

**NCD Alliance<sup>1</sup>**  
**Nutrition, Physical Activity and Non-Communicable Disease (NCD) Prevention**  
**Working Group**

**Nutrition, Physical Activity and NCD Prevention: A Briefing Document**

The NCD Alliance Proposed Outcomes Document calls on governments around the world to commit to actions in a number of key areas to tackle the global burden of Non-Communicable Diseases (NCDs)<sup>2</sup>. This briefing document works in synergy with the Proposed Outcomes Document and provides evidence-based actions for nutrition and physical activity related aspects of NCD prevention.

The Nutrition, Physical Activity and NCD Prevention briefing document is divided into two sections. Part A provides Key Messages and Guiding Principles together with clear Calls for Action to improve nutrition and increase physical activity. Part B presents an overview of the available evidence of nutrition, physical activity and NCDs, and of effective policies and interventions to reduce the common risk factors.

The Calls to Action are aimed primarily at governments in recognition of the chief and central responsibility they have for public health and the upstream policies that create systems and structures in society, which determine an individual's ability to make healthy choices. The Calls to Action are also aimed at other key groups in society, referred to in this document as 'actor groups'. These are groups of people, at all levels of society, who have decision-taking and policy-making responsibility in relation to nutrition and physical activity. All actor groups need to take action now to tackle the growing burden of NCDs worldwide.

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<sup>1</sup> The NCD Alliance is a formal alliance of four international federations representing the four main NCDs outlined in the World Health Organization's 2008-2013 Action Plan for NCDs – cardiovascular disease, diabetes, cancer, and chronic respiratory disease. The four organisations are the International Diabetes Federation, The International Union Against Tuberculosis and Lung Disease, Union for International Cancer Control and World Heart Federation.

<sup>2</sup> Non-Communicable Diseases (NCDs) defined as cancer, cardiovascular disease, chronic respiratory disease and diabetes, and the four shared risk factors of tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol, as identified by the World Health Organization (WHO).

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## Part A

Part A of this policy briefing document provides key messages, guiding principles and calls to action in relation to nutrition, physical activity and Non-Communicable Disease (NCD) prevention. These are based on sufficient evidence of associations between food, nutrition, physical activity, body fatness and NCDs. Part B contains an overview of the supporting background evidence.

### Key Messages and Guiding Principles

Nutrition and physical activity are crucial factors in the prevention and control of NCDs.

Government has chief and central responsibility for developing the necessary policies for preventing and controlling NCDs and should work with other actors across society to ensure these are translated into effective actions.

A 'health in all policies' approach needs to be adopted to prevent and control NCDs. Policies for food security need to be enhanced to ensure *nutrition security*<sup>3</sup>.

*Upstream* system changes and high-impact whole *population* interventions are required, which support downstream measures and which do not widen inequalities.

A *life course* approach to NCD prevention and control ensures that policies and actions promote health from the earliest stages of life and through all life stages.

Action needs to be taken now because governments and health systems will not be able to cope with the growing burden of NCDs.

The benefits of actions that address nutrition, physical activity and NCD prevention will also positively impact other important global challenges, including: climate change, sustainability, and economic and development issues.

### Common features of successful nutrition and physical activity policies and actions

There are a number of common features to successful policies and actions on nutrition and physical activity (L'Abbé et al, 2009; WCRF/AICR, 2009; Cavill et al 2007; Ogilvie et al 2007; Marcus et al, 2006; Foster et al 2006; Marcus et al, 2006). These include:

- Strong government leadership in pulling together stakeholders.
- The establishment of independent scientific and expert panels to examine the evidence to make recommendations to inform the process.

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<sup>3</sup> Nutrition security is used to include not only adequate nutrition but also proportionate nutrition – gained through accessible and affordable ranges of health-promoting foods, along with the skills and knowledge to make use of these foods and the appropriate forms of information to motivate individuals to make healthful choices.

- Active engagement by the media to help raise awareness among consumers.
- Active involvement of civil society organisations to monitor and hold stakeholders to account.
- Action at multiple levels including the socio-economic environment; physical environment; institutional; community and individual levels
- A focus on physical activities that can be integrated into daily life and not solely on sport or planned exercise.
- Maintenance and sustainability of physical activity interventions to effectively influence behaviour change.

## Calls to Action

We, the NCD Alliance, are calling for governments to make a high-level commitment to take concrete multi-sector action to prevent NCDs through legislation, regulation and the implementation of health-promoting public policies in the areas outlined below.

**There is a need to control food supply, food information and the marketing and promotion of energy-dense, nutrient-poor foods that are high in saturated fat, sugar and salt while still addressing hunger. The immediate low cost ‘best buys’ include mass-media campaigns, voluntary action by the food industry campaigns, food taxes and tax increases, subsidies, labelling, marketing restrictions and advertising bans (Beaglehole et al, 2011).**

This can be achieved through the following actions:

**Table 1. Actions for governments to influence food supply, food information and the marketing and promotion of energy-dense, nutrient-poor foods that are high in saturated fats, trans-fats, salt or refined sugars**

Action	Key Actor Groups
<ul style="list-style-type: none"> <li>Developing global governance structures and comprehensive food policies that integrate NCD prevention with MDG hunger and nutrition goals, along with goals for agricultural sustainability and environmental protection. This requires an integrated programme across UN agencies.</li> </ul>	Multilateral Agencies, National and Local Government
<ul style="list-style-type: none"> <li>Developing the necessary policies to provide incentives for the production and formulation of healthy foods.</li> </ul>	National and Local Government
<ul style="list-style-type: none"> <li>Ensuring the availability and accessibility of supplies of safe, nutrient-dense and relatively unprocessed foods to all sections of the community.</li> </ul>	National and Local Government, Industry
<ul style="list-style-type: none"> <li>Discouraging the promotional marketing of foods and beverages high in refined sugar, saturated or trans-fats or salt, and elimination of those particularly aimed at children.</li> </ul>	National and Local Government, Multilateral Agencies, Industry, Media, Schools
<ul style="list-style-type: none"> <li>Mandating easy-to-interpret, front-of-pack food labelling and restaurant menu labelling showing key nutrition information.</li> </ul>	National and Local Government, Industry
<ul style="list-style-type: none"> <li>Ensuring NCD prevention is an explicit priority in all stages of food systems including product development, formulation, promotion and distribution.</li> </ul>	National and Local Government, Industry, Multilateral Agencies,

