THE WILBERFORCE SOCIETY

A Marketing Approach to Risk Factor Management in the Prevention of Non-Communicable Diseases in the Developing World

Architha Padma Srinivasan,
Arrash Arya Yassaee,
Alison Andrew, Zoe W Li,
Ira Kleine, Roger Lightwood
& Alex Jackman

Abstract

The burden of non-communicable diseases (NCDs) is often eclipsed by the overriding demands of handling communicable diseases in the developing world. Developing countries are faced with a double burden of disease as they begin to face an increasing encumbrance from NCDs during an earlier phase of economic development than their high-income counterparts. The solution is of course, in the timeworn policy: prevention. However, unlike communicable diseases, the risk factors for NCDs are often flared up by lifestyle choices and change must therefore come from within the people.

This paper recommends that in order to achieve maximum return on investment, governments must recognise that changes in lifestyle are best achieved through a marketing approach, where the environment is modified in ways that make healthier actions the easier choices. This marketing model has been analysed under the 4P framework of marketing, looking at a variety of existing interventions around the world, and thereby constructing novel and exciting policy recommendations.

About The Wilberforce Society

The Wilberforce Society was founded in 2009 by students at the University of Cambridge. It is the University's student-run think tank, and aims to provide a forum for dialogue between students and leading policymakers.

This core aim is achieved by three key functions: the promotion of public policy debate amongst the wider student body, the publishing of students' policy research to a professional audience, and reaching out to policymakers across the UK to work with students on the formulation of new policy.

For further information on the society, its events and the possibility of commissioning policy research, please visit www.thewilberforcesociety.co.uk or email chairman@wilberforcesociety.co.uk.

Follow @TWSCambridge on Twitter.

Foreword

This impressive report prepared by The Wilberforce Society at Cambridge University provides novel and imaginative insights into the global burden of non-communicable diseases. Using a truly multidisciplinary approach to understanding the burden of the problem, its causes and potential solutions the report provides an opportunity to consider how strategies currently available to alleviate the burden of chronic disease might be better applied, and how public policy might be adapted to incorporate solutions built on different perspectives.

We hope this report will stimulate further debate not least within the All Party Parliamentary Group on Global Health.

We congratulate The Wilberforce Society and the authors on this report and their important contribution.

Lord Kakkar

Lord Crisp

Acknowledgements

This report has been constructed using data sources that consist mainly of publications accessible between Dec 2011 and August 2012 on the internet. WHO and World Bank statistics contribute a significant portion to our work, however for national statistics, wherever possible, the authors have looked for independent studies. The report continuously cites various case studies, not simply to base policy recommendations upon, but to highlight the multiple solutions available, reflecting the variety of needs that the developing world has.

The authors choose to focus exclusively from an impartial perspective on what should be conducted, with the assumption that governments and organisations will themselves be best placed to deduce how these policies can be implemented. The authors are a team of 7 (at the time) undergraduate students from the University of Cambridge, with backgrounds in Medicine, Economics, Management and Geography.

Contents

Contents 4

1 Introduction 5
- 1.1 Background . . . 5
- 1.2 Definition of NCDs and a note on mental health . . . 5

2 The Economic Case for Tackling NCDs 6
- 2.1 The Costs of NCDs — a micro analysis . . . 6
- 2.2 Why prevention is better than treatment. . . . 8

3 Prevention — the Risk Factor Approach 10
- 3.1 Tobacco use . . . 10
- 3.2 Alcohol consumption . . . 11
- 3.3 Lack of physical activity . . . 11
- 3.4 Unhealthy diet . . . 12

4 A Note on Financing Healthcare 13
- 4.1 Universal Coverage and Zero Out-of-Pocket Expenditure . . . 13
- 4.2 Devolve Organisational Structures . . . 14

5 WHO Targets and the Marketing Approach 15
- 5.1 Risk factor targets . . . 15
- 5.2 An introduction to the marketing approach . . . 16

6 Existing Interventions and Recommendations 19
- 6.1 Products . . . 19
- 6.2 Price . . . 23
- 6.3 Place . . . 24
- 6.4 Promotion . . . 26

7 Feasibility of Policies 32
- 7.1 Costs . . . 32
- 7.2 Implementation . . . 33

8 Conclusion 34

9 Summary of recommendations 35

Bibliography 37

Chapter 1

Introduction

1.1 Background

The so called *silent epidemic* of non-communicable diseases (NCDs) has received considerable attention from high income countries, where the health industry's successful effort to tackle communicable diseases has shifted the lime-light to NCDs, the current biggest killers (63 % of global deaths) (World Health Organization, 2009a). Their less wealthy counterparts, the low and middle income countries (LMICs), however, are faced with a more complex problem: the double disease burden (Human Development Network, 2011). These developing countries will face a rising rate of NCDs at an earlier phase of economic development, while still spending a significant part of their resources on communicable diseases. The importance of well-planned early intervention in these settings is momentous.

This report analyses the case of NCDs and stands out in the sea of NCD-policy documents by suggesting a holistic model for governments that look at NCD prevention — an approach that highlights the need for marketing principles in the implementation of prevention policies in the case of NCDs — turning policies into life-style brands.

1.2 Definition of NCDs and a note on mental health

Non-communicable diseases (NCDs) are by definition medical conditions that are non-contagious. The four main groups of NCDs, as described by the World Health Organization (WHO), are cardiovascular disease (CVD), cancers, diabetes and chronic lung diseases (World Health Organization, 2011b).

The authors of this paper acknowledge the importance of mental health and while the authors would have liked to extend research into this sector, this has been avoided due to the limited scope of the paper. The authors would like to urge the WHO and future researchers to rectify this gap in the NCD frameworks and would recommend the WHO to acknowledge mental health as a major category of NCD, especially as neuropsychiatric disorders cause the highest loss of disability adjusted life years (DALYs).

Chapter 2

The Economic Case for Tackling NCDs

A recent report estimated that by 2030 cumulative losses in global output (due to reduced productivity and reduced life years) will total $47 trillion, or 5 % of GDP (Chand, 2012). In developing countries the losses may be up to 7 % of GDP (Suhrcke et al., 2006). This striking loss in economic potential owes to the chronic nature of NCDs and their ability to cause sizable premature deaths — 28 % of global deaths due to NCDs are below 60 years of age (World Health Organization, 2011b).

The choice that faces governments is either to assume the costs of healthcare (and other public health interventions) in preventing NCDs, or to accept the future costs associated with treatment and loss of productivity in the working age population as a result of chronic NCDs.

