less developed economies and poorer populations. The impact of the mounting NCD challenge cannot be fully understood without considering the broad range of direct and indirect effects on economies and health systems, as well as on the affected individual and his or her household.

These effects drive economic and human development outcomes, including: decreased country productivity and competitiveness, greater fiscal pressures, diminished health outcomes, and increased poverty, inequity, and opportunity loss. This paper focuses on solutions, indicating opportunities for prevention and the kind of actions that can achieve it.

### Key messages:

- Preventing premature disease and mortality from NCDs will accelerate the development of middle- and low-income countries.
- Proven, cost-effective, fiscally sustainable interventions to prevent NCDs exist.
- Preventing NCDs requires action beyond the health sector.
- The health sector has a central role in preventing NCDs, but it may require a paradigm shift.

NCDs exact a heavy toll on individuals and society. They cause disease, disability, and death, and reduce productivity which is vital for development. They also impose hefty costs on health services, particularly since NCDs frequently lead to ongoing disability and need for long-term care. Prevention that results in healthy aging and the reduction of morbidity is far more cost-effective and financially sustainable than treatment alone. Because NCDs arise from a complex combination of genetics, behavioral, and environmental factors, effective prevention efforts typically require the involvement of actors beyond the health sector, including from sectors such as education, agriculture, energy, and urban design. Successful prevention efforts – of which this paper profiles a cross-section – adopt a variety of “multisectoral” approaches, underpinned by a range of policy instruments. Yet, the health sector has a critical stewardship role to play in bringing all key stakeholders together in addressing NCDs. It will also need to adapt to cope with the growing NCD challenge in both middle- and lower-income countries.

## 1. HALTING THE NCD EPIDEMIC: THE PREVENTION IMPERATIVE

**A small number of proven prevention<sup>1</sup> measures could stem the rise of the NCD epidemic.** Data indicate the potential of affordable, potent, prevention tools focused on five key areas: tobacco, alcohol, diet, exercise, and nutrition. Together, these programs could reduce the burden of NCDs by more than half, yet cost only a tiny fraction of current health spending.

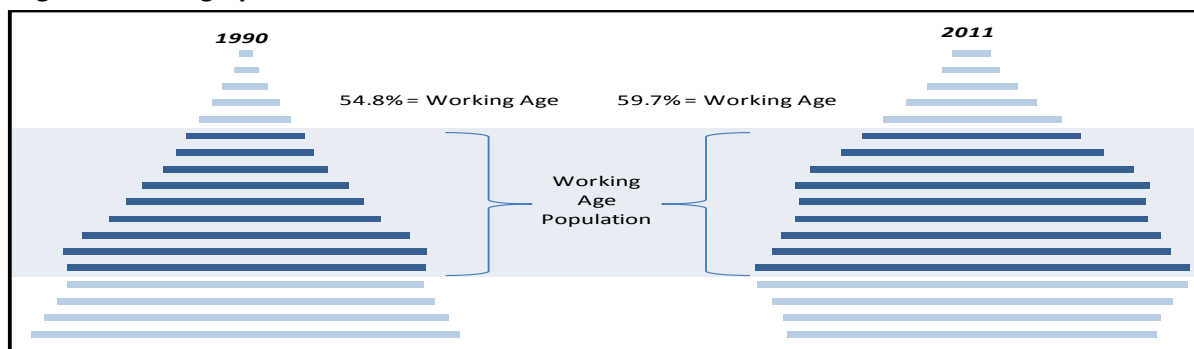
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<sup>1</sup> In this paper the term *prevention* includes two different but complementary concepts: “*disease prevention*” and “*health promotion*”. *Disease prevention* is considered to be action, usually emanating from the *health sector*, dealing with individuals and populations identified as exhibiting identifiable *risk factors*, often associated with different *risk behaviors*. *Health promotion* strives to boost the resources that help people avoid getting sick and thus seeks to support the autonomy of individuals. These terms are frequently used interchangeably, but some countries do make a clear distinction between the concepts.

If nothing is done to reduce the risks of chronic diseases, considerable loss of human life and economic costs will follow. Studies (Abegunde et al 2007) suggest that in 23 low- and middle-income countries with the highest burden of NCDs, 250 million lives and US\$ 84 billion of national output could be lost between 2006 and 2015. Most countries will not be able to afford the fiscal burden of treating NCDs.

**Preventing NCDs will help promote development in middle- and low-income countries, which can take advantage of the “demographic dividend”.** Middle- and low-income countries are entering a limited period in which the size of the working-age population is growing substantially relative to the non-working or dependent population, i.e. their dependency ratios are falling (see example in Figure 1). This phenomenon gives rise to a “demographic dividend”, which is very favorable for development because a larger share of resources is available for saving, investment, and production (Cotlear, ed. 2001). After a generation or so, however, dependency ratios begin to rise again. Aside from appropriate economic policies, countries need a healthy population of working-age adults to fully realize the benefits of the demographic dividend. In Egypt, for example, NCDs reduce hours worked by as much as 50%, leading to an estimated overall production loss of about 12% of its GDP (Rocco 2001).

**Figure 1: Demographic Dividend in Chile**



Source: International data base. US Census Bureau<sup>2</sup>

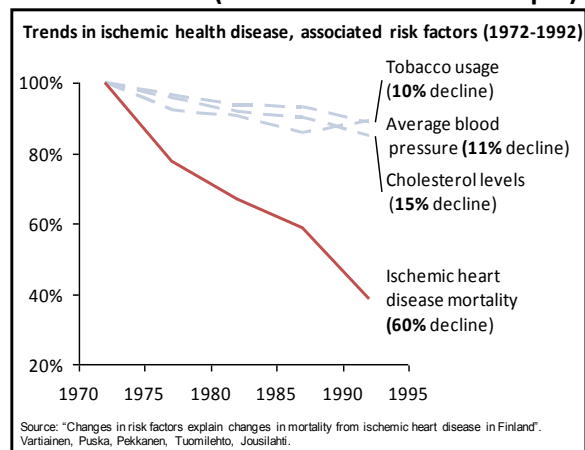
Many developing countries are confronting NCDs at lower levels of income and among younger populations than high-income countries experienced (World Bank 2011). In developing countries, a large percentage of deaths from NCDs and about 80% of all disability occur **before the age of 60**, most of which could be prevented.

**By reducing exposure to a few risk factors, preventing NCDs can be feasible, fiscally sustainable, and often equitable.** Treating NCDs involves high cost and often lifelong expenses. For most middle- and low- income countries, prevention is the only financially sustainable way to bring NCD-related morbidity and mortality down to OECD levels (WHO 2008). Globally, only about 50% of the burden of NCDs can be attributed to aging populations; this proportion is likely to be significantly smaller in middle- and low-income countries. The rest of the burden is driven by two sets of socio-economic factors. The first is economic transition, which includes urbanization and the globalization of risk factors such as tobacco use. The second centers around poverty (figure 4), which increases exposure to NCD risk factors such as poor

<sup>2</sup> <http://www.census.gov/population/international/data/idb/informationGateway.php>

diet and poor access to healthy foods. A study conducted in two similar Finnish provinces between 1972 and 1992 found that decreases in NCD risk factors contributed greatly to a steep decline in mortality from ischemic heart disease (Figure 2).

**Figure 2: Trends in risk factors and ischemic heart disease (North Karelia & Kuopio)**



Source: Adapted from Vartiainen, et al, 1994.

The study demonstrated that major reductions in mortality from NCDs can be achieved through dietary changes, increased physical activity, reduced smoking, and close control of serum cholesterol and blood pressure. In one province, the annual mortality rate of chronic heart disease fell by some 85% in 20 years, driven by innovative co-communication strategies and changes in primary health care, environment, nutrition, and tobacco control.

**A substantial percentage of the burden of NCDs can be prevented through a few, key health promotion and disease prevention interventions, at very low costs per capita.** These costs are likely to be fiscally sustainable for middle-income and most low-income countries. Figure 3 compares the estimated costs per capita of various key preventive interventions in relation to total health spending for several middle-income countries. Estimates on the cost of prevention vary from around US\$ 1.5 to 4.5 per capita per year for a comprehensive package that includes the most efficient regulatory- and health-care measures for NCD prevention. In comparison, the median annual cost of treatment for diabetes patients in India has been found to be US\$ 142 per patient in rural areas and US\$ 227 in urban areas (Ramachandran et al 2007).