	Health Professionals, Agriculture
<ul style="list-style-type: none"> <li>Using government food purchasing, research and economic development budgets to promote the availability and accessibility of foods which meet national health promotion guidelines.</li> </ul>	National and Local Government, Multilateral Agencies, Health Professionals
<ul style="list-style-type: none"> <li>Promoting exclusive breastfeeding for the first six months of life and implementing the <i>International Code of Marketing of Breast-milk Substitutes</i> and subsequent WHA resolutions.</li> </ul>	National and Local Government, Industry, Health Professionals, Media, People
<ul style="list-style-type: none"> <li>Incorporating nutrition and physical activity standards into occupational health and safety laws and workplace wellness programmes.</li> </ul>	National and Local Government, Workplaces and Institutions
<ul style="list-style-type: none"> <li>Incorporating food and nutrition (including food preparation and cooking skills) and physical education into the mandatory core education curriculum.</li> </ul>	Schools
<ul style="list-style-type: none"> <li>Ensuring access to clean water for safe drinking as a cheaper alternative to sugary soft drinks.</li> </ul>	National and Local Government, Health Professionals

In addition to the central responsibility of governments, the role of civil society organisations is crucial to achieving the above actions:

Action	Key Actor Groups
<ul style="list-style-type: none"> <li>Supporting Civil Society Organisations to assist policy development and holding other actors to account regarding their policies and actions on food and nutrition in relation to NCD prevention.</li> </ul>	National and Local Government, Civil Society Organisations

**There is a need to create and maintain built and external environments that encourage physical activity and other healthy behaviours. This can be achieved through the following actions:**

**Table 2. Actions for governments to help create and maintain built and external environments that encourage physical activity and other healthy behaviours**

Action	Key Actor Groups
<ul style="list-style-type: none"> <li>Modifying transport policy to favour walking and cycling over car travel for short urban journeys.</li> </ul>	National and Local Government, Town Planners, Transport Planners

<ul style="list-style-type: none"> <li>Legislating to promote the provision of safe open spaces and widespread dedicated walking and cycling facilities throughout built and external environments.</li> </ul>	National and Local Government, Town Planners, Health Professionals
<ul style="list-style-type: none"> <li>Ensuring schools have safe and accessible facilities for active recreation, activity, play and sports.</li> </ul>	National and Local Government, Schools
<ul style="list-style-type: none"> <li>Encouraging workplaces and institutions to ensure physical environments are designed or adapted to facilitate physical activity and weight control.</li> </ul>	National and Local Government, Workplaces, Health Professionals
<ul style="list-style-type: none"> <li>Using planning and zoning regulations to promote availability and accessibility of healthy foods and plentiful physical activity (especially active travel<sup>4</sup>).</li> </ul>	National and Local Government, Town Planners
<ul style="list-style-type: none"> <li>Encouraging and facilitating active travel.</li> </ul>	National and Local Government, Health and Other Professionals, Media, Workplaces and Institutions, Schools, People

In addition to the central responsibility of governments, the role of civil society organisations is crucial to achieving the above actions:

Action	Key Actor Groups
<ul style="list-style-type: none"> <li>Supporting Civil Society Organisations to assist policy developing and holding other actors to account regarding their policies and actions on physical activity in relation to NCD prevention.</li> </ul>	National and Local Government, Civil Society Organisations

### **Additional priority areas**

- The special needs of vulnerable groups in society including women, children, indigenous peoples and minority groups.
- The need to build capacity in the health workforce by including nutrition, physical activity and NCD prevention in core professional training and continuing professional development.

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<sup>4</sup> Active travel defined as healthy modes of transport such as walking or cycling.