2.1 The Costs of NCDs — a micro analysis

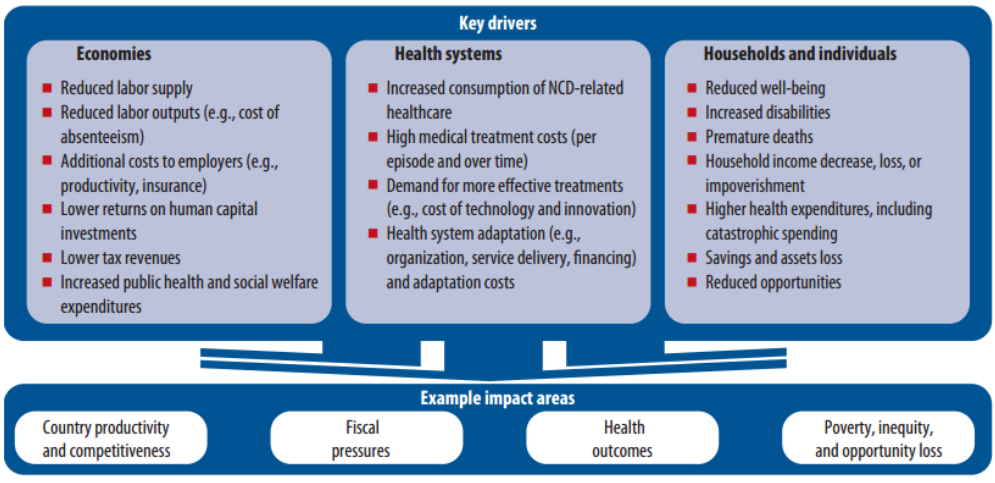

Figure 2.1: NCDs have a significant impact on economies, health systems and households (Source: Nikolic et al., 2011)

Other than costs to the government and the world as a whole (Nikolic et al., 2011), the cost of NCDs at an individual level can be crippling. Obliging individuals to deal with the disease risks the future ability of the individual to remain economically active, as health care costs can be phenomenal and possibly impoverishing in countries with poor government health support or insurance facilities (Xu, 2005).

Costs can be divided into three categories (Xie et al., 2008):

1. Direct costs, defined by resources associated with the provision of an intervention or treatment for an illness,
2. Indirect costs, defined as productivity loss incurred by an illness, and
3. Intangible costs, defined as pain and sufferings of patients because of a disease.

2.1.1 Direct Costs

Crucially, NCDs are particularly expensive to treat as they are often chronic. Depletion of resources is therefore greater than with acute episodes of illness. Further, in LMICs, individual households are more heavily affected as government contribution to healthcare is lower and costs are greater in relation to their means. World Health Organization (2011b) summarised two multi-country studies, saying "it cost on average from two to eight days' wages to purchase one month's supply of at least one cardiovascular medicine."

Engelgau et al. (2011a) state, "In India, about 40 % of household expenditures for treating NCDs is financed by households with distress patterns (borrowing and sales of assets)", showing the large gap in national policy. Catastrophic healthcare payments reinforce poverty, in turn eroding safeguards like social healthcare and insurance, and encouraging further catastrophic expenditure.

2.1.2 Indirect Costs

Due to the long term debilitating nature of NCDs (in comparison to most communicable diseases) the indirect costs incurred by the sufferer are substantially large. Further indirect costs are also incurred by carers. This can have impoverishing bearing on individual households, particularly if the affected individual has been the bread-winner.

Globally, the economic impact of cancer, excluding direct medical costs, totalled $895 billion in 2008 (John & Ross, 2010).

2.1.3 Intangible Costs

By their very definition intangible costs associated with NCDs are difficult to measure or quantify in any meaningful way. One way in which such intangible costs can be quantified is by

measuring the loss of disability adjusted life years (DALYs) [1], where years of life are weighted for the quality of life. Figure 2.2 shows the distribution of DALYs lost due to NCDs, by income groups. In the Americas, NCDs account for more than 62 % of DALYs lost (World Health Organization, 2008, Part 4).

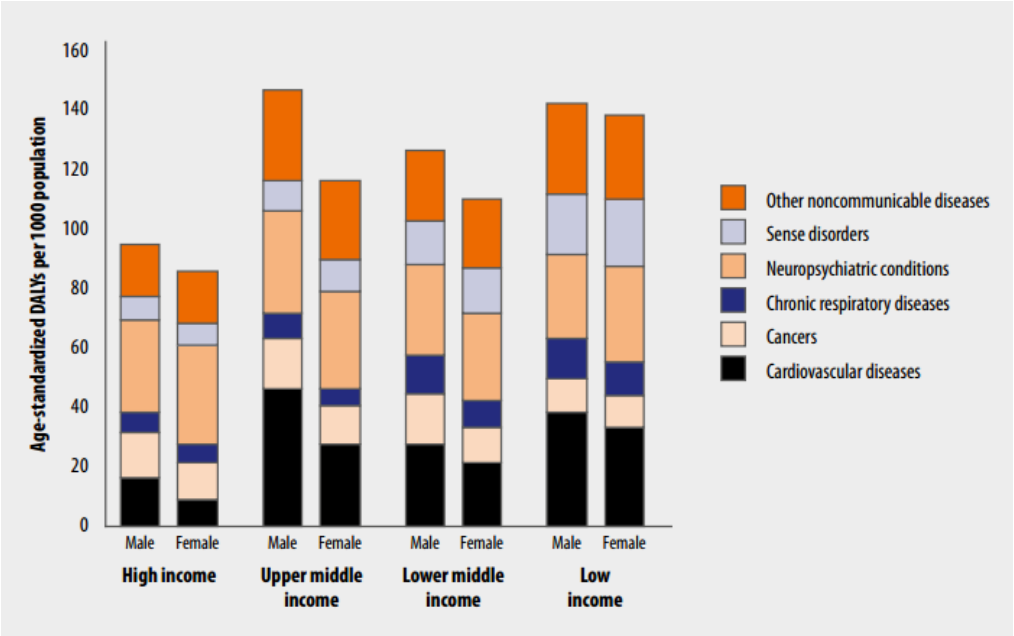

Figure 2.2: Age-standardized DALYs for noncommunicable diseases by major cause group, sex and country income group, 2004 (Source: World Health Organization, 2008)

Recognising that healthcare issues reach beyond treatment (Frank, 1995) is also crucial in determining policy decisions. For example, privatizing healthcare systems in the name of efficiency or cost-effectiveness can worsen the ability of poor households to cope with NCDs. Instead, methods of limiting the financial risks faced by NCD sufferers must be implemented, and then risk factors minimised to reduce NCD prevalence.

2.2 Why prevention is better than treatment.

> "Traditionally, policymakers have been slow to recognise the importance of risk factors and the cost-effectiveness of preventive interventions despite these having greater benefits than therapeutic or palliative interventions in addressing the direct causes of death." — *Walker et al. (2007)*

Since publication of the WHO report on chronic diseases (World Health Organization, 2005) several developing and developed countries have taken action. Some interesting Fitness-on-the-Job campaigns have highlighted the monetary benefits of prevention campaigns with regards to NCDs.

[1] "DALYs for a disease or health condition are calculated as the sum of the years of life lost (YLL) due to premature mortality in the population and the years lost due to disability (YLD) for incident cases of the health condition: DALY = YLL + YLD" — WHO

The following are some examples of business health improvement initiatives:

- Johnson & Johnson health promotion campaign saved $250m in health care costs in the last decade (Berry et al., 2010).
- Citibank's encouragement of employees to complete health risk appraisal, is estimated to save $5 per $1 spent (Engelgau et al., 2011a).
- Pacificare recently started a scheme in which $390 per year was offered to employees to encourage better eating, exercise, reduced smoking and/or drinking (Engelgau et al., 2011a).
- Surveys on the existence and impact of smoking cessation programmes in business within Long Island revealed that 93 % of companies had smoking cessation components and with returns of more than $3 for every $1 spent (Mulligan, 2010).
- H-E-B, a supermarket chain, found that shifting 10 % of its employees from high- and medium-risk status to low-risk generates a 6 to 1 return on investment, from saving treatment costs (Berry & Mirabito, 2011).