**Figure 3: Estimated yearly cost per capita of key preventive interventions (in US\$)**

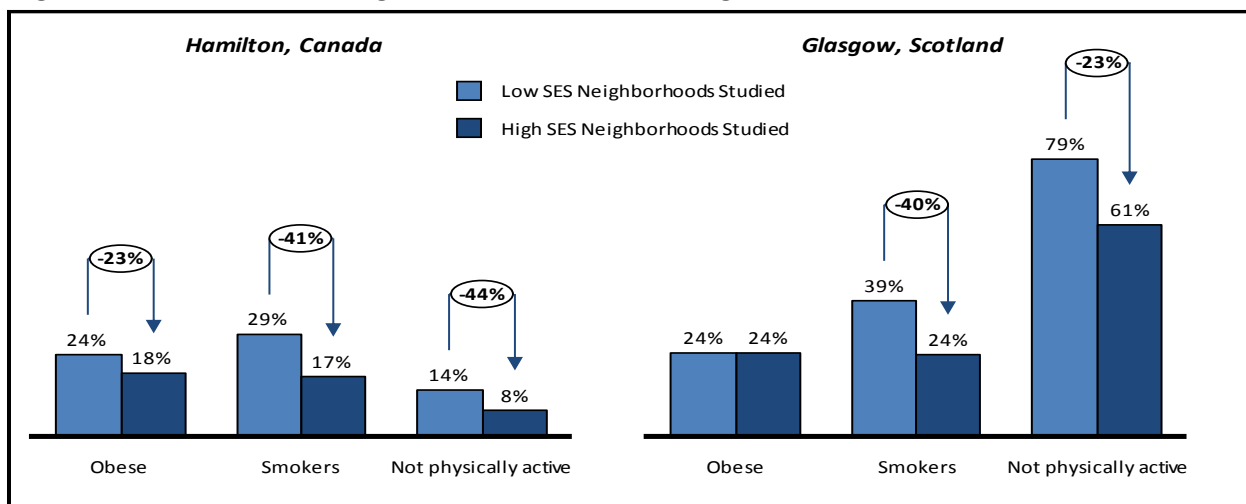
Proposed interventions for each risk factor	Per capita cost for each risk factor by country in US\$					
	Brazil	China	India	Mexico	Russia	South Africa
Tobacco: excise tax increase, information and labeling, smoking restrictions, and advertising bans	0.25	0.14	0.16	0.54	0.49	0.60
Alcohol: excise tax increase, advertising bans, and restricted access	0.15	0.07	0.05	0.24	0.52	0.29
Diet and exercise: mass media campaigns, food taxes and subsidies, nutritional information/labeling, and marketing restrictions	0.48	0.43	0.35	0.79	1.18	0.99
High blood pressure and cholesterol:						
– Reduced dietary salt (mass media campaigns, regulation of food industry)	0.12	0.05	0.06	0.22	0.16	0.15
– Combination drug therapy for high-risk individuals	1.89	1.02	0.90	2.74	1.73	1.85
<b>Total cost per capita of a comprehensive package of interventions</b>	<b>2.89</b>	<b>1.72</b>	<b>1.52</b>	<b>4.53</b>	<b>4.08</b>	<b>3.88</b>
<b>Cost of comprehensive package as share of current per capita total health spending</b>	<b>0.39%</b>	<b>0.97%</b>	<b>3.38%</b>	<b>0.88%</b>	<b>0.86%</b>	<b>0.80%</b>

Source: Adapted from: M. Ceccini, et al. 2010. Per capita health expenditure World Bank data (2009)

There is a global consensus on the cost-effectiveness of the above interventions in comparison to treatment. However, the importance of treatment to reduce mortality and disability cannot be underestimated. The relative importance and feasibility of these preventive interventions may vary country by country. Each country will need to find a balance between a selected number of preventive and treatment interventions to respond to the specific risk factors to which its population is exposed, its demographic and epidemiological profile, the level of a country's resources, its institutional capacity, the impact of some measures on resources distribution (for example, taxes and subsidies can be regressive), and the equity of the distribution of resources and health outcomes (for example, smoking or cancer may be more prevalent among the poor or middle class).

**Poverty is an indirect risk factor for NCDs.** NCDs are not only “diseases of wealth”. Poverty restricts the ability of individuals, households, and whole segments of the population to reduce their exposure to risk factors for NCDs. For instance, the prevalence of low birth-weight and malnutrition in the first 1,000 days of life is higher among the poor. Low-nutrient, high-caloric foods are becoming easily available in poor areas and are generally cheaper than healthier foods. In many cities, “convenience stores” selling tobacco and unhealthy snacks are open 24 hours, while grocery stores are not. Similarly, the poor can seldom choose to work in smoke-free and healthy environments, they tend to use less-clean fuels for cooking and heating, and live in areas with few recreational spaces where there are many alcohol outlets. Studies in Canada and the UK (Wilson et al 2010) show that factors related to socio-economic status (SES) account for differences in the level of NCDs between poor and rich, even when controlling for the quality of health services (Figure 4).

**Figure 4: Risk behaviors in neighborhoods of low versus high socio-economic status**



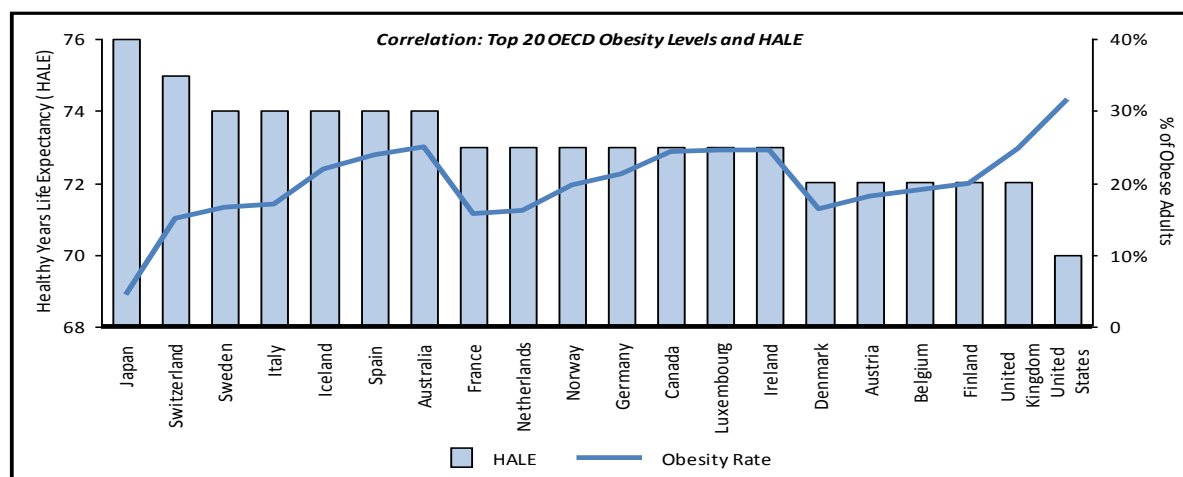
Source: Wilson et al. 2010.

**In most developing countries, both the NCD and the MDG agendas need to be part of the health policy dialogue.** Low birth weight and malnutrition in the first 1,000 days of life contribute significantly to diabetes and cardiovascular problems later in life. Hypertension and diabetes during pregnancy also increase the risk of diabetes and cardiovascular disease later in

life<sup>3</sup>. Smoking and alcohol abuse increase the probability of developing active tuberculosis by 50% and reduce the effectiveness of treatment. The links between sexually transmitted diseases and several cancers are well documented. These facts indicate the need for comprehensive health policies that utilize existing resources better. In low-income, low-capacity settings, national health strategies would primarily focus on the most cost-effective prevention measures, complementing the MDG agenda. In middle-income countries, the concern is most likely the economic and fiscal pressures NCDs will place on health systems and government budgets. The most recent International Monetary Fund Fiscal Monitor (IMF 2011) identifies health care costs as the main source of fiscal pressure for middle- and high-income countries, and projects that unless action is taken, the impact of increasing health expenditures in these countries could dwarf the impact of the current economic crisis.