## Part B

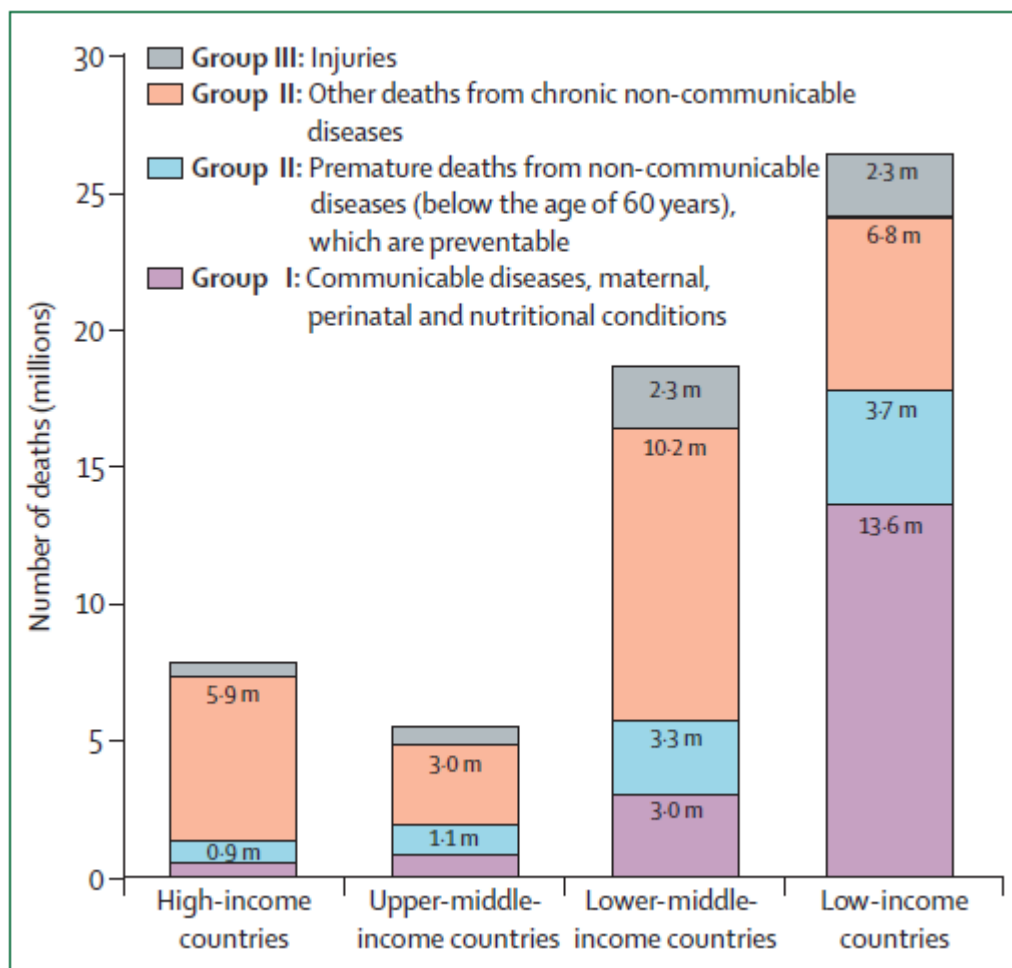
### Background and Evidence

Part B presents an overview of key considerations, contextual information and the evidence base for the key messages, guiding principles and calls to action found in Part A.

#### Section 1: Food, nutrition, physical inactivity and NCDs

There is convincing evidence that food, nutrition, physical activity and body composition throughout the life course play a crucial role in the development of NCDs. The burden of NCDs is continuing to rise in low- and middle-income countries, where a significant proportion of premature deaths occur in people under 60 years. This has major adverse social, economic and health effects (Horton, 2007) (see Figure 1). Up to 80% of heart disease, stroke, and type 2 diabetes and over a third of the most common cancers could be prevented by eliminating shared risk factors, mainly tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol (WHO, 2008).

**Figure 1: Total number of deaths in the world in 2004 (Geneau et al, 2010)**



Obesity raises the risk of over forty NCDs and associated disease risk factors, including diabetes, cardiovascular disease and certain cancers. Unhealthy diets, especially the excessive consumption of calories, salt, saturated fat and sugar cause at least 40% of all deaths from NCDs, and approximately one-quarter of all deaths globally (WHO, 2009a). Furthermore, physical inactivity causes over 1 in 20 of the total deaths occurring each year (WHO, 2009a).

While energy-dense, nutrient-poor diets increase the risk of NCDs, healthful diets can be protective against NCDs: for example, plant-based diets that include plenty of fruits and vegetables can reduce the risk of cardiovascular disease and several types of cancer. Breastfeeding reduces the risk of obesity in childhood and potentially reduces the risk of subsequent diabetes (and breastfeeding has also been shown to be associated with a reduced risk of diabetes and breast cancer in the mother). A summary of the main influences on major NCDs and obesity risk associated with diet and physical activity is shown in Table 3 and influences on other important NCDs are highlighted in Table 4.

**Table 3: Summary of main nutrition and physical activity influences on major NCDs and obesity<sup>5</sup>**

	<b>Increases risk</b>	<b>Decreases risk</b>
<b>Obesity</b>	Sedentary behaviour High intake of energy-dense micro-nutrient poor foods Heavy marketing of energy-dense foods and fast food outlets High intake of sugar-sweetened soft drinks and fruit juices	Regular physical activity Diets high in fibre Being breastfed Home and school environments supporting healthy food choices for children
<b>Type 2 diabetes</b>	Overweight and obesity Abdominal obesity Physical inactivity	Voluntary weight loss in overweight people Physical activity High intake of dietary fibre from a variety of plant-based foods
<b>Cardiovascular diseases</b>	Trans fatty acids Saturated fats High salt intake, including from salt-preserved and processed foods Overweight	Regular physical activity Fish and fish oils Fruits and vegetables Diets high in fibre from a variety of plant-based foods Wholegrain cereals Nuts (unsalted) Plant sterols and stanols Polyunsaturated fats from plant sources

<sup>5</sup> Adapted from Joint WHO/FAO (2002)

<b>Diet-related cancers<sup>6</sup></b>	Abdominal fatness and body fatness Red and processed meat Salt-preserved food and salt Arsenic in drinking water Aflatoxins	Physical activity Fruits and vegetables Diets high in fibre, vitamin C, beta-carotene, carotenoids and folate Lactation
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**Table 4: Summary of main nutrition and physical activity influences on other important NCDs**

	Increases risk	Decreases risk
<b>Dental diseases</b>	High or frequent consumption of free sugars Consumption of acidic soft drinks and juices Vitamin C deficiency	Hard cheese Sugar-free chewing gum Maintaining adequate Vitamin D status
<b>Osteoporosis</b>	Low body weight	Maintaining adequate calcium intake and Vitamin D status Physical activity

### 1.1 Malnutrition, including both under- and over-nutrition

In lower-income countries, nutritional deficiencies and nutrition-related infectious diseases especially among children co-exist with obesity within the same populations and in the same communities and families (WCRF/AICR, 2009). The interaction between under- and over-nutrition needs to be recognised. Under-nutrition during fetal development and early infancy predisposes an individual to the development of NCDs in adulthood. Rapid weight gain during childhood accentuates this relationship, so that early under-nutrition and later exposure to energy-dense foods have a synergistic effect. Thus shorter (stunted growth) individuals with abdominal adiposity have the highest risk of major NCDs. It is therefore important that policies to deal with classical under-nutrition do not inadvertently and unnecessarily increase the incidence of NCDs. Policies for hunger reduction need to be assessed in terms of diet-related NCD risk, and food supplies to meet deficiency diseases should not contain high levels of saturated fats, trans-fats, salt or refined sugars.

## Section 2: Key considerations

Food growers, distributors and manufacturers have recognised the need for safe food supplies and have acted to protect consumers from contaminated and spoiled food. More recently some of the major food multinationals have published strategies to reduce hunger and provide food with added nutrients to

<sup>6</sup> Cancer-specific information taken from WCRF/AICR (2007)

prevent deficiency diseases. Now there are new concerns that action is needed to re-shape the food supply chain in order to protect people from NCDs.