Improvements observed through these campaigns are encouraging and demonstrates prevention can be more cost effective than treatment. These examples also emphasise that where infrastructure exists, workplace approaches can successfully tackle NCD burden. If prevention and treatment infrastructures are well implemented, the increase in productivity could offset the costs of the process of changing behaviours and legislation. Ideally, the money saved via prevention could meet or contribute to the costs of caring for those who still develop NCDs. This idea will be analysed in more detail later in the paper.

Chapter 3

Prevention — the Risk Factor Approach

Ezzati et al. (2004) estimate that 72 % of lung cancer, 60 % of chronic obstructive pulmonary disease, 83–89 % ischaemic heart disease and 70–76 % of strokes worldwide can be attributed to 20 risk factors (including some factors more relevant to communicable diseases).

In addition to fixed risk factors such as age, sex and genetics this report identifies and discusses four common behavioural risk factors for NCDs:

1. Tobacco use
2. Alcohol consumption
3. Unhealthy diet
4. Lack of physical activity

3.1 Tobacco use

14 % of global deaths from NCDs over the age of 30 are attributable to tobacco use (World Health Organization, 2012b).

78 % of male deaths due to cancers of the trachea, bronchus and lungs (53 % for females), 42 % of male deaths due to respiratory disease (29 % for females) and 14 % of male deaths due to CVD (6 % for females) is estimated to be due to smoking (World Health Organization, 2012b). This is predicted to rise steeply over the next 50 years unless current patterns of tobacco use change (Jha & Chaloupka, 2000).

Smoking prevalence, however, is on the increase in LMICs (Bump & Reich, 2013), and is more common amongst the poor and uneducated. Policy interventions to control tobacco use are not nearly as widespread in developing countries as in the developed world (World Health Organization, 2003). Globally only 1 % of spending on tobacco control is spent in low and middle income countries (The NCD Alliance, 2011).

3.2 Alcohol consumption

Globally, 4.6 % of DALYs lost is referred to harmful alcohol consumption, not exclusive to NCDs (World Health Organization, 2009b; Parry et al., 2011).

Interestingly, although recorded alcohol consumption is lower in LMICs than developed countries (as many cultures consume less or no alcohol *e.g.* countries with large Muslim populations or a high prevalence of low biological tolerance to alcohol), it is noteworthy that the proportion of unrecorded to total alcohol consumption[2] in low- and lower middle– income countries is 0.479 and 0.389, respectively (2003–05 data, World Health Organization, 2011a). The reason is thought to be home brewing, which is more common in LMICs. Acquiring better data on alcohol consumption could therefore contribute to better policy frameworks in the developing world.

3.3 Lack of physical activity

Physical inactivity increases the risk of mortality by 20–30 %, particularly through cardiovascular and respiratory diseases. Globally, around 31 % of adults (>15yrs) have insufficient physical activity (World Health Organization, 2011b). The World Health Survey 2002–03 (World Health Organization, 2013), found that across developing countries there is a consistent pattern: levels of inactivity in women is far greater than levels in men. The averages (across countries) show women had 50 % higher levels of physical inactivity than men. Policies must therefore pay attention to the inconsistencies in the different segments of the population.

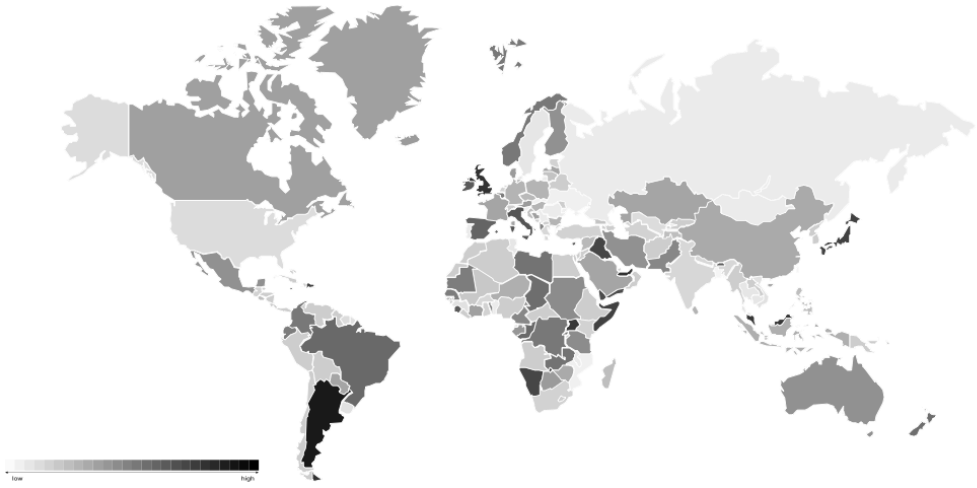

Figure 3.1: Prevalence of physical inactivity, low (light) to high (dark). (Data: World Health Organization, 2013)

[2]Specifically, APC: the adult (>15yrs) per capita amount of alcohol consumed in litres of pure alcohol in a given population.

3.4 Unhealthy diet

Unhealthy diet, along with lack of physical activity can lead to a range of physiological changes such as raised blood pressure, raised cholesterol, raised blood glucose and obesity.

> "In terms of attributable deaths, the leading NCD risk factor globally is raised blood pressure (to which 13 % of global deaths are attributed), followed by tobacco use (9 %), raised blood glucose (6 %), physical inactivity (6 %), and overweight and obesity (5 %)
>
> A 10 % reduction in serum cholesterol in men aged 40 has been reported to result in a 50 % reduction in heart disease within five years; the same serum cholesterol reduction for men aged 70 years can result in an average 20 % reduction in heart disease occurrence in the next five years" — *World Health Organization (2013)*

An estimated 2.3 % of global loss of DALY is due to overweight and obesity (World Health Organization, 2012a). Not only does a high BMI increase risk of CVD and diabetes, it also increases the risk of a variety of cancers, such as breast, colon, kidney and pancreas (Aronne, 2002).

Chapter 4

A Note on Financing Healthcare

In both the developed and developing world resource constraints are often a key reason why high quality health care is not provided. However, as we have argued earlier in this report there is an economic imperative that developing country governments act on the problem of NCDs — if time, effort and resources are not invested in preventing what many in the field are referring to as a global epidemic governments will suffer greater financial losses in the long run due to vast amounts of wasted productivity and potential.

There are a great number of models of financing healthcare provision. While an in-depth analysis is well beyond the scope of this report we include a brief summary of some ideas and concepts that we believe would be both effective and efficient in the developing world:

4.1 Universal Coverage and Zero Out-of-Pocket Expenditure

Currently healthcare coverage in many parts of the developing world is highly inequitable with more than 60 % of health care spending coming from out of pocket payments compared to 20 % in high-income countries (Peters et al., 2008). Out-of-pocket financing can place a catastrophic burden on individuals and families forcing many into poverty (Xu et al., 2003). It also represents economic inefficiencies — people cannot invest in (human) capital formation if precautionary savings for such catastrophic events must be accrued. Forming a system of universal coverage with no out-of-pocket expenditure can include compulsory social insurance, universal healthcare provision via taxation, and voluntary insurance. A mixture of the three could also be tailored to economic groups, perhaps based on taxation bands, though introducing means-assessment in even high-income countries would likely involve the establishment of a considerable bureaucracy. There are also examples of creative methods of raising resources to finance healthcare — Gabon uses a levy on mobile phone use (Stenberg et al., 2010).