**Today’s policy decisions in middle- and low-income countries will determine the disease profile of their populations in the coming years.** The outcome of adequate NCD prevention is healthy aging and the reduction of morbidity. OECD countries that have achieved similar stages of development do not necessarily have the same health outcomes. A broad spectrum of possible health outcomes in relation to obesity, as an example, is illustrated in Figure 5. The challenge for low- and middle-income countries, then, is to address NCD risk factors to stay ahead of similar indicators in high-income countries (Adeyi et al 2007).

**Figure 5: Obesity levels and HALE in the top 20 OECD countries**



Source: Authors calculations from WHO Statistical Information system data<sup>4</sup>. HALE: Healthy Life Expectancy at Birth

While treatment of NCDs lies naturally in the domain of health, effective prevention requires active leadership, involvement, and cooperation from a range of sectors and actors beyond the health sector. This presents an opportunity for governments to develop and implement an accountability framework with key indicators, identifying the responsibility of different sectors for achieving key government priorities. The next section presents evidence that effective NCD control is feasible, with examples of multisectoral approaches across the world.

<sup>3</sup> [http://www.globalhealthmagazine.com/cover/stories/ncd\\_prevention](http://www.globalhealthmagazine.com/cover/stories/ncd_prevention)

<sup>4</sup> <http://www.who.int/whosis/indicators/2007HALE0/en/>

## 2. A MULTISECTORAL APPROACH: KEY TO EFFECTIVE PREVENTION

**No single sector can reduce all the important risk factors or influence all relevant dimensions of the NCD problem.** The health sector typically plays a central coordinating role in prevention efforts but other sectors have important leadership roles in areas such as education, agriculture, energy, social norms, and the natural and built environments. Case examples show that successful prevention takes many different forms and varies by scope, the risk factors addressed, sectoral roles, and the degree of coordination required.

The previous section of the paper demonstrated the importance and urgency of action to prevent NCDs. How can such action be best configured and implemented for maximum impact? There is a universe of multisectoral interventions that can tackle NCDs. Which sector is best positioned to participate in such interventions depends in part on the choice of intervention and the risk factor being addressed. Figure 6 illustrates how sectors beyond health have a potential role to play in reducing the major NCD risk factors.

**Figure 6: Sectors in which actions can be taken to reduce key risk factors for NCDs**

	Tobacco	Poor Diet & Nutrition	Physical inactivity	Alcohol	Unhealthy environment	Pathogens	Injuries & violence
<b>Health</b>	✓	✓	✓	✓		✓	
<b>Education</b>	✓	✓	✓	✓		✓	✓
<b>Finance</b>	✓	✓		✓	✓		
<b>Urban Planning</b>			✓	✓	✓		✓
<b>Agriculture</b>	✓	✓			✓		
<b>Industry</b>	✓	✓		✓	✓		
<b>Transport</b>			✓		✓		✓

Source: Authors

Prevention efforts by governments and other actors in high-, middle-, and low-income countries take many different forms – there is certainly no “one size fits all” approach. In this section we examine several successful examples of multisectoral action, classified along the following five dimensions: the risk factors covered by the intervention, the sector leading the effort, the scope of the intervention (national or sub-national), the type of actor participating (public or private), and the degree of coordination required.

### RANGE OF TARGETED RISKS FACTORS

Some interventions are comprehensive and target several risk factors concurrently, such as in the case in Karelia and Kuopio previously discussed (figure 2). These often have the highest impact but their implementation is generally more complex. More often, successful interventions focus only on one risk factor and tend to be easier to execute. The choice of approach depends on country circumstances.

Consider *Uruguay's campaign to reduce tobacco use* and the effects of secondhand smoke through a 100% smoke-free policy in all public places and workplaces. Led by the President, the campaign had support from the Ministry of Health, public and private sectors, civil society, the Pan American Health Organization, and the media. In March 2006, Uruguay became the first country in the Americas and the first middle-income country to enact comprehensive smoke-free legislation. Studies in Montevideo showed a reduction in air nicotine concentrations of 91% between 2002 and 2007 (Blanco-Marquizo et al 2010).

In *Argentina's effort to control salt*, programs by the Federal Ministry of Health in collaboration with universities, research institutions, and associations representing the baking and food industries have led to: (a) the development and dissemination of nutritional guidelines for healthy salt consumption; (b) legislation to create a coordinated national plan for salt reduction and to regulate the use of salt by the food industry; (c) the development of food products containing less sodium (PHAC 2009); and (d) a law reducing access to salt shakers in restaurants. A 15% reduction in dietary salt intake in Argentina could save about 60,000 lives over the period 2006-2015 at a cost of US\$ 0.14 per capita (Asaria et al 2007).

*Samoa's ban on imports of turkey tail meat* (which has high fat content) was a response to concern over both the impact of fat on health and the "dumping" of "low quality" food on the market (Thow et al 2010). The Prime Minister proposed the ban and the Ministry of Health prepared a paper detailing the links between fat intake and NCDs (Thow et al 2010). The ban, introduced in 2007, was designed and implemented by the Ministry of Revenue and enforced by the Customs Department. It reduced the supply of turkey tail meat by 98%, raising the awareness of fat as a contributor to poor health.

### LEADERSHIP BY A RANGE OF DIFFERENT SECTORS

While some NCD prevention programs are led by the health sector, others are initiated by other actors. An example of this is the *National Biomass Cookstove Initiative in India* (Box 1).

*Sustrans National Cycle Network in the UK* is an NGO that encourages cycling, through partnerships with local transport authorities and public health teams, other NGOs, and volunteers (Cooper 2011). In 2009, 407 million cycling and walking journeys were made on the National Cycle Network: an increase of 6% from 2008, with an estimated health benefit from cycling and walking of approximately US\$ 625 million, as well as reduced greenhouse gas emissions<sup>5</sup>.

In *Russia*, a Government Commission for Road Safety is being led by the Ministry of Internal Affairs to coordinate efforts to implement the *Federal Targeted Program for Ensuring Road Traffic Safety 2006-2012* (Marquez and Bliss 2010). The program aims to reduce road fatalities by 33% from 2004 levels through a comprehensive legislative framework and tighter enforcement of blood- and breath-alcohol-content limits. From 2004 to 2008, road traffic deaths and non-fatal road traffic injuries were reduced by 13%.

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<sup>5</sup> [http://www.ecf.com/4053\\_1](http://www.ecf.com/4053_1)



**Box 1:** *The Indian National Initiative for Advanced Biomass Cookstoves: the Benefits of Clean Combustion (Venkataraman et al 2010).*

**Program goals:**

- To replace traditional cookstoves in Indian households using highly pollutant biomass and coal with energy-efficient ones
- To reduce the harm caused by traditional cookstoves to the environment and health

**Program rationale:** More than 770 million Indians across 160 million poor households rely primarily on biomass as their cooking fuel with very negative impacts on health and the environment.

**Key actors participating:**

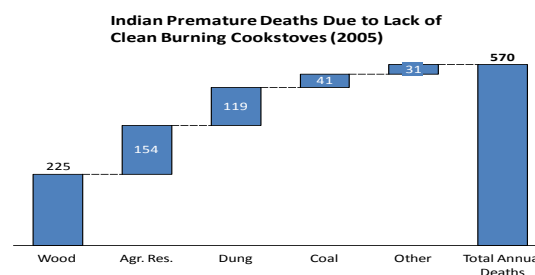
- Led and coordinated by the Ministry of New and Renewable Energy, with support from Prime Minister and other officials
- Implementing partners include state agency nodes, private sector actors, NGOs, self-help groups, and several technical research institutions such as X PRIZE Foundation and the Indian Institute of Technology Delhi

**Policy instruments used:** Subsidies for innovation and use; provision of information

**Activities carried-out:** Setting up of testing, certification, and monitoring facilities, and R&D training across Indian technical institutions. Launch of a global competition to develop and deploy clean cookstoves. Assessment of existing improved biomass cookstoves through a series of pilot-scale projects in several locations. Deployment and development of new cookstoves and partial subsidy of cookstove costs for consumers.

**Impact:** While it is too early to assess its impact, modeling suggests that the program has the potential to:

- Reduce the national disease burden by almost 3% (avoiding 570,000 premature deaths per year in women and children)
- Eliminate one third of India's black carbon emissions along with a range of other air pollutants.
- Reduce 4% of India's greenhouse gas emissions, worth up to US\$ 1 billion on the international carbon market.