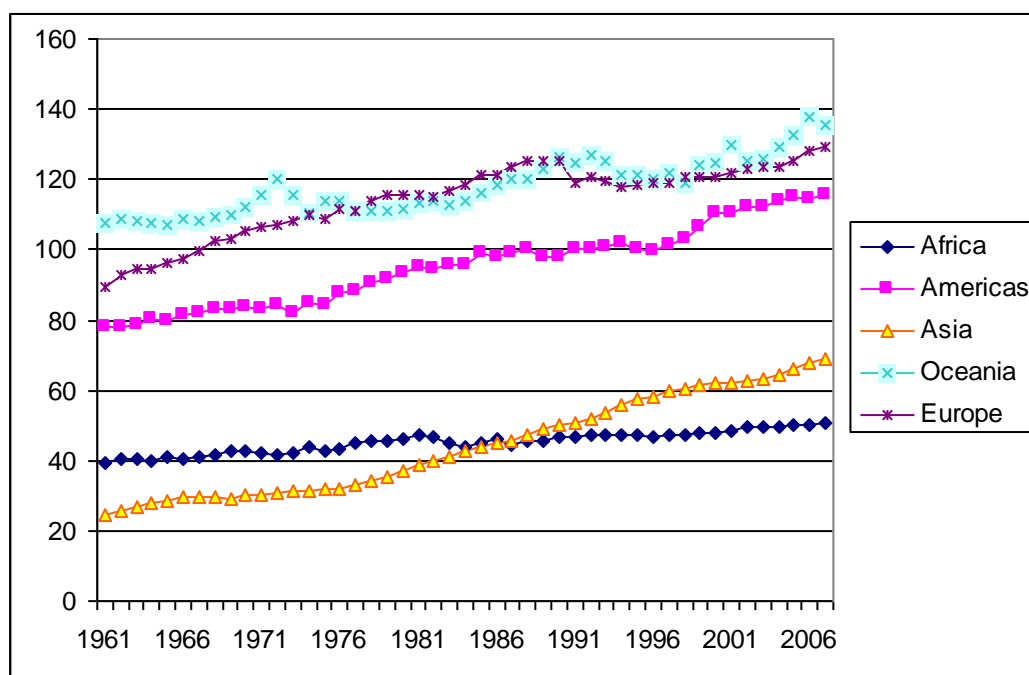
As with any commercial sector, there will be embedded interests which will seek to resist change, and there will be enterprises seeking to create new markets with a new range of products. The role of governments is to ensure that the health and well-being of citizens is fully served by these evolving markets, using the incentives and controls governments have available, and to assist and support populations in making the best choices in the marketplace.

The food industry has recognised that it has a role in supporting the fulfilment of the Millennium Development Goals. It must now also recognise that its strategies to reduce hunger and under-nutrition need to be integrated into a wider nutrition strategy that helps protect from NCDs: nutrition security means more than preventing under-nutrition, it also means recognising the dietary causes of NCDs and ensuring access to health-promoting and protecting foods, along with the means and the motivation to consume them.

## 2.1 Trends in food supplies

The last thirty years have seen a rapid change in food supplies across much of the world (Figure 2). In particular, the supply of dietary fats and sugars has increased rapidly in most regions, with increasing globalisation of commodity markets and expansion of production capacity for foods such as soft drinks, snack foods, sweetened breakfast cereals and the expansion of fast-food services.

**Figure 2: Per capita supply of fats and oils (FAO, 2011)<sup>7</sup>**



<sup>7</sup> in grams/person/day

As the market for these foods rises, the demand for the underlying commodities increases, production levels rise and prices fall. The world as a whole has seen several decades of falling prices for sugars, fats and starches. Meanwhile the markets for locally produced traditional food products are neglected, and the producers of traditional foods find it difficult to survive.

## **2.2 Trends in physical activity**

Physical inactivity is the fourth leading risk factor for global mortality (WHO, 2011a). At least 60% of the world's population fails to complete the recommended amount of physical activity required to induce health benefits, with high levels of inactivity found in virtually all developed and developing countries. This is partly due to an increase in sedentary behaviour during occupational and domestic activities as well as insufficient participation in physical activity during leisure time. An increase in the use of cars for short journeys has also been associated with declining physical activity levels (WHO, 2011b).

In rapidly growing large cities of the developing world, physical inactivity is a particular problem. Evidence suggests that in these environments inactivity is linked to (WHO, 2011b):

- population over-crowding
- increased poverty
- increased levels of crime
- high-density traffic
- low air quality
- lack of parks, sidewalks and sports / recreation facilities

Consequently, NCDs associated with physical inactivity are a major public health problem in most cities around the world. Effective public health measures are urgently needed to provide environments which promote adequate physical activity in all sections of the population.

## **2.3 Responsibility of governments and others**

On current trends, the treatment of NCDs will be unaffordable in the long term and, in many low-income countries, is unaffordable now. It is vital that NCD control programmes include prevention at a population level. Dietary choices are modified by price and availability of healthier foods – factors which are determined at societal and global levels. Physical activity is modified by workplace environments, transport requirements and local amenities. Capacity to make healthy choices is also affected by household income and educational levels. Action to prevent and control NCDs therefore needs to be taken on a global, national, community and household level. Although there is limited evidence available specifically for low- and middle-income countries, there is the opportunity for lessons to be learned from the evidence and best practice

available from high-income countries in terms of both improvements that have been made, as well as the unintended consequences of development.

In the case of food supplies, the globalisation of markets has led to a rapid increase in availability of mass-produced, processed foods with long shelf-lives and, frequently, with a nutrient profile that is energy-dense and micronutrient-poor. There is a danger that the gains made in ensuring adequate global food security are raising the risk of encouraging poor quality diets that lead to NCDs. Food and agriculture policies that aim to provide sufficient food also need to attend to the quality of that food. The phrase 'nutrition security' represents the need for food supplies to provide an adequate diet to protect against NCDs, in a context in which consumers have the information, skills and motivation to make healthy choices.

In order to ensure that food supplies do not increase the risk of NCDs, food supply policies need to be introduced which encourage improvement in nutritional quality. An integrated approach to food and agriculture is needed, combining policies to deal with hunger, nutrition, sustainable production and global warming. The agencies that lead this must have the authority and capacity to question the assumption that an open market will supply the quality of food required: this is not currently the case for NCDs. An open market might be able to provide a healthy diet for all, but incentives and regulations need to be put in place to make it happen.