4.2 Devolve Organisational Structures

An approach that has been tried to improve the efficiency of healthcare structures is the shift of decision-making control as well as revenue rights and responsibilities from the core of the government to the lower, local levels, as occurred in Argentina and Brazil. In Singapore, public hospitals are highly independent and their accountability is ensured through contracts rather than direct control. The hospitals are in competition with one another for patients and can keep surplus funds. It appears that Zambia is attempting a similar model with its districts. This emphasises that a variety of models can be employed with similar levels of success. Considerations of local needs and resources have to be incorporated into any decision to modify healthcare structures (Balabanova et al., 2013).

Although there are many benefits to autonomy, such an approach must be careful not to become fragmented else effective resource allocation is impeded. Places such as Armenia, Hungary and the UK have stuck to a more hierarchical control structure to avoid this. However, a virtual integration model, where modern communication systems are used to share information rather than orders being issued down a hierarchy, is thought to be a better solution to ensuring fragmentation doesn't occur and reduce efficiency. Bangladesh and Ghana are beginning to implement this approach (World Health Organization, 2000).

Chapter 5

WHO Targets and the Marketing Approach

5.1 Risk factor targets

The World Health Assembly targets for NCD risk factors are: reducing raised blood pressure by 25 %, tobacco use and salt consumption by 30 % each and physical inactivity by 10 % (Beaglehole et al., 2012).

The behavioural changes required are indicated in Table 5.1.

Table 5.1: Behavioural changes related to risk factor control. Data acquired from `http://www.nhs.uk`. Recommendations may vary within different demographics.

Risk factor	Desired behavioural change	Recommendations
Tobacco	Decrease consumption	Safe level: zero
Alcohol	Decrease harmful consumption	Safe daily intake: 3–4 unit (men), 2–3 unit (women)
Physical activity	Increase physical activity	Recommended minimum: 150 min/week moderate-intensity aerobic activity, muscle-strengthening activities on 2 or more days.
Unhealthy diet	Decrease salt, fat, sugar consumption Increase consumption of fruit and vegetables Maintain overall balanced food consumption	Ideal BMI: 18.5–24.9. Daily guideline intake: salt 6 g, sugar 70 g (men) 50 g (women), saturated fat 30 g (men), 20 g (women), trans fats 5 g.

These targets visibly require considerable modifications in lifestyle. To successfully endorse such changes, policy makers must research the drivers of lifestyle choices. Marketing specialists perform such research on a daily basis, and there is an enormous amount of theory that already exists on this matter, which governments can draw from. However, on analysis of several studies and reports, it is painfully apparent that very few initiatives take this holistic

approach. Governments are often sporadic, fragmented and one-dimensional with health-care campaigns. This makes it impossible for them to extract maximum value from the resources spent.

The main recommendation made by this report is that governments must focus on two aspects when creating new policies to support the reduction of NCD risk factors.

1. Innovation in products and marketing
2. Implementation of seamless marketing

(A *product* in this context would be any article or service that can be consumed by the population, which will aid reduction in risk factors.)

Categorising the focus points in this manner will enable the governments to take appropriate initiatives and make coherent support systems.

5.2 An introduction to the marketing approach

When it comes to healthcare campaigns, policy-makers build on concepts that they think will be successful. Often these concepts neither consider the supporting environment nor the effect of competing messages. Hence, while there have been interesting policies in place, with notably rigorous efforts to materialise some, their outcomes have been less than ideal. This made us start looking at this healthcare problem from a marketing angle.

As consumers, we buy products which we believe to have the smallest cost to benefit ratio. And great products win their consumer base through great marketing — interventions that skew the perception of benefits through strategically placed information. This is because benefits can be indirect — *e.g.* in the form of social status.

We noted that by taking a marketing based approach, the communicator (government) is in a position to critically analyse the product (tools for good health), the benefits (well-being) and the costs to the consumer (lifestyle changes, decreased pleasure). This will then allow the government to create value and communicate how the benefits offset the costs to facilitate the population in making healthy choices.

The marketing approach has 4 stages (Luecke, 2006):

1. Segmentation
2. Targeting
3. Positioning
4. Market Planning

We will discuss each of these stages and focus on the fourth stage, market planning, in greater detail.

5.2.1 Segmentation

Blanket policies to tackle the weaknesses of healthcare systems are ineffective, and indeed counterproductive. Different people react and respond in different ways to marketing efforts depending on their needs and values. Therefore, promotional tactics must be based on a clear understanding of the market segments. Segmentation can be based on age, sex, geographical area, educational backgrounds, economic backgrounds *etc.*. By dividing the population in this manner, the marketing strategies can be modified to suit individual segments, and achieve maximum efficacy.

In improving healthcare systems it is important to invest in suitable data collection on risk factors, health conditions and interventions as the success of future policy development is greatly dependent on the quality of the data available. This should include data from household and facilities surveys, focus groups and other qualitative methods, and academic studies, as global data may well not reflect local needs.

5.2.2 Targeting

Some health policies are best targeted at specific groups within the population. This choice can be based on a return on investment (ROI) analysis. ROI is the ratio between the positive outcome that results from the marketing effort and the costs involved in making the effort itself. This type of analysis allows the government to allocate resources appropriately between each of the population segments. For example, cervical cancer campaigns target women of a certain age-group.

5.2.3 Positioning

This is informed by an analysis of current practice and the competing concepts, which de-value our proposition. For example, if the main reason for alcohol consumption is social status or fashion, our communication strategy must look to position alternative choices as being even more fashionable.

5.2.4 Market planning

This looks directly into the channels that can be used in order to achieve the planned position within each of the targeted segments. The approaches must therefore look to convey a profitable exchange to the consumers. To be effective, a "product must be tailored to the customer's needs, priced realistically, distributed through convenient channels, and actively promoted to customers." (Lovelock & Wirtz, 2010)

This can be considered under the 4P framework (Sargeant, 2009):

1. Product — What is being marketed. This includes both the physical product and the experience that it offers.

2. Price — How much it costs. Costs are not limited to money — this may include time, resources *etc.*. A price that consumers are willing to pay depends on the perception of the product; this can be exploited in cases where the strategy is to market a particular product negatively.

3. Place — Where the product is available: If products and services are easily accessible, they are more likely to be used. In the case of products like support-groups, discreet placement may be of high value.

4. Promotion — How the benefits are conveyed. This includes direct communication, advertising and publicity. This can involve a number of techniques and strategies, some of which will be outlined below.

Often, governments need to consider competing products (those which increase risk factors). By considering all four aspects of marketing simultaneously, governments can create seamless policy interventions, which compete effectively with unhealthy life-style choices. In some cases, governments can also consider *negative marketing* for competing products. I.e. make innovation in unhealthy products expensive, increase prices, hinder accessibility and restrict or counter promotions.