Source: "The Indian National Initiative for Advanced Biomass Cookstoves: The benefits of clean combustion".

## INITIATIVES AT NATIONAL AND SUB-NATIONAL LEVELS

Often actions are undertaken at local level. The Mayor of *New York City* brought the health sector and hospitality industries together in a way that influenced similar actions across the US. In 1995, *New York City forbade smoking* in all restaurants with over 35 seats. In 2002, this was expanded to virtually all bars and restaurants. In 2002, 21.5% of *New York* adults were current smokers but there were only 15.8% by 2009 (a decrease of approximately 350,000 smokers). During the same period, the number of adults who had never smoked increased by approximately 4%<sup>6</sup>. In another measure, two years after its *ban on trans-fats*, the proportion of the city's restaurants using trans-fats fell from 50% to less than 2%.

Sub-national leadership is important in a diverse and decentralized country. In *Jakarta*, for example, partners are working with the city administration on an *anti-smoking policy*. Violators of the ban on smoking in public buildings face administrative sanctions and shaming in local media. In addition, an alliance of 12 Indonesian Mayors coordinates implementation of anti-smoking policies<sup>7</sup>, with the support of the Ministry of Health and the International Union Against Tuberculosis and Lung Disease<sup>8</sup>.

<sup>6</sup> New York City Department of Health and Mental Hygiene Database. New York, NY.

<http://www.nyc.gov/html/doh/html/browse/browse-data.shtml>

<sup>7</sup> [http://www.searo.who.int/LinkFiles/TFI\\_policies-Indo.pdf](http://www.searo.who.int/LinkFiles/TFI_policies-Indo.pdf)

<sup>8</sup> <http://www.theunion.org/index.php/en/newsroom/news/item/1-mayors-alliance-to-accelerate-sub-national-smokefree-efforts-in-indonesia>

The government of Colombia's capital city of *Bogotá* aimed to develop a more sustainable transport system, by upgrading the rapid bus transit system and creating 300 km of cycle paths across the city. Every Sunday a 70 mile route across the city, the *Ciclovía*, closes to cars, attracting more than a million pedestrians and cyclists every week (almost 15% of Bogotá's population). Results of a recent evaluation led by the health sector suggest that the initiative increases the population's weekly physical activity (Sarmiento et al 2010). Particulate matter from vehicles is 13 times lower during *Ciclovía*<sup>9</sup>. The program which began in 1974 has been replicated in at least 12 other cities in Colombia and throughout North and South America<sup>10</sup>.

### **ACTION BY BOTH PUBLIC AND PRIVATE ACTORS**

At times the private sector may be best positioned to initiate action. Consider for example, the *Gum Marom Kids League in Northern Uganda*. In this region, many children were abducted and forced to serve as child soldiers during 20 years of civil war (Cooper 2011). Launched in 2010, this initiative focuses on physical activity (soccer) to improve the mental health of children aged 10-14 years and includes peace-building activities and conflict management. Community-based NGOs are driving the initiative, in partnership with schools and local government, primarily the local Sports Office and Education Officer.

The Ministry of Health of the *United Arab Emirates* and *Bin Sina Pharmacy* formed a public-private partnership in 2008<sup>11</sup> by which Bin Sina offers a consolidated health examination, and assistance and advice on cholesterol, blood pressure, diabetes, and obesity to everyone who visits their 30 outlets at a subsidized price<sup>12</sup>. In the first year of the program, some 28,000 people participated and high cholesterol was discovered in 27% of participants – almost half of whom were unaware of it.

In *Trinidad and Tobago, Jamaica, Barbados, and the Bahamas*, thousands suffer from high blood pressure, high cholesterol, diabetes, Alzheimer's disease, and depression. The *Pfizer Together Program* was created in October 2010 to enhance knowledge of these conditions, promote treatment adherence, and ultimately make a positive impact on patients' quality of life. The program targets low-income patients and brings together key external stakeholders such as physicians and pharmacies around the common agenda of improving patient health outcomes. The program has provided tools and information to a network of some 1,900 doctors to help them educate patients about chronic diseases. Eligible patients receive discounted prices for certain Pfizer medicines addressing cardiovascular diseases, depression, Alzheimer's, and glaucoma, as well as access to a free telephone hotline that provides real-time answers about their diseases and medications. Although this program is in early stages the initial results are encouraging, with 300 patients have already been enrolled.

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<sup>9</sup> <http://www.8-80cities.org/articles-car-free/Ciclovias%20Recreativas%20of%20the%20Americas.pdf>

<sup>10</sup> <http://cicloviarecreativa.uniandes.edu.co/english/index.html>

<sup>11</sup> <http://www1.albawaba.com/news/moh-binsina-pharmacys-second-campaign-against-high-risk-ailments-launched>

<sup>12</sup> Bin Sina Pharmacy is the oldest pharmacy in the UAE, and has about five million customers per year, serving up to 14,000 customers per day

## DIFFERENT DEGREES OF COORDINATION

In the *Cooper Union for the Advancement of Science and Art*, a single independent actor has had impact on a wide scale, influencing other actors in New York City. An urban architect designed a building to emphasize interaction and activity while keeping people moving – slow elevators stop on only three of the eight floors, and a wide staircase encourages students to walk the campus that has become the “social heart” of the building<sup>13</sup>. Other programs have many actors, like *Agita São Paulo* (Box 2).

These examples illustrate some of the many combinations of actors and drivers that can have an effective impact on NCDs. The next section considers what helped these initiatives to be successful and the policy tools that governments could use to lever them.

**Box 2: *Agita São Paulo*, launched in 1996 (Matsudo et al 2003, 2010)**

### **PROGRAM GOALS:**

- To increase the population’s knowledge on the importance of physical activity and up activity levels by 20% over 10 years

**PROGRAM RATIONALE:** In the early 1990s nearly 70% of the adults in São Paulo were not sufficiently active leading to poor health outcomes that placed a heavy burden on the health system.

### **ACTORS PARTICIPATING:**

- Launched by the State Secretariat of Health of Sao Paulo
- Coordinated by the Studies Centre of the Physical Fitness Research Laboratory of Sao Caetano do Sul (CELAFISCS)
- Implementing partners: more than 300 governmental, non-governmental, and private partners from several industries
- Funded through direct and indirect partner contributions, private business, and the State Health Secretariat, with State funds equivalent to less than \$0.01 per state inhabitant per year

**POLICY INSTRUMENTS USED:** Cues to channel behavior; education and information; and partnerships with voluntary controls

**ACTIVITIES:** Mass media; promotional giveaways; mega-events (Active Community Day, Annual São Paulo Mega-Walk); access to sporting facilities; improving physical environments; and “prescription” of physical activity by health professionals

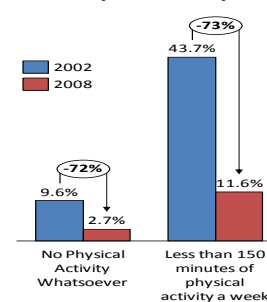
### **IMPACT OF PROGRAM:**

- Physical activity: the proportion of residents with no physical activity fell from nearly 10% to less than 3% between 2002 and 2008; and the proportion of individuals with less than 150 minutes of weekly activity fell from 43.7% to 11.6%
- Awareness: between 2002 and 2008 the proportion of residents aware of the program rose from 37% to 60%

### **SUCCESS FACTORS:**

- A respected coordinating body able to attract partners
- Simple and straightforward messages and activities
- Cross-sector partnerships leveraging program reach and capacity
- Technical cooperation and support among partners allowing program to remain dynamic and innovative

**Sao Paulo Resident Physical Activity Survey 2002-2008**



Source: "Time Trends in Physical Activity in the State of Sao Paulo, Brazil: 2002-2008" V. Matsudo, S. Matsudo, T. Araujo, D. Andrade, L. Oliveira, P. Hallal.

## 3. SUCCESS FACTORS AND POLICY LEVERS

**Successful efforts at multisectoral prevention share a few common factors, including the use of well-tailored policy instruments.** Typically, such efforts focus on a well-defined target, give high-profile leaders a central role, identify wins for non-health stakeholders, generate indirect health impacts from programs outside the health sector, ensure that different actors are

<sup>13</sup> <http://www.nytimes.com/2009/06/05/arts/design/05coop.html>

assigned roles that play to their strengths, and apply policy instruments appropriate to the problem ranging from command-and-control regulation to education and information.