The WHO *2008-2013 Action Plan for the global strategy for the prevention and control of NCDs* (2008) highlights the responsibility of government for investing in NCD prevention as an integral part of sustainable socio-economic development. Governments have a chief and central responsibility for protecting, maintaining, and improving public health, including the prevention of NCDs, by reducing the level of exposure of individuals and populations to common risk factors, including unhealthy diet and physical inactivity, and their determinants.

The commercial interests involved in many of the issues relating to NCDs need to be recognised. As the WHO has made clear:

*"Governments should be the key stakeholders in the development of policy and provide leadership, through a multistakeholder platform, for implementation, monitoring and evaluation. In setting the national policy framework, governments may choose to allocate defined roles to other stakeholders, while protecting the public interest and avoiding conflict of interest."* (WHO, 2010).

In brief, governments and multilateral government agencies need to set the policies without undue commercial influence, while involving commercial stakeholders in policy implementation.

## **2.4 A life course approach to NCD prevention**

Evidence indicates that policies and actions designed to prevent NCDs need to be aimed at populations throughout the whole life course. Exposure to environmental factors in modifying NCD risk varies in different parts of the world and at different life stages, starting with nutritional risks during conception and fetal development. In most cases, positive lifestyle changes can reduce the risk of NCDs at any age, although exposure to healthier ways of life at a younger age delays morbidity and offers the greatest protection from premature mortality.

## **2.5 Urbanisation, industrialisation and globalisation**

As a result of urbanisation and the industrialisation of food systems, and the reduction in food insecurity with general sufficient and even abundant food and of the replacement of active with sedentary ways of life, patterns of disease and disability have changed (WCRF/AICR, 2009). Globally, consumption industries whose objectives are to increase their global market and market share – especially tobacco, alcohol and high fat, sugary and salty processed foods – are among the key drivers of NCDs in low- and middle-income countries. Tobacco use alone is responsible for 1 in 6 of all NCD deaths (Jha et al, 2006) and tobacco companies are now expanding their markets in developing economies, targeting those countries with few marketing and other regulatory controls (ICIJ, 2010). Similarly, the world's largest processed food manufacturers are targeting emerging and developing markets for new growth (Euromonitor International, 2011). In 2002 alone, sales of processed foods in low-to-middle income countries grew by around 29%, compared to 7% in upper to middle-income countries (Hawkes, 2005).

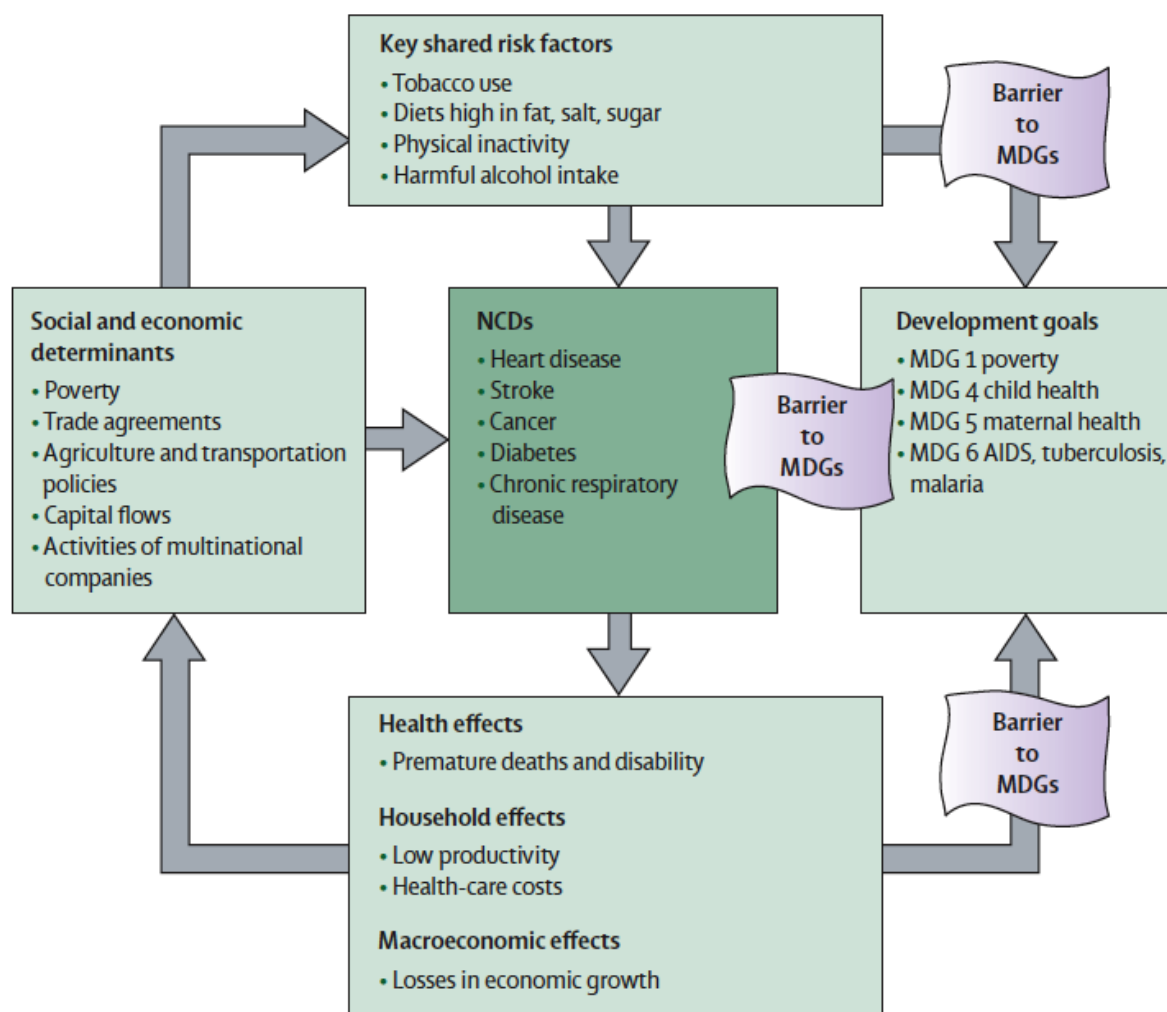
Within emerging and developing economies, this growth is driven by foreign direct investment (FDI), which dwarfs development funds. In 2002, US\$ 327 million was invested as FDI into food, beverage and tobacco products in developing countries, compared to US\$ 69 million spent by bilateral and multilateral agencies on tackling NCDs (Yach and Hawkes, 2004).