In the next section of the report we will summarise a variety of innovative products and marketing tactics that have been used by government and private bodies in the past. By means of a table, we will also illustrate how each of these tactics falls into the 4P framework of marketing and can be used to complement each other. If implemented well, this approach will help governments acquire greater value from the resources they spend.

Chapter 6

Existing Interventions and Recommendations

Table 6.1 summarises a variety of interventions, considered under the 4P framework. Some of the interventions are considered in greater detail under each of the four market planning aspects.

6.1 Products

Products must look to make breakthroughs which easily diffuse into the current market. Therefore there must be emphasis on products that act as context-matched alternatives, like non-alcoholic beverages and electric cigarettes, and products that integrate into the modern lifestyles and facilitate healthier choices, such as smart phone apps that provide support.

The health care market is large and engineers and researchers must be encouraged to invest time in innovative ideas. The current education system will play a vital role in the progress of this industry, by nurturing interest in this area.

6.1.1 Recommendations

- **Annual calls for student proposals for health care products**
- **Research subsidies for businesses looking to make health care products**

Table 6.1: Summary of interventions considered under the 4P framework

Desired Behavioural Change	Product		Price (monetary and other costs)	Place	Promotion
Decreased Consumption of Tobacco	Desired	Electric Cigarettes, Nicotine patches, Rehabilitation programmes	Government subsidies	Placed on tobacco counters, Accessibility through all hospitals/pharmacies	Motivational material providing support to those quitting, Make products discrete to avoid stigma
	Undesired	Tobacco	Taxation, Smoking bans	Restrictions on where/to whom cigarettes can be sold	Laws against tobacco advertisement and product placement in media
Decreased Consumption of Alcohol	Desired	Alcohol free beverages, Rehabilitation programmes		Placed in bars/ restaurants/clubs/grocery shops	Innovative packaging techniques (*e.g.* J2O)
	Undesired	Alcohol	Taxation	Restrictions on the hours of alcohol sale, Restrictions on drinking in public places	Laws against alcohol advertisement and product placement in media

continued...

...continued

Desired Behavioural Change	Product		Price (monetary and other costs)	Place	Promotion
Increased Physical Activity	Desired	Gym, Sports (general), Games involving physical activity (*e.g.* Nintendo Wii), Cycling/walking to work or school	Government subsidies, Health insurance discounts	City planning techniques to make walking/cycling a more attractive option, Better facilities for women, Better cycle park facilities, Showers at work for cyclists/pedestrians	Motivational campaigns using sporting heroes *etc.*.
	Undesired	Car to work/school	Insurance premiums, Car park fees	Peak-time road closures	
Decrease intake of unhealthy food substances (salt, sugar, saturated fats, trans-fats)	Desired	Low sodium salt alternatives, Nutroceuticals, Healthy cereal alternatives	Government subsidies	Healthier checkout counters, Restaurant menus, Healthy alternatives placed on the same shelves	Healthy-eating guidelines, Recipe suggestions on packaging and advertisements
	Undesired	Salt, Sugar, Saturated fats, Trans fats	Taxation		

continued...

...continued

Desired Behavioural Change	Product		Price (monetary and other costs)	Place	Promotion
Maintain overall balance in food consumption	Desired	Fruits and Vegetables, Healthy-recipes cookbooks, Smart phone apps (*e.g.* Food diaries)	Government subsidies	Restaurant menus, Healthier checkout counters, Healthy alternatives placed on the same shelves	5 a day campaign, Promotion of a healthy diet using celebrity chefs *etc.*, Educational campaigns about the dangers of raised blood pressure
	Undesired				
Maintain balance of biological risk factors (blood pressure/ cholesterol/blood sugar)		Anti-hypertensive drugs, Cholesterol lowering drugs, Personal BP monitors, Personal glucose monitors	Government subsidies	Accessibility of drugs through local hospitals/pharmacies	Mobile health clinics that can test blood pressure/cholesterol in remote and rural areas
Other	Desired	Hep-B immunisation to prevent liver cancer, Papilloma virus vaccines for cervical cancer	Government subsidies	Accessibility of drugs through local hospitals/pharmacies	Mobile health clinics

6.1.2 Existing interventions

mWellcare

mWellcare (South Asia Network for Chronic Disease, 2009) is an innovative health care monitor developed for evaluation in India which exploits the huge availability of mobile technology on the subcontinent. The platform collects data from individuals, administrated by a non-physician worker, on risk factors and uses algorithms to estimate that individuals risk of CVD, mental health problems and alcohol disorders. The platform then gives the individual guidance (based on NICE guidelines) on the actions that should be taken to manage risk. The idea is that the system will be very cheap to run — the only on-going costs will be updating guidelines and maintaining the servers — and there will be additional profit making opportunities through the sale of customised services to those who have the ability to pay.

txt2stop

The *txt2stop* smoking cessation programme (Free et al., 2011) has recently been evaluated in the UK and led to a doubling of successful quit rates in a six month period. An automated system sends participants 5 messages (motivational and informative) a day up to a pre-determined quit date and then continues to send participants messages to motivate the quit attempt and to give tips on how to deal with cravings *etc.*. There is also a facility for the participant to text either "crave" or "lapse" to receive tips on dealing with both of these situations as well as motivation not to quit the attempt. Follow up interviews found participants found the real time delivery very useful as well as motivational messages informing them of the health benefits they'd already accrued through not smoking. Since the system is automated it costs little to run at scale and may be very applicable to a developing country environment.

6.2 Price

Governments are in a favourable position when it comes to price. Not only can they subsidise businesses and incentivise consumption of desirable products, they can also tax products that lead to increased risk factors. Monetary costs play a great role in the perception of costs, as they are tangible and easy and quick to analyse. Policies aimed at improving population diet must be realistic and realise that unless forced to create healthier foodstuffs by regulation, the food industry will ultimately act in its own interest.

6.2.1 Recommendations

- **Encourage health insurance bodies to consider discounts for individuals who make healthy choices.**
- **Expand government taxes and subsidies to a greater range of undesirable/desirable food stuffs**

6.2.2 Existing interventions

Food subsidies

Economic research suggests that relative increases in price of unhealthy foods and decreases in price of healthy foods could significantly improve biological risk factors. For example, Powell et al. (2007) suggest that a 10 % price increase in fast foods would lead to a 6 % decrease in adolescent obesity. Many governments in the developing world already subsidise some foods, but an introduction of higher taxes for foods deemed unhealthy, such as sugar-sweetened beverages, is a more recent idea, currently being tested in some American states.

Tobacco taxation

In developing countries, data of cigarette prices and consumption rates indicate a strong correlation between increasing prices and decreasing consumption (Townsend, 1996). Ross & Al-Sadat (2007) deduced a 25 % price increase would reduce cigarette consumption by 3.37 %, 165 fewer tobacco-related lung cancer deaths per year and a 20.8 % increase in the government excise tax revenue in Malaysia. Lee et al. (2004) showed that 1 % tax increase in Taiwan brought about an average annual 13.27 packs per person (10.5 %) reduction in cigarette consumption. It has been shown that younger age groups show greater price elasticity than older age groups (Chaloupka et al., 2002). This is thought to be because they have less disposable income, less rigid life-styles, and lower addiction rates, which makes it easier for them to break away from more expensive choices.