### KEY SUCCESS FACTORS FOR INTERVENTIONS TO COMBAT NCDs

An analysis of the success factors common to high-impact multisectoral prevention efforts, such as those profiled in this paper, suggests five core actions for country leaders:

- **Focus on a well-defined target while addressing risk factors from several angles.** Successful programs have clear and consistent messaging on their targets, such as “Promote 30 minutes of daily exercise” or “Ban smoking in restaurants”, which lead to a diversity of actions. If the objective is to reduce morbidity and mortality from traffic accidents, for example, redesigning roads will go only part of way; impact is likely to be higher with additional measures, such as legislation, enforcement of speed limits and seat belt use, education of youth drivers on road safety, and well-planned trauma hospitals. Coordinated interventions commonly have more impact than those driven by a single sector; action should therefore be designed in collaboration with other stakeholders and involve multiple policy interventions.
- **Give high-profile leaders a central role in driving initiatives.** Strong personalities with influence on policy makers and the general public are well placed for bringing different actors together to collaborate towards a well-defined NCD prevention goal. Mayors, Presidents, Prime Ministers, and First Ladies have frequently been at the forefront of national and other efforts. They can help provide a balance between and within different sectors and reinforce the accountability of partner institutions. In the example from New York City for instance, Mayor Bloomberg’s leadership brought the health sector and hospitality industries together to address smoking and trans-fat risk factors.
- **Be opportunistic, identify indirect impacts on health, and optimize impact.** The initiatives profiled in this paper show that there are major opportunities for policies and programs outside the health sector to have direct or indirect impact on health. In the example of Samoa’s ban on turkey tail meat, the negative health effects of cheap, fatty meat, especially on the poor, were included in trade discussions that were already underway on meat “dumping”. Significant health gains have also been achieved from initiatives aimed at reducing air pollutants that contribute to climate change (Box 1).
- **Identify wins for non-health stakeholders.** All sectors are accountable for improving lives but constructive measures may nevertheless meet resistance from a range of stakeholders where economic interests conflict. It is important, therefore, to identify incentives beyond health that will encourage sectors and leaders to support NCD prevention measures. The fight against NCDs, food prices, and climate change, for instance, may intersect with each other in positive or negative ways. Certain agricultural subsidies, for example, may be contributing to the obesity epidemic and rising food prices. Grain and soya subsidies have helped to change eating habits across the planet, resulting in lower prices of certain food additives (such as sweeteners), meat and farmed fish, and processed foods. Meanwhile, these same subsidies contribute to climate change through the increase of CO<sub>2</sub> and methane from intensive animal farming. These subsidies have also lowered prices for biofuels, which are now driving food price increases. This illustrates the complexity of the issues involved. Sometimes direct financial gains can be made, such as the potential saving of US\$ 1 billion on the international carbon market in the National Biomass Cookstove Initiative in India (Box 1).

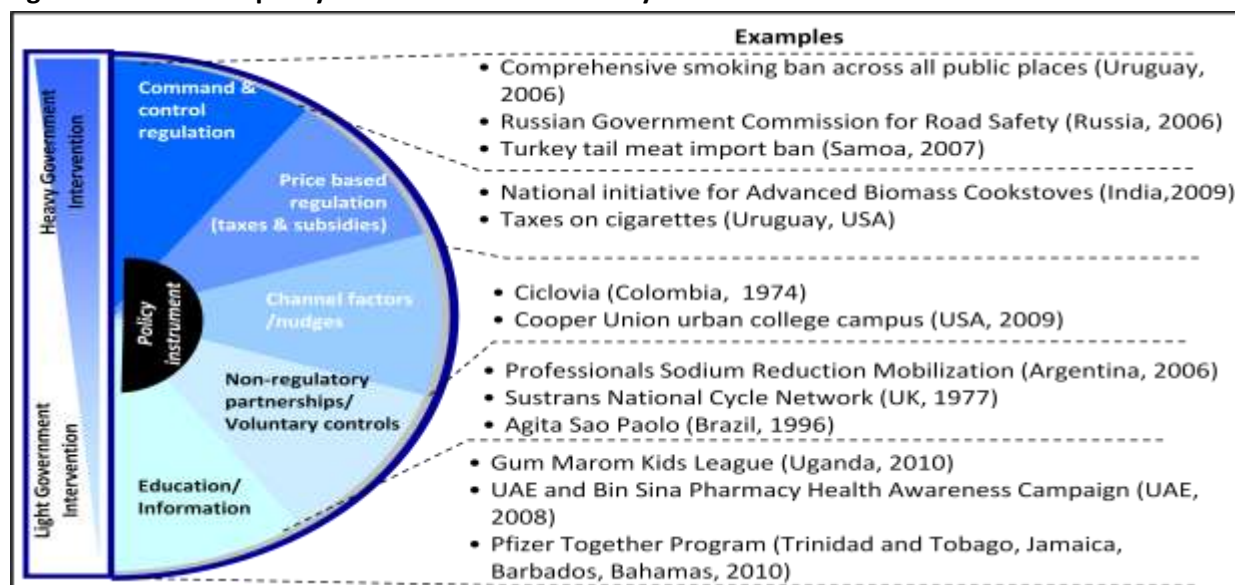
- **Ensure that different actors focus on what they do best.** Coordinated efforts by different sectors add value in identifying opportunities, crystallizing incentives, and monitoring impact, but this need not mean that different actors must follow the same structure. Rather, they can participate by leveraging the networks of different actors and building on each others' strengths. Working through different channels generally provides access both to the broader population as well as defined target groups. By allowing the flexible adaptation of interventions, different actors can tailor their messaging to the local, socio-cultural realities of the population groups they serve.

Many of the programs discussed in this paper are in emerging markets without advanced resource allocations to treat NCDs; perhaps this is because leaders in middle- and low-income countries have learnt to innovate. This is not to say that more resources will not be needed to address NCDs in those countries. However, these programs illustrate real opportunity for governments in the developing world to tackle NCD risk factors early and forge a path of development where governments, the private sector, civil society, and populations hold joint accountability to shape healthier and more productive lifestyles.

### POLICY INSTRUMENTS TO PROMOTE EFFECTIVE MULTISECTORAL INTERVENTIONS

To underpin action to prevent NCDs, policy makers may make use of one or more of the policy instruments set out below to enforce or encourage behavior shifts by individuals or organizations. Different instruments are more or less effective in different situations and contexts. Figure 7 sets out the impact of the different instruments for the initiatives discussed in the previous section. It is important to note that combinations of policy levers can tackle a particular risk factor more comprehensively. For example, bans on smoking in public areas together with taxes on cigarettes can lead to effective control of tobacco use. The cases considered in Section 3 are highlighted in the Appendix with regard to their policy levers, aim, actors and impacts.

Figure 7: Illustrative policy instruments to reduce key risk factors for NCDs



Source: Authors

- **Price-based regulations** including taxes and subsidies do not prohibit or mandate a behavior but use financial incentives and disincentives. Where there is insufficient consensus and it is not feasible to eliminate or enforce behavior, policy makers may use these mechanisms to coax changes for health, political, or social reasons. It is not feasible to ban smoking in people’s homes, but sufficiently high and comprehensive taxes are the single most cost-effective measure to discourage new smokers and reduce use. Also, increasing fuel taxes and subsidizing public transport will encourage people to walk more. In this example, synergy results from involving more than one sector.
- **Channel or nudge factors** may or may not involve regulation. This policy instrument uses non-financial incentives and disincentives. For example, consumers may be nudged into making healthier choices by the specific placement of certain products in groceries and cafeterias<sup>14</sup>. Employing similar measures across a variety of outlets, sectors, and industries will create maximum impact. Changing the layout of a building so that people use the stairs instead of an elevator, as in the case of *The Cooper Union for the Advancement of Science and Art* in New York City, makes the default choice the most likely option. Coordinating the actions of industry, retail, revenue, and consumer groups gives best results.
- **Voluntary controls, agreements and non-regulatory partnerships** are useful to ensure that there is buy-in from key stakeholders. A good example is voluntary self-regulation within an industry. So far, the efficacy of this approach is doubtful due to the possibility of default by one party, even where there is a genuine interest in healthier practices. Such initiatives more frequently arise where an industry is either homogeneous (e.g. bread makers in Buenos Aires), or dominated by one or two big companies (e.g. soda manufacturers). Even in such cases, the industry may eventually request government regulation to ensure cooperation. Lawmakers can support and encourage such initiatives.
- **Education and the provision of information** are often supported by the public sector to promote public health. While increased awareness and information has been shown to modify attitudes about the health consequences of behavior, there remain serious limitations on their effectiveness to modify actual behavior in all but children of school going age. For this reason, these instruments are more useful when applied in tandem with other policy measures, both as a way to foster acceptance of them and to facilitate coordinated vision and implementation among different players and sectors.