## **2.6 NCDs and the Millennium Development Goals (MDG)**

NCDs account for a large enough share of the disease burden of the poor in all low- and middle-income countries to require robust and concerted international action against NCDs in low-income and middle-income countries (WHO, 2008; WHO, 2009b). Comprehensive food policies, integrating NCD prevention with the hunger and nutrition MDGs, along with goals for agricultural sustainability and environmental protection would have a positive impact on global health.

Figure 3 shows the relationship between poverty and other indicators of socio-economic disparity on the distribution of risk factors and how these relate to existing MDG.

**Figure 3: Inter-relation between poverty, chronic disease and development (Beaglehole et al, 2011)**



There are economic benefits to reducing the incidence of NCDs: reduced loss of productivity due to disease, reduced loss of educational achievement due to childhood disease, and lower costs to families and to government through decreased health expenditure and social support.

Furthermore, actions to control food marketing and labelling can provide opportunities for producers of healthier products, and for smaller and local producers, to increase their share of the market. Actions to use government spending power to purchase healthier foods can further stimulate market production.

## 2.7 Increasing and ageing populations

Between 2000-2050 the global number of people aged over 70 is projected to increase from 267 million to over 1 billion, an almost fourfold increase. Most of this increase is projected to be lower-income countries. This dramatic increase in life expectancy is combined with an increase in the number of people living



with an NCD and any associated disabilities for longer. The global burden of NCDs for all ages as measured by DALYs (disability adjusted life years) is 16% (WHO, 2005). NCDs are a major cause of premature death in people under 60 years in developing countries. Failure to stem the NCDs epidemic will ultimately lead to reductions in life-expectancy in developing countries.

## **2.8 Conflicts of interest**

As noted above, the role of the commercial sector is specific: while the food and beverage industry needs to be part of the solution, it is not a health agency and any conflicts of interest need to be acknowledged and addressed. It is therefore important that if industry is involved in implementing policies, e.g. funding interventions, that the commercial interests are recognised and limited so that they do not pose conflicts with public health objectives. Governments in particular need to assert leadership in order to avoid conflicts of interest with the private sector.

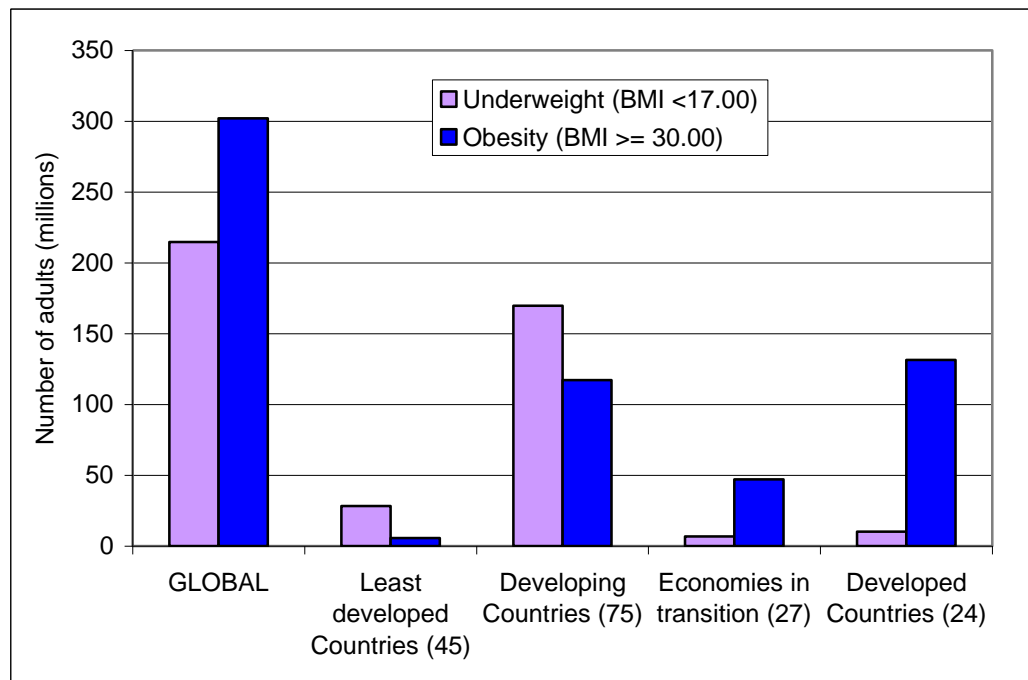
### **Section 3: The evidence base: food, nutrition, physical activity and NCDs**

The statements in this section, are based on voluminous evidence from systematic literature reviews on the effects of food, nutrition, physical activity and body fatness on cancer risk (WCRF/AICR, 2007), which also took into consideration the judgements and recommendations of other authoritative reports in relation to the prevention and control of other NCDs.

#### **3.1 There is sufficient evidence that body fatness/body fat distribution (overweight and obesity) influences NCD risk**

Obesity is a complex condition, affecting virtually all ages and socio-economic groups. Overweight children often go on to become overweight and obese adults. For adults, in most countries in Asia and Latin America and some in Africa, obesity is now more prevalent than under-nutrition and potentially a greater threat than nutritional deficiencies and infectious diseases (see Figure 4).

**Figure 4. Numbers of obese and undernourished adults worldwide, year 2000 (WHO, 2011c)**



Increased consumption of high energy-dense, nutrient-poor foods combined with reduced physical activity, have led to obesity rates that have risen three-fold or more since 1980 in some areas of North America, the United Kingdom, Eastern Europe, the Middle East, the Pacific Islands, Australasia and China.

Obesity levels are also rising dramatically in children. In 2010, over 42 million children worldwide were overweight and the vast majority – 35 million – were from developing countries (WHO, 2011d).

There is convincing evidence that obesity causes a number of cancers and increases the risk of other conditions including hypertension and stroke, type 2 diabetes and coronary heart disease (WCRF/AICR, 2007). Evidence shows that maintenance of a healthy weight throughout life may be one of the most important ways to protect against NCDs after avoiding tobacco.