However, individual smoking profiles of some countries suggest that tobacco taxes can be ineffective. For example, 40 % of tobacco consumption in India is through *bidi* smoking which is not taxed; in certain areas, the prevalence of chewing/applying tobacco is higher than smoking it (John et al., 2009).

Incentives: an air miles approach

Discovery in South Africa has a programme called *vitality*, which encourages participants to stay healthy through an *air miles* approach. Participants earn points by exercising, which can be used to reduce premiums or even on exotic holidays. Participants are less likely to fall ill and, if they do, they spend a shorter time in hospital, making participation "more than pay for its rewards" (The Economist, 2011).

6.3 Place

The accessibility of a product affects consumption, and is therefore an important consideration. If healthy alternatives are well placed, they can act as reminders and help individuals make the healthier choices (Chance et al., 2012). It is important to also remember that the *place* of a product does not simply refer to its location. Often, the environment created to facilitate access can be crucial — *e.g.* accessibility of sports for women.

6.3.1 Recommendations

- **Consider barriers to accessibility of products in each market segment and implement appropriate policies, *e.g.* accessibility of healthy foods for office-goers in urban settings**
- **Encourage food-outlets, such as restaurants, to introduce low-calorie menus**

6.3.2 Existing interventions

Checkouts — checked out

This report by the Children's Food Campaign, UK (Haigh & Durham, 2012), describes how strategic placement of junk food along check out queues promotes the consumption of unhealthy foods and recommends policies against these displays. Similarly, placing fruit near the checkout-counters of super markets instead of processed snacks was shown to improve consumption of fruit, and this is now being advocated in several developed countries, including the UK.

Accessibility of sports for women

In many countries, particularly developing countries where much physical activity is undertaken out of doors in communal spaces, there is a marked lack of female-only facilities where women can exercise in a way that fits in with any modesty or safety concerns. Some governments have implemented strategies to encourage uptake of physical activity by women in a manner that addresses the cultural, social and physical barriers in place. Below are some examples (Sport for Development and Peace International Working Group, 2008):

Egypt: Creating Sports Facilities for older women In order to encourage older women to participate in sport and physical activity the Egyptian government has created 37 sports centres only for use by women over the age of 35.

Rwanda: Increasing the valuation of girls within mixed team sports Rwanda's Youth Sports Association set up the Esperance football program. Under the programme's rules, teams must have equal numbers of girls and boys and only girls can score goals. The aim is to ensure girls are valued within sport. The programme has increased the participation of girls in football throughout the country.

Pakistan: Giving positive sporting experiences to Afghan refugee girls The SportWorks project in Pakistan has created play activities to build skills around communication, conflict prevention and leadership. Of the 5000 children involved 70 % are girls.

Kenya: Meeting girls' safety concerns to encourage participation in football When safety concerns were raised as a barrier to participation, The Mathare Youth Sports Association Girls' Football Programme provided security for travelling to and from practices and games.

6.4 Promotion

The only method by which a sustained focus on healthier options will be created is from consumer demand. Thus the focus of any policy which does not directly regulate the food industry must be to focus on changing the demand side of the food market away towards healthier foodstuffs.

To influence consumer decisions, promotional tactics must look to highlight the need for the product, make information about the product's benefits accessible and make the product more visible than other alternatives. In the case of NCDs, a major problem in developing countries is the lack of awareness. Intervention studies have shown the benefit of education in reducing the prevalence of risk-factors. Raising awareness of the dangers of smoking using cinema slides, posters, folk dramas, radio programs and newspaper articles, as well as cessation camps, group discussion and individual counselling, have proven effective in India; after a 5-year follow up period, 3 % in the control group versus 9 % in the intervention cohort stopped using tobacco (of every type), and for chewers in particular 10.2 % of men and 14.9 % of women chewers in the intervention cohort had stopped (Gupta & Ray, 2003).

These influences can be through several media — direct advertising, word-of-mouth promotion, opinion leaders *etc.*. Word-of-mouth promotion has been found to be more influential than printed media on purchasing decisions and so, the way to promote a consumer community could be to use strong marketing. Many lifestyle choices are rooted in societal values and habits and intervention schemes that can engage with communities can be successful agents of change. Such targeted approach would allow for the flexibility and innovation needed to deal with the specific needs and cultural barriers within each community, creating pathways for successful change. Further, amidst younger generations, peer-group involvement can encourage changes in lifestyle, a phenomenon known as *positive peer pressure*.

6.4.1 Recommendations

- **Improve access to information to raise awareness**
- **Use multi-media promotion**
- **Celebrity endorsement**
- **Facilitate new community organisations that work for health initiatives**
- **Involve and empower the youth to create their own health initiatives**
- **Treat workplaces as communities of their own, and use their infrastructure to promote changes in lifestyle**

6.4.2 Recommended interventions in detail

Text message nudges and radio reminders

This idea can be applied to the NCD case through health-message campaigns: short and snappy weekly tips on how to live healthier/health facts that can be read quickly. For example, "XX people world-wide die from smoking-related diseases such as cancer every day"

Entertainment: TV soaps; movies *etc.*

The entertainment sector could also be used to educate about the realistic nature of the causes and prognosis of chronic diseases. Incorporating realistic scenarios into a story-line would be easy and a cost-effective way of educating whole populations of the devastating consequences for the individual and their family.

Several soaps in developing countries have been criticised for portraying health problems quite unrealistically, often promoting unhelpful or mistaken first-aid techniques. This popular source of entertainment and information is a key factor to be dealt with in the task of tackling NCD-myths. For example, in the UK, any health-issues raised in an episode are followed up with a number at the end of the show that can be called for advice.

Celebrity involvement

Campaigns could be supported by local celebrities, such as movie actors or sport-stars, to raise the hype and impact of advertisements. Local cooking programmes with celebrity chefs, or sporting events with national champions could help to raise awareness and also encourage participation.

This could also have considerable benefit in tackling the problem of peer-pressure, especially amongst young people (*e.g.* by making saying "no" to smoking "cool"). This can also counter the effect of celebrity endorsement of unhealthy products through product placements in movies or soaps. Personal accounts of celebrity's health-related experiences could also be useful in dispelling health-myths;

Educational videos

These have the advantage of overcoming communication barriers due to illiteracy. Further, videos have the greatest scare-factor. These can be distributed to schools as part of the curriculum. They can also be displayed in hospital/GP waiting areas, where people are most likely to take the time to pay attention.

Cost should not be a problem with the media proposals as once set up, automatic weekly text messages/radio adverts do not require any human input. Incorporating more realistic medical situations into soap story-lines may require greater initial effort to appropriately train script-writers/producers *etc.*., but once done, the sector could be self-regulating. Celebrity involvement could cost a considerable amount, but there are well-known, altruistic sportsmen/women who would volunteer to do such adverts free-of-charge.