## 4. REPOSITIONING HEALTH SYSTEMS

As discussed above, many of the drivers of NCDs are outside the remit of the health sector. What, then, can be the role of the health sector in NCDs prevention? **As the only sector with a mandate to approach health issues from a holistic point of view, the health sector must play a central role in NCD prevention and mitigation efforts.** This role includes: assessing the size of the NCD problem and the nature of its drivers; initiating dialogue with relevant actors and helping them develop priority interventions; and monitoring and evaluating outcomes.

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<sup>14</sup> Studies show that by placing healthy foods at the entrance or at eye level with unhealthy products in more obscure areas will result in people choosing healthier options. Regulation of product placement in school cafeterias and fast food outlets outside the perimeter of schools is being piloted in the US.

The health sector is uniquely positioned to collect and provide the information that is needed to stimulate the development and support the implementation of all kinds of initiatives – from action by the private sector to shifts in government policy. It has, firstly, the “know how” and scientific resources to identify the direct NCD risk factors and the immediate drivers of the epidemic. At the same time, it can assess the size of the problem and present this evidence to society at large. In this way, it can initiate dialogue with relevant actors and help them identify priority interventions. Finally, the health sector has the fundamental role of monitoring and evaluating the outcomes and results of interventions, prompting any shifts that may be necessary to correct a course of action.

In identifying and monitoring the rise and persistence of risk factors, the health sector can act as a catalyst through identifying policy “windows” across various sectors including international trade, climate change, education, and many others. Similarly, the health sector can facilitate other sectors in having an appreciation for the health impact of their actions and initiatives. With these attributes, the health sector has the potential to help coordinate certain types of action by multiple sectors. It is imperative that the health sector offer tools for monitoring intermediate goals (such as increased physical activity), as well as the long-term impact on health outcomes. It is equally critical that results are tracked and widely publicized. A key priority must be to provide better data on the economic and fiscal impact of health gains resulting from specific NCD prevention initiatives. These actions will help other actors and sectors to optimize their initiatives, potentially beyond country borders.

**In facing up to the challenge of NCDs, the health sector requires a paradigm shift on many levels.** The chronic nature of NCDs poses the most challenging demand for developing country health systems, which are largely designed to respond to acute diseases of limited duration. Several differences between acute and chronic care are given in Figure 8.

**Figure 8: Differences between acute and chronic conditions relevant for health systems**

Acute conditions	Chronic conditions
Treat to heal	Treat to prolong life and avoid complications
Discontinuous episodes with resolution	Continuous illness with complications
Treatment compliance good because duration short	Treatment compliance very low
Prevention often does not require behavior change	Prevention requires adjustments in behaviors and lifestyles
Mostly resolve without sequelae or end in death	Often accompanied by long term disability before death
Individual feels sick and seeks care	Disease silent for years. Often diagnosis of complications
One-off direct medical expenditure	Ongoing medical expenditure for family and health system
One-off indirect costs (transport)	Substantial indirect costs(repeated visits to health services)
Information systems count episodes	Patients need to be tracked not just counted

Measuring NCDs requires that information systems evolve from counting acute cases to the long-term and regular tracking of exposure to risk factors and eventually complex illness and disability. The depth of the changes and the level of investment required in adapting the health service to deal with NCDs are different in low and middle-income countries but even in low-income countries effective changes can be introduced with modest additional resources.

The health sector needs to adjust how it and its services are organized and financed to become much more effective in addressing NCDs. Its organization and the financial incentives involved must be aligned to encourage screening and identification of people at high risk of developing an NCD and for initiating the interventions needed. This applies at the level of primary prevention to stop disease from developing and at secondary prevention to reduce its impact where already present. In low-income countries most screening and ongoing treatment can and should be done at the level of primary care. In the presence of disease, finally, the health sector will need to make the necessary adjustments to coordinate the appropriate continuum of care whenever this is feasible, within the context of available resources

## CONCLUSION

Prevention is key to limiting the growing burden of NCDs; is cost-effective and necessary to address the socio-economic costs and suffering associated with NCDs; and is necessary to support development goals and improve levels of equity, especially in middle- and low-income countries. The appropriate strategic mix between prevention and treatment must be dealt with in the local context. The paper has shown how a few key interventions can help to avoid the risk factors that lead to NCDs, including tobacco and alcohol use, poor diet and exercise, indoor air pollution, and poverty and reduced agency. And the paper has shown that the best way to design and deliver such interventions is through policy measures and actions by multiple sectors and actors. Many of the underlying risk factors of NCDs both direct<sup>15</sup> and indirect<sup>16</sup>, extend beyond the reach of the health sector, and there is a growing and diverse set of examples of success in tackling these factors, several of which this paper has mentioned. Taking action to prevent the epidemic of NCDs is everyone's business—and the whole of society's responsibility. Nonetheless, as this paper has emphasized, the health sector has a central role to play in collecting and publicizing data to galvanize and catalyze prevention efforts by multiple sectors.

Because successful prevention involves multiple sectors and actors, countries need to adopt a framework that clearly sets out the different levels of accountability of each role player. Such a framework will require strong national buy-in, but there are tools, examples, and support agencies available to facilitate this. The World Bank already works with all the sectors that can impact NCDs and is particularly well placed to support policy measures through its lending policy, including policy loans and specific investment loans, and through its analytical and advisory services. Countries may, for instance, need support in launching prevention policies and in implementing them. The Bank already supports NCD control through more traditional instruments including knowledge products, technical assistance, policy dialogue, and the leveraging of resources.

Middle- and low-income countries can seize the opportunity and act now to tackle NCDs and the underlying risk factors of these diseases. If they do so, these countries will greatly increase their prospects of reaping the full benefits of their demographic dividend, and of ensuring sustained economic development, greater equality, and a better quality of life for their people in the years ahead.

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<sup>15</sup> Such as tobacco and alcohol use, poor diet and exercise, indoor air pollution, etc.

<sup>16</sup> Such as poverty and reduced agency



## Appendix: Table of case examples in order of appearance in the text

	Policy Lever	Scope	Actors	Incentives	Impact
<b>Tobacco Control (Uruguay)</b>	<ul style="list-style-type: none"> <li>Command and control regulation</li> </ul>	<ul style="list-style-type: none"> <li>Campaign to reduce tobacco use and effects of secondhand tobacco smoke (rates for which were the highest in Latin America prior to campaign) through a 100% smoke-free policy in all public places and workplaces. In 2006, Uruguay became the first country in the Americas and the first middle-income country in the world to enact a comprehensive smoking ban</li> </ul>	<ul style="list-style-type: none"> <li>Decree led and signed by the President of the Republic and supported by the Ministry of Health</li> <li>Popular social support: government launched two widely successful media campaigns to garner public support</li> <li>Ministry of Health inspectors and citizens who collaborated with inspectors as observers</li> <li>National Alliance for Tobacco Control, public, private, and civil society</li> </ul>	<ul style="list-style-type: none"> <li>Government incentive to reduce tobacco as a risk factor</li> <li>Civil society desire to reduce exposure to second hand smoke</li> </ul>	<ul style="list-style-type: none"> <li>Exposure to secondhand smoke decreased significantly in indoor public places and workplaces. One study focusing on Montevideo showed a reduction in air nicotine concentrations of 91% between 2002 and 2007, confirming comprehensive smoke-free legislation as a best practice to protect public health with wide applicability for other countries.</li> </ul>
<b>National Sodium Intervention (Argentina)</b>	<ul style="list-style-type: none"> <li>Education and information</li> <li>Initial non-regulatory partnerships/voluntary controls</li> <li>Command and control regulation</li> </ul>	<ul style="list-style-type: none"> <li>National and regional studies on salt use and impacts (initiated in 2006)</li> <li>Dissemination of nutritional guidelines for healthy salt consumption</li> <li>Bills before parliament to regulate use of salt by food industry</li> <li>Efforts to develop alternative food products containing less sodium</li> </ul>	<ul style="list-style-type: none"> <li>National Ministry of Health</li> <li>National University of La Plata</li> <li>National Institute of Industrial Technology</li> <li>Argentine Federation of Bread and Flour Industries</li> <li>Chamber of Industrial Bakers, Pastry Cooks, and Related Professionals (CIPPA)</li> </ul>	<ul style="list-style-type: none"> <li>National Ministry of Health sought to encourage healthy lifestyles with an emphasis on lowering blood pressure</li> <li>CIPPA incentive to be seen as collaborative and part of solution agreeing to technology transfer for the production of reduced-salt breads and other baked goods</li> </ul>	<ul style="list-style-type: none"> <li>A recent study estimated a 15% reduction in dietary salt consumption across Argentina would save 60,000 lives over approximately 10 years</li> </ul>