### **3.2 There is sufficient evidence that physical activity reduces NCD risk**

Sedentary ways of life have been usual in high-income countries since the second half of the 20<sup>th</sup> century. Convincing evidence shows that all forms of physical activity protect against some cancers and research also shows it protects against cardiovascular disease, type 2 diabetes and as well as weight gain, overweight and obesity (WCRF/AICR, 2007).

### **3.3 There is sufficient evidence that plant-based diets reduce NCD risk**

Fruit, vegetables, pulses (legumes) and whole grains are generally low in energy and rich in nutrients. Consuming more plant foods and limiting the amount of energy-dense foods consumed therefore reduces risk of overweight and obesity, which is a common risk factor for NCD.

### **3.4 There is sufficient evidence that energy-dense foods and sugary drinks increase NCD risk**

Food patterns are changing with rising levels of fats and oils and refined sugars entering the food supply. Evidence shows that consumption of energy-dense foods and sugary drinks is increasing worldwide and is probably contributing to the global increase in obesity. These changes are happening most rapidly in low- and middle-income countries.

Under-nourished populations are at high risk of NCDs when exposed to foods with high levels of fats – especially saturated and trans fats – or added sugars or salt. Unhealthy diets include the regular consumption of sugary drinks, processed meats, deep-fried foods and other fatty, sugary and salty foods, especially when they replace fruit, vegetables, pulses and whole grains. Unhealthy diets are also characterised by the consumption of foods which are more highly processed, are high energy density, use non-nutritive additives to extend shelf life and increase market appeal, and which are actively promoted to the consumer. In an unhealthy diet, fresh but perishable foods (often the more traditional foods) are typically replaced by energy-dense, highly palatable, long-shelf-life foods.

Sugary drinks provide energy but do not induce satiety or compensatory reduction in subsequent energy intake and so promote overconsumption of energy and thus weight gain. Limiting the consumption of energy-dense foods and avoiding sugary drinks helps to prevent and to control weight gain.

### **3.5 There is good evidence that alcohol consumption influences NCD risk**

There is convincing evidence that alcohol increases the risk of cancer of the oesophagus, mouth, throat (pharynx and larynx), breast, as well as bowel cancer in men. It also probably increases the risk of liver cancer and bowel cancer in women (WCRF/AICR 2007). The evidence on cancer justifies a recommendation not to drink alcoholic drinks. However, modest amounts of alcoholic drinks are likely to reduce the risk of coronary heart disease especially in men over the age of 40 and postmenopausal women (WCRF/AICR, 2009)<sup>8</sup>.

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<sup>8</sup> The Global Alcohol and Policy Alliance (GAPA) is leading the work on alcohol and NCDs on behalf of the NCD Alliance. Please see GAPA Brief (2011) for comprehensive information and key recommendations in relation to alcohol and NCDs.

### **3.6 There is sufficient evidence that breastfeeding reduces NCD risk**

Evidence shows that breastfeeding protects the mother against breast cancer at all ages. Being breastfed provides a desirable growth trajectory as well as also helping to prevent overweight and obesity in children (WCRF/AICR, 2007) and subsequent risk of diabetes.

### **3.7 There is sufficient evidence that high salt intake increases NCD risk**

There is strong evidence that salt and salt-preserved foods are a cause of NCDs. A high intake of salt/sodium is a major factor in hypertension, the leading risk factor for death in the world. Salted and salty foods are a probable cause of stomach cancer. Current guidelines recommend population salt intakes of less than 5g per day.

In some countries salt is iodized for the prevention of iodine deficiency. The effects of iodine deficiency are most acute if it occurs during pregnancy, while the fetus is developing, and in the first few months of life. Targeting pregnant women and children with iodized oil or iodide tablets can help to tackle iodine deficiency (WHO, 2007). A WHO expert group recently reviewed the evidence on salt, fortification and health and recommended national goals aim to reduce adult population salt intakes to <5g per day. For countries with salt iodization programmes, close collaboration with salt reduction programmes are recommended to ensure they are congruent (WHO, 2007).

### **3.8 There is sufficient evidence that methods of food preservation, processing and preparation influence NCD risk**

The dietary intake of common salt, mostly from processed foods, is a major cause of hypertension and is also a probable cause of stomach cancer (see Section 3.7). In addition, the widespread use of common salt as well as other sodium salts in many processed foods primarily to extend shelf-life and prevent spoilage, is also an issue of concern for the major NCDs. Salted and salty foods including processed meats are probable or convincing causes of some cancers. In addition, Cantonese style salted fish, a traditional part of the diet in southern china, Taiwan, Malaysia, and Singapore, is a probable cause of nasopharyngeal cancer (WCRF/AICR, 2007). Alternative preserving methods, and increased provision of fresh, chilled and frozen foods should be considered.

There is also concern that nitrite from processed meats, which gives it their recognisable colour may be involved in carcinogenesis, particularly in the stomach. Dietary nitrates (which occurs naturally in plants) and nitrites are probably human carcinogens because they are converted in the body to *N*-nitroso compounds. These may be formed in meat during the curing process or in the body (particularly in the stomach). Several *N*-nitroso compounds are known human or animal carcinogens (WCRF/AICR, 2007).

Contamination of pulses and some other primary products with aflatoxins is a problem in many low-income countries especially in tropical and subtropical

regions. Aflatoxins and aflatoxin-contaminated foods are a convincing cause of liver cancer.

Arsenic in drinking water is a convincing cause of lung cancer and a probable cause of skin cancer. Arsenic residues can arise from agricultural, mining and industrial practices or may occur naturally from volcanic activity. Contamination of water with arsenic is a particular problem in parts of Asia (WCRF/AICR, 2007).

#### **Section 4: The evidence base: policy and the need for action**

This section provides examples of the best available evidence from systematic literature reviews of effective policies for tackling unhealthy diets (including high consumption of energy-dense, nutrient-poor foods that are particularly high in saturated fat, sugar and salt), physical inactivity, and obesity. The evidence presented here is deemed to be sufficient to warrant strong justification for political action.