Fitness champions at the workplace

Awareness of the importance of physical activity can be raised through the workplace. Large businesses must have health intervention programmes as part of their corporate social responsibility profiles. Electing employees to be the "sports officer for the month" who can organise different physical activities for their colleagues can be a great bottom-up approach. Fitness champions can be trained by local health workers, who can introduce and guide new ideas and keep track of larger geographical areas.

Community health competitions

Competitions need not be traditional and based on speed or strength. They could encourage collective competition between communities or physical activity groups. They could compete based on the number of participants, collective amount of time spent running/walking, collective cholesterol levels *etc.*. This will encourage peer support and the involvement of older members of the community, who are at greater risk of NCDs.

Youth action teams

The emphasis here is on the autonomy of young people — the youths themselves collaborate to plan out new initiatives that they want to try out and implement them in their own communities.

Fitness in schools

Empowerment of children is crucial to sustainable success. Many of the lifestyle choices made by the adolescent population will likely set the trajectory for their future health, social and economic outcomes. Educating and empowering them in the fight against NCDs will not only benefit their generation, but also set a firm base for future generations too. Ideas could be introduced in the form of food journals or poster competitions.

Total community development initiative

Community-based finance systems have the potential to empower poor communities in self-help and in taking control of improving their living conditions. Coupling this to health-related factors may provide an effective incentive for people to reduce their alcohol or tobacco consumption. Therefore, community schemes in which everyone contributes the money they would have spent on alcohol or tobacco to a community kitty to raise enough money for a recreational facility (such as: football pitch/snooker table/swimming pool) could be successful.

6.4.3 Existing interventions

Food labelling in the UK

Consumers appear to appreciate labels, and research indicates those who read them tend to use them to make purchase decisions and encourage more helpful diets (Hawkes, 2004). However they are predominantly used by certain groups (women, youth *etc.*.) and it requires an educated population to interpret. How understood the system is can be contested: in the UK only 75 % of consumers understand the traffic light system (Lobstein et al., 2007).

Text messaging and consumer information

Rettie et al. (2005) show not only 89 % attention to information in text message advertisements, but also 5 % rate of forwarding of ad messages to friends. It also showed positive brand attitude changes due to increased spontaneous and prompted brand recall.

Be Clear on Cancer campaign

The UK government's *Be Clear on Cancer* campaign (Richards, 2012), which ran until the end of March 2012, included TV, radio, press, bus and online advertising, as well as a series of events across the country. They included shopping centre road shows and Race for Life with Cancer Research UK. The campaign was also supported by information packs made available through GP practices. This coordinated use of media is said to have been the reason for success.

Time to Change campaign

Celebrity support was the main marketing strategy used by this campaign in the UK. The involvement of big industry names not only brought attention to mental health discrimination, but also helped alleviate stigma associated with it (Henderson et al., 2012).

The North Karelia Project

In Finland, a particularly innovative modification was the switch from dairy to berry farming in the local region to support the dietary changes in the community, in an effort to reduce coronary heart disease (Puska & Ståhl, 2010).

South Korea

One exercise in South Korea specifically targeted housewives in encouraging traditional cooking (Kim et al., 2000). This proactive policy is believed to have had a role in the nationally low fat intakes and obesity rates. By targeting lead family members who makes dietary decisions (*e.g.* mothers), families can be encouraged to plan a healthier diet and make informed choices about their food.

The Agita São Paulo Project

This is a multi-level community based intervention programme launched in 1996 specifically tailored to promote physical activity in São Paulo, Brazil. Their promotional tactics included mass media; promotional giveaways; mega-events; creating access to sporting facilities; influencing policies, statutes and laws; improving physical environments; and working with health professionals to prescribe physical activity (Matsudo et al., 2006).

Fitness on the job campaigns

Fitness on the Job campaigns such as those run by Johnson & Johnson, Citibank and Pacificare, emphasise the important of using the private sector capacity of dealing with NCDs as the formal labour market expands (Berry et al., 2010). Johnson & Johnson estimates of long-term impacts on employees involved in such a scheme average a $224.66 reduction in medical care expenditure per employee per year. Specific health aspects can also be tackled, with equal success. Surveys on the existence and impact of smoking cessation programmes in business within Long Island revealed that 93 % of companies had smoking cessation components and that universally, returns of more than $3 exist for every $1 spent on such programmes.

6.4.4 Overarching principles

These form the basis of successful community interventions.

Planning Initial research to gauge the suitability of specific interventions within each community and the resources required to facilitate lifestyle changes will be crucial to success. This very much relies on the local knowledge and insight of the population themselves — including the residents, youth groups, local healthcare workers, community decision makers, organisations, volunteer groups, businesses *etc.*.

Cross-networking Enabling free sharing of information and efforts between health groups, local organisations, community groups, formal decision makers, informal opinion leaders, and relevant industries from the beginning enables a multi-faceted approach and is critical to community interventions. Cultivating their support and commitment will not only allow interventions to be tailored specific to each community but will also strengthen the commitment and energy to building a cohesive strategy.

Self-help Empowerment of individuals within the community in preventative self-care, management and promotion of health ensures bottom-up exploitation of intervention programmes

Sustainability Community interventions must be continued in the long term to gain full benefits of change. On-going monitoring and evaluation of interventions, alongside long-term commitment at both the community and national level is therefore vital for prolonged success and encouragement.

6.4.5 Other practical considerations

Slow rate of savings-accumulation People can be disheartened if they do not see results quickly. This could be overcome through periodic reviews of progress being made to motivate participation.

Conflicting interests *e.g.* while alcohol misuse has been shown to contribute to NCD risks, the drinks companies often provide local employment and tax revenue for governments. This powerful conflict of interest means that encouraging developing countries to adopt policies that, in the short-term, appear to disadvantage them becomes difficult.

Cultural barriers In some countries, it is culturally unacceptable to discuss/tackle alcohol as a public health/social problem, a problem particularly predominant in Islamic societies.

Variation The large differences in the drivers of consumption and consumption patterns would require policies to be adjusted to suit each country's needs — it is important that policy ideas are backed up by relevant research within the communities and are piloted before large-scale implementation.

Chapter 7

Feasibility of Policies

"Change is not made without inconvenience, even from worse to better"

— *Richard Hooker*

The propositions in this report aim to add value to policy efforts. The potential viability of any project will rely on the ability to face costs and challenges involved in the implementation process. A key characteristic of this report is that propositions that are made aim to increase the effectiveness of resources already employed, by approaching the problem from all dimensions.

7.1 Costs

The cost of provision is often cited as the key reason why innovative and exciting ideas in public health promotion and prevention are not implemented. We foresee that many readers of this report may find our report naive; and they may believe that our ideas are creative yet represent an affordable luxury for countries where governments often have difficulties financing the most basic public services. We would beg to differ and would argue that effective healthcare should be viewed as an investment in the people of a country. The same people that the country is relying on to provide economic growth and development.

Whilst resource constraints do play an important role in limiting health care provision in developing countries effective health care may not always be as expensive in lower and middle — income countries as is often imagined. Often the most effective health care is very labour intensive and since labour is cheaper in developing countries it is often much less costly to provide such care in low and middle income countries than in the developed world. This argument particularly applies to many of the policy recommendations based on health promotion and preventions outlined in this paper. Indeed, Sen (1999) argues that there is no need for low-income countries to wait for economic growth to provide universal effective health care to their citizens. Several countries have proven this point — China, Costa Rica, Kerala (India) and Sri Lanka achieved levels of health comparable to those in wealthier countries yet at a significantly lower cost (Balabanova et al., 2013). Kerela, a state in southern India, has a GDP per capita of £825 yet has a life expectancy at birth of 74 years — higher than far more affluent countries like Russia, Hungary, Turkey and Brazil (Sauvaget et al., 2011).