	Policy Lever	Scope	Actors	Incentives	Impact
<b>Restricting Unhealthy Food Imports – Turkey Tail Meat Import Ban (Samoa)</b>	<ul style="list-style-type: none"> <li>Command and control regulation</li> </ul>	<ul style="list-style-type: none"> <li>Ban on US turkey tail meat imports in 2007 in an effort to limit NCDs. Turkey tail meat is a highly fatty meat and widely consumed in Samoa by middle- and low-income families due to its low price</li> <li>The Government was also concerned about the lowering of trade barriers resulting in an influx of inferior food imports</li> </ul>	<ul style="list-style-type: none"> <li>Government of Independent Samoa</li> <li>Designed by the Ministry of Revenue and implemented by the Customs Department</li> <li>National media</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Trade: Concern over the “dumping” of perceived “low-quality” food on the market – history of using import bans in Samoa to affect food supply</li> <li>Ministry of Health: Fatty foods have become a rising epidemic in the Pacific as the region battles the highest obesity rates in the world</li> </ul>	<ul style="list-style-type: none"> <li>Almost half of consumers switched to cheap meats such as chicken and mutton, and about one quarter replaced turkey tails with lower-fat meat or seafood</li> <li>Samoa is under pressure to abandon its turkey-tail import restriction as it negotiates to join the WTO</li> </ul>
<b>National Biomass Cookstove Initiative (India)</b>	<ul style="list-style-type: none"> <li>Subsidies and the promotion of markets</li> </ul>	<ul style="list-style-type: none"> <li>Launched in 2009, the aim is to develop next-generation cleaner biomass cookstoves and deploy them in all Indian households currently using traditional cookstoves</li> <li>As part of the initiative, the Indian government formed a partnership to create a global competition to develop and deploy affordable, clean and efficient cookstoves</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Energy, universities, NGOs, and private corporations</li> <li>Ministry of New &amp; Renewable Energy (India)</li> <li>X-Prize Foundation, a non-profit that designs research prizes</li> <li>National and international private sector biomass cookstove producers</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Energy: to reduce air pollutants and greenhouse gas emissions that contribute to climate change, reduction in crop yields and poor health outcomes</li> <li>Ministry of Health: to reduce premature deaths resulting from indoor air pollution</li> <li>In addition, initiative looks to reduce deforestation</li> <li>Private corporations: opportunity to tap into a market of over 750 million people</li> <li>NGO (X-Prize) to spur development of a key technology that could save millions of lives</li> </ul>	<ul style="list-style-type: none"> <li>Estimated that initiative could result in avoiding 570,000 premature deaths of poor women and children and a reduction of 4% of India’s estimated greenhouse gases as of 2010; avoided emissions currently would be worth US \$1 billion on the international carbon market</li> <li>Further data needed</li> </ul>
<b>Sustrans National Cycle Networks (UK)</b>	<ul style="list-style-type: none"> <li>Education and information</li> <li>Non-regulatory partnerships/voluntary controls</li> </ul>	<ul style="list-style-type: none"> <li>Sustrans is an NGO that partners with communities, local authorities, and other organizations to build projects across the UK enabling active transportation while additionally advocating for sustainable and healthy transport-friendly policies</li> </ul>	<ul style="list-style-type: none"> <li>Sustrans National Cycle Network</li> <li>Local and central governments across the UK</li> <li>Multiple charitable trusts, schools, and private partners</li> <li>Non-departmental public bodies</li> <li>The European Union</li> </ul>	<ul style="list-style-type: none"> <li>Advocating active transport modes across the UK increases physical activity to improve health and attracts public funding</li> <li>Decreases traffic congestion and improves air quality while lowering CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Significant increases in bicycling across the United Kingdom, with positive health impacts due to physical activity increases and impact on the environment through reduced carbon emissions. In 2009, 407 million journeys were made on the National Cycle Network, a 6% increase from 2008, with estimated health benefit of £384million</li> </ul>

	Policy Lever	Scope	Actors	Incentives	Impact
<b>Russian Government Commission for Road Safety (Russia)</b>	<ul style="list-style-type: none"> <li>Education and information</li> <li>Non-regulatory partnerships/voluntary controls</li> <li>Command and control regulation</li> <li>Channel / Nudge regulation</li> </ul>	<ul style="list-style-type: none"> <li>In 2006 the Russian Government launched a national initiative to improve road safety and decrease the incidence of traffic accidents and deaths</li> <li>The Ministry of Internal Affairs coordinates the multi-pronged initiative which has included: stricter drunk-driving laws; anti-alcohol and safe driving campaigns; new road signs and speed bumps; legislation proposals to reduce speed limits; the organization of emergency services; and improved vehicle design and safety equipment</li> </ul>	<ul style="list-style-type: none"> <li>Russian Ministry of Internal Affairs</li> <li>Russian Ministry of Health and Social Development</li> <li>Djandelidze Research Institute of Emergency Medicine</li> <li>Regional government partners</li> </ul>	<ul style="list-style-type: none"> <li>Ministry of Internal Affairs: Improves safety of citizens and overall well-being</li> <li>Ministry of Health and Social Development: Campaign to reduce drinking improves health of citizens and encourages healthier lifestyles</li> </ul>	<ul style="list-style-type: none"> <li>Russia experienced a 20% drop in road traffic deaths per 10,000 vehicles between 2006 and 2008</li> <li>Russia experienced a 17% drop in traffic accidents per 10,000 vehicles between 2006 and 2008</li> </ul>
<b>New York City Smoking Ban (USA)</b>	<ul style="list-style-type: none"> <li>Command and control regulation</li> </ul>	<ul style="list-style-type: none"> <li>Incremental legislation to push smoking and tobacco use out of public places through fines and social pressure. 1995: Smoking forbidden in all restaurants with at least 35 seats; 2002: Expanded to virtually all bars &amp; restaurants; 2011: Ban extended to public parks and beaches</li> </ul>	<ul style="list-style-type: none"> <li>2002-11 Legislation has been led and aggressively touted by Mayor of NYC, Michael Bloomberg</li> <li>NYC Board of Health</li> </ul>	<ul style="list-style-type: none"> <li>Positive publicity for Mayor as legislation viewed as protecting bar and restaurant employees; decreasing societal healthcare costs</li> <li>NYC Board of Health: Reduce tobacco use and exposure to second hand smoke</li> </ul>	<ul style="list-style-type: none"> <li>By 2009 the number of adults classified as current smokers decreased to 15.8% from 21.5% in 2002</li> </ul>
<b>New York City Ban on Trans Fat in all Restaurant (USA)</b>	<ul style="list-style-type: none"> <li>Command and control regulation</li> </ul>	<ul style="list-style-type: none"> <li>In 2006, with the support of Mayor Bloomberg, NYC Board of Health introduced a mandatory ban on all artificial trans fats in New York City restaurants</li> </ul>	<ul style="list-style-type: none"> <li>NYC Board of Health</li> </ul>	<ul style="list-style-type: none"> <li>NYC Board of Health: to reduce risk factors contributing to cardiovascular disease</li> </ul>	<ul style="list-style-type: none"> <li>Percentage of restaurants using artificial trans fats decreased from 50 percent to less than 2 percent in 2 years</li> <li>Initiative has prompted at least 13 jurisdictions in the US to adopt similar laws including state of California</li> </ul>
<b>Mayor's Anti-Tobacco Alliance (Indonesia)</b>	<ul style="list-style-type: none"> <li>Command and control regulation</li> <li>Education and information</li> </ul>	<ul style="list-style-type: none"> <li>An alliance of 12 Indonesian mayors was launched in early 2011 to enact tobacco control legislation at the sub-national level. The alliance will share best practice models from cities already implementing such legislation as they attempt to build the alliance to spread anti-tobacco legislation across the country</li> </ul>	<ul style="list-style-type: none"> <li>Mayors of 12 Indonesian cities</li> <li>Indonesia Ministry of Health</li> <li>International Union Against Tuberculosis and Lung Disease</li> </ul>	<ul style="list-style-type: none"> <li>Indonesia has the 3<sup>rd</sup> highest smoking rate in the world and an estimated 200,000 Indonesians die annually as a result of tobacco-related illnesses. The Indonesian government spends approximately \$1.2 billion annually to treat tobacco-related illnesses.</li> </ul>	<ul style="list-style-type: none"> <li>The alliance was launched early in 2011, the goal is to expand it to 22 cities and increasingly influence the 95 members of the Mayors Association of Indonesia as their mandate grows to a national scale</li> </ul>