##### **4.1 Control food supply, food information and the marketing and promotion of energy-dense, nutrient-poor foods that are high in saturated fat, sugar and salt**

- A review of obesity prevention found that promotional campaigns can increase awareness of the foods and drinks that make up healthy diets and can prompt people to change their diets. The review also highlighted the benefit of point-of-purchase schemes in shops, supermarkets, restaurants, and cafes, particularly when supported by more information and promotion (NICE, 2006a).
- A review of front-of-pack nutrition guidance found 'traffic light' labelling to be popular and effective in helping to influence consumer choices (UK Food Standards Agency, 2009). A review found good evidence for the effectiveness of point-of-sale labelling in cafeterias and supermarkets and provision of nutrition information on restaurant menus, as well as for nutrition labelling (Brownson et al, 2006).
- A systematic review found strong evidence for the efficacy of targeted social marketing campaigns to promote active travel (Ogilvie et al, 2007).
- Systematic reviews of marketing of foods and beverages to children have repeatedly shown that this marketing has an effect on dietary patterns and obesity (Hastings et al, 2003; Institute of Medicine, 2006; Cairns et al, 2009). Advertising unhealthy processed foods to children has been banned in Quebec, Sweden, and Norway since 1980, 1991, and 1992, respectively (Hawkes, 2004). In Quebec, reduced exposure to advertising resulted in fewer sugary 'children's' cereals being purchased, particularly in French-speaking households, which are less exposed to advertising on English-language channels from the USA (Goldberg, 1990).
- A variety of approaches can be used to reduce salt intake depending on the dietary source. Education and health promotion can work in populations where salt is mainly added to food at the household level, such as rural Africa (Cappuccio et al, 2006). Collaboration with food

industry to reduce salt content supported by appropriate regulation has proved to be cost-effective in populations where the majority of salt comes from processed foods, such as Finland and the UK (Assaria et al, 2007). Salt substitution is being explored as a way to reduce intakes China (China Salt Substitute Study Collaborative Group, 2007).

- Among the most effective approaches for the elimination of trans fat from the food supply are the introduction of regulatory limits for foods and oils, and mandatory labels as implemented in Denmark and New York City (L'Abbé et al, 2009). Use of agriculture and tax subsidies to support production of healthier alternatives was adopted in Argentina (L'Abbé et al, 2009). Recent expert reviews of food labels in America, Australia and the UK recommend that front of pack food labels should help consumers select foods based on the nutrients most strongly linked to public health concerns, including calories, saturated fat, trans fat, salt and sugar (IoM, 2010). In order for labels to be effective, governments should set minimum standards, and monitor these to ensure and enforce compliance by industry (Australian Government, 2011).

#### **4.2 Create and maintain built and external environments that encourage physical activity and other healthy behaviours**

- A review concluded that various aspects of the built environment are associated with both physical activity and healthy body weights (Raine et al, 2008). It found evidence that environmental interventions to promote physical activity can be effective. Increasing both the visibility and usability of stairs and access to leisure-time locations increases physical activity (Kahn et al, 2002; Sallis et al, 1998).
- There is also evidence that maintenance of facilities to be active, usable public transport systems, and cycling and walking infrastructure are useful, especially in cities at risk of losing this support because of development (Kahn et al, 2002; Sharpe, 2003; Cavill and Foster, 2004; Ogilvie et al, 2004).
- Children who report greater access to local facilities, paths, and recreation opportunities (fitness and community centres, walking and biking trails) are more active. Access to such facilities and time spent outdoors are consistently related to higher levels of physical activity (Vliegen, 2001; Brownson et al, 2006; The Guide to Community Preventive Services, 2008).
- Footpaths to school are associated with active commuting behaviour (Boarnet et al, 2005).
- Road safety, traffic volume, and availability of bicycle storage at school are important in determining whether children play outdoors or cycle (Foster et al, 2009; Caville, et al, 2006; NICE, 2006b; NICE, 2007).
- A report found that creating footpaths and cycle trails, increasing opportunities for active commuting including public transport; the quality, aesthetic design, and attractiveness of residential areas; providing year-round access to facilities for physical activity and mixed land use; reducing crime or fear of crime for example through better street lighting; and improving road safety could help to create supportive residential

- environments (Schoeppe et al, 2007).
- Cycle infrastructure (tracks, trails, and storage at public transport points) and policies that discourage car use can increase cycling and walking (NICE, 2006a; NICE, 2007; Popkin et al, 2005; Transport for London, 2007; Association of Train Operating Companies, 2006; Pratt et al, 2004; Pucher et al, 2003).

### **4.3 Additional priority areas**

**The following additional priority areas are important to consider when adopting approaches for preventing and controlling NCD.**

**The special needs of vulnerable groups in society including women, children, indigenous peoples and minority groups.**

Promotion of breastfeeding:

- Baby Friendly Hospitals have been shown to be effective for encouraging higher levels of breast-feeding (Renfrew et al, 2009).
- Evidence from south-east Asia shows that TV advertising of breast-milk substitutes encourages the abandonment of breastfeeding among a large proportion of new mothers (Putthakeo et al, 2009).
- In the Gambia, a small West African country, an intervention to develop the United Nations Baby-Friendly Community Initiative has raised the rate of initiation of breastfeeding on the first day of life from 60 to 100 per cent and decreased the introduction of complementary feeding at 4 months from 90 per cent to nearly zero (WHO, 2003).
- In Northern Ireland, which has the lowest breastfeeding rate in Europe (HPA, 2011a), the Health Promotion Agency has run successful campaigns to break down the barriers to breastfeeding in public (HPA, 2011b).
- Longer maternity leave and enabling workplace policies promote breastfeeding (Walker, 2006; Chatterji, 2005; Dyson et al, 2005). The reverse also applies (Chen et al, 2006; Wise et al, 2008; Kosmala-Anderson and Wallace, 2006).

Workplace initiatives:

- A review found that supportive workplaces encourage active commuting (Foster et al, 2006).

**Build capacity in the health workforce by including nutrition, physical activity and NCD prevention in core professional training and continuing professional development.**

- Health professionals should take a lead in educating and working with colleagues, other professionals, and other actors to improve public health. They should also involve people as family and community members, and take account of their personal characteristics in all types of professional

practice. Some interventions have been designed to increase knowledge and also measures of healthy eating (HPA, 2011c; HPA, 2011d; WHO, 2006; French et al, 2004). Interventions to change dietary habits have been shown to more effective when these include nutritional education components (Janer et al, 2002; Ciliska et al, 2000).



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