	Policy Lever	Scope	Actors	Incentives	Impact
<b>Sustainable Transport &amp; Ciclovía (Bogotá Colombia)</b>	<ul style="list-style-type: none"> <li>• Command and control regulation</li> <li>• Channel/ nudge regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Bogotá has aimed to create a more sustainable transport system by creating a 300 km network of bike paths across the city , upgrading the rapid bus transit system and restricting private cars in the city through several measures</li> <li>• “Ciclovía” an over 30-year-old, much-replicated tradition, which shuts down a 70 mile route across the city for bicycling and pedestrian use only every Sunday</li> </ul>	<ul style="list-style-type: none"> <li>• Bogotá Department of Transport</li> <li>• Bogotá Department of Recreation</li> <li>• Bogotá Police Department</li> <li>• Bogotá Mayor’s Office</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting physical activity over sedate travel modes reduces traffic congestion and air pollution across Bogotá and decreases travel times while improving the health and mobility of the city</li> </ul>	<ul style="list-style-type: none"> <li>• Ciclovía attracts more than 1 million cyclists and pedestrians every week; which is almost 15% of Bogotá’s population</li> <li>• Since the construction of over 300 km worth of bike lanes, bicycle usage has increased 5 times throughout the city and it is estimated between 300,000 and 400,000 trips are made daily via bicycles across the city</li> </ul>
<b>Gum Marom Kids League (Northern Uganda)</b>	<ul style="list-style-type: none"> <li>• Education and information</li> <li>• Non-regulatory partnerships/ voluntary controls</li> </ul>	<ul style="list-style-type: none"> <li>• Launched in 2010, this initiative was set up to engage the local community, build a more robust peace, and improve the physical and mental health of children aged 10-14 years in this region that has recently emerged from 20 years of civil war</li> </ul>	<ul style="list-style-type: none"> <li>• Local community based organization, the Youth Coalition for Peace, Canadian-based NGO OA Projects, and Kids League Uganda</li> <li>• Schools and local government (primarily the local Sports Office and Education Officer)</li> </ul>	<ul style="list-style-type: none"> <li>• Peace building activities, conflict management, and health awareness was an incentive for all actors</li> </ul>	<ul style="list-style-type: none"> <li>• Mental health was measured using a locally-developed tool, and physical health using a ‘beep’ test, standing jump and BMI for age. Preliminary analysis of data collected at the start of the project suggests normal growth patterns, but identified a population-wide deficit in physical fitness and persistent mental-health challenges.</li> </ul>
<b>UAE Health Ministry Awareness Campaign (United Arab Emirates)</b>	<ul style="list-style-type: none"> <li>• Education and information</li> </ul>	<ul style="list-style-type: none"> <li>• With obesity, diabetes and other conditions rising at an alarming rate in the United Arab Emirates, the Health Ministry partnered with Bin Sina Pharmacy in an effort to raise the public consciousness around healthy lifestyles and the danger of risk factors.</li> <li>• In the partnership, Bin Sina offers health examinations, assistance, and advice on cholesterol, blood pressure, diabetes, and obesity in a consolidated checkup to all who visit their outlets at</li> </ul>	<ul style="list-style-type: none"> <li>• United Arab Emirates Health Ministry</li> <li>• Bin Sina Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>• The rise of NCDs in the UAE will pose a growing health crisis in the future if not addressed; population needs to be educated about their own health</li> </ul>	<ul style="list-style-type: none"> <li>• In the first year 28,000 citizens participated (across approximately 30 outlets)</li> <li>• The checkups revealed 27% of participants had high cholesterol, almost half of whom were unaware of their condition</li> </ul>

	Policy Lever	Scope	Actors	Incentives	Impact
<b>Agita Sao Paulo (Brazil)</b>	<ul style="list-style-type: none"> <li>Education and information</li> <li>Non-regulatory partnerships/voluntary controls</li> </ul>	<ul style="list-style-type: none"> <li>Program to combat physical inactivity amongst residents of the Brazilian state of São Paulo through major public information campaigns and the sponsorship of programs for physical activity including initiatives to develop facilities for physical activity. Launched in 1996. Core message: 30 minutes of moderate physical activity/day on most days of the week</li> </ul>	<ul style="list-style-type: none"> <li>Led by the Sao Paulo State Secretariat of Health and the Studies Center for Physical Fitness Research Laboratory (CELAFISCS)</li> <li>More than 300 partner organizations, governmental, NGOs, and private sector, ranging from health, education, sports, industry, workers, and environment</li> </ul>	<ul style="list-style-type: none"> <li>Public institutions sought to improve public health</li> <li>Partners received positive publicity and goodwill by partnering with CELAFISCS – an internationally renowned research institution – and may also have been motivated to see improvements in the health of their specific workers or patients</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of inactive individuals declined from 9.6% in 2002 to 2.7% in 2008</li> <li>Proportion of individuals with less than 150 minutes of activity per week decreased from 43.7% to 11.6%</li> <li>Significant impact documented in small groups including elderly women, private school students, patients with hypertension and diabetes in a small insurance company, amongst others</li> <li>Initiative spread continent-wide</li> </ul>
<b>Pfizer Together Program (Trinidad and Tobago, Jamaica, Barbados, Bahamas)</b>	<ul style="list-style-type: none"> <li>Education and information, non-regulatory partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Program was created in 2010 to enhance knowledge of, promote treatment adherence, and make a positive impact on quality of life for patients with conditions such as high blood pressure, high cholesterol, diabetes, Alzheimer's disease and depression. The program targets low-income patients.</li> </ul>	<ul style="list-style-type: none"> <li>Pfizer,</li> <li>physicians,</li> <li>pharmacies</li> </ul>	<ul style="list-style-type: none"> <li>Incentives: Improving patient health outcomes by improving knowledge and treatment adherence</li> </ul>	<ul style="list-style-type: none"> <li>Program has provided tools and information to a network of 1900 doctors to help educate patients about chronic diseases. Eligible patients have received discounted prices for medicines addressing cardiovascular disease, depression, Alzheimer's and glaucoma and access to a free telephone hotline that provides real-time answers about their disease and medications. To date more than 300 patients have been enrolled in the program.</li> </ul>
<b>Urban College Campus, New York City (USA)</b>	<ul style="list-style-type: none"> <li>Channel/nudge regulation</li> </ul>	<ul style="list-style-type: none"> <li>Urban architect Thom Mayne designed the college's NYC building to have a wide, centrally-located staircase while building elevators are purposefully slow and only stop on 3 of the building's 8 floors so students naturally walk the "vertical campus"</li> </ul>	<ul style="list-style-type: none"> <li>The Cooper Union for the Advancement of Science and Art</li> </ul>	<ul style="list-style-type: none"> <li>The design features of the building were planned to emphasize socialization and to keep people moving in the building</li> </ul>	<ul style="list-style-type: none"> <li>The central staircase has been called the "social heart" of the building and is helping influence a new movement of "slow architecture" in NYC and elsewhere that emphasizes movement and attempt to minimize elevator use</li> </ul>

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