Given over 20 % of global health resources are currently wasted, and interventions to tackle NCDs cost little over $60 per capita by 2015 (reported by the WHO for the Taskforce on Innovative International Financing for Health Systems), we also recommend that health services regularly audit their services to examine efficiency and how changes to resource allocation could improve service provision.

This report contends that a marketing approach can be both an efficient and cost effective solution to the problem of NCDs in the developing world. We contend that a marketing approach would be a pertinent method of addressing NCDs since it addresses the wide and diverse aspects of the problem in a holistic manner. We foresee that employing a joined up approach would be more effective than targeting individual areas separately since initiatives could complement one another and overlapping could be limited.

7.2 Implementation

The success of the policies outlined in this report depends on the effectiveness of their implementation. This in turn requires successful leadership from government and other organisations and successful working between government departments, organisations and stakeholders.

The unstable political environment in several developing countries can lead to variable response from local authorities involved in implementation, thus affecting outcomes. Similarly, many recommendations require strong relationships between the government, commercial entities and other stakeholders. At present, such relationships are not always effective and stable in the long term, which can affect the implementation plans. More critical issues such as corruption can introduce substantial bias in policy decisions. However, recognising these problems during the planning stage enables the policy makers to take constraints into account and act accordingly when designing policies and projects.

Making training a major component of project plans can help maintain sufficient stock of human capital to ensure sustainability. As illustrated in the case studies in the report, developing countries are able to take advantage of technological advancements to support policy implementation. Issues associated with decentralisation can also be tackled through the use of communication technologies, which allow effective administration and supervision of outcomes across large geographical areas. Technology has revolutionised healthcare, right from organisational issues, health promotion and information governance. Effective use of such technology can aid the marketing policies that have been set out in this report.

Chapter 8

Conclusion

"The whole is greater than the sum of its parts" — *Aristotle*

This report emphasises the need for a multi-faceted and balanced method to policy design in tackling NCDs in the developing world, recognising that many government initiatives have been sporadic and disjointed in their approach, struggling to achieve maximum output from the resources employed. During the current economic climate, especially in the developing world, where resources are scarce, budgets must be carefully allocated to ensure the best return on investment. The marketing approach to risk factor management suggests a robust framework that takes advantage of the synergism between the management of product, price, place and promotion — creating a pathway to more sustainable outcomes from government interventions in the health sector.

Chapter 9

Summary of recommendations

- Educate policy makers of the advantages of a marketing approach to health care interventions.
- Facilitate implementation teams with access to professional marketers, who will have an insight in analysing and overcoming challenges in marketing lifestyle products.
- Build relationships with local and national businesses that may mutually benefit from supporting healthcare interventions, such as the media.
- Encourage the education system to engage the youth in the formation of healthcare products and policy implementation plans.
- Improve data collection across the nation, in order to support future interventions and avoid wastage.
- Encourage all policy project managers to document and evaluate interventions (successful and unsuccessful), in order to create a substantive database of evidence to draw on.
- Initiate annual calls for student proposals for health care products
- Subsidise research for businesses looking to make health care products
- Encourage health insurance bodies to consider discounts for individuals who make healthy choices
- Expand government taxes and subsidies to a greater range of undesirable/desirable food stuffs
- Consider barriers to accessibility of products in each market segment and implement appropriate policies. *e.g.* accessibility of healthy foods for office-goers in urban settings
- Encourage food-outlets, such as restaurants, to introduce low-calorie menus
- Improve access to information to raise awareness

- Use multi-media promotion
- Text message nudges and radio reminders
- Use of entertainment: TV soaps, movies *etc.*.
- Educational videos
- Take advantage of celebrity endorsement
- Facilitate new community organisations that work for health initiatives to cross-network
- Total community development initiatives
- Inter-community health competitions
- Involve and empower the youth to create their own health initiatives — Youth Action Teams
- Fitness in schools
- Treat workplaces as communities of their own, and use their infrastructure to promote changes in lifestyle — including the use of ***fitness champions***

Bibliography

Aronne, L. J. (2002). Obesity as a disease: etiology, treatment, and management considerations for the obese patient. *Obesity research* **10** (S2), 95S–96S. ISSN: 1071-7323.
DOI: 10.1038/oby.2002.201.

Balabanova, D., Mills, A., Conteh, L., Akkazieva, B., Banteyerga, H., Dash, U., Gilson, L., Harmer, A., Ibraimova, A., Islam, Z., Kidanu, A., Koehlmoos, T. P., Limwattananon, S., Muraleedharan, V., Murzalieva, G., Palafox, B., Panichkriangkrai, W., Patcharanarumol, W., Penn-Kekana, L., Powell-Jackson, T., Tangcharoensathien, V., & McKee, M. (2013). Good Health at Low Cost 25 years on: lessons for the future of health systems strengthening. *Lancet*. ISSN: 1474-547X.
DOI: 10.1016/S0140-6736(12)62000-5.

Beaglehole, R., Bonita, R., Horton, R., Ezzati, M., Bhala, N., Amuyunzu-Nyamongo, M., Mwatsama, M., & Reddy, K. S. (2012). Measuring progress on NCDs: one goal and five targets. *Lancet* **380**(9850), pp. 1283–5. ISSN: 1474-547X.
DOI: 10.1016/S0140-6736(12)61692-4.

Berry, L, Mirabito, A, & Baun, W (2010). What's the hard return on employee wellness programs? *Harvard Business Review* (December).
URL: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2064874

Berry, L. L. & Mirabito, A. M. (2011). Partnering for prevention with workplace health promotion programs. *Mayo Clinic proceedings. Mayo Clinic* **86**(4), pp. 335–7. ISSN: 1942-5546.
DOI: 10.4065/mcp.2010.0803.

Bump, J. B. & Reich, M. R. (2013). Political economy analysis for tobacco control in low- and middle-income countries. *Health policy and planning* **28**(2), pp. 123–33. ISSN: 1460-2237.
DOI: 10.1093/heapol/czs049.

Chaloupka, F. J., Grossman, M., & Saffer, H. (2002). The effects of price on alcohol consumption and alcohol-related problems. *Alcohol Research & Health* **26**(1), pp. 22–34. ISSN: 1535-7414.
URL: http://www.ncbi.nlm.nih.gov/pubmed/12154648

Chance, Z., Dhar, R., Frederick, S., Kichlu, R., Ratelis, E., & Waters, J. (2012). *Influencing Health Choices at Work*. White Paper. Golden Valley, MN: OptumHealth.
URL: http://www.cci.som.yale.edu/content/influencing-health-choices-work-white-paper-written-ycci-and-optumhealth

Chand, S. (2012). *Silent Killer, Economic Opportunity: Rethinking Non-Communicable Disease*. January. Chatham House.
URL: http://www.chathamhouse.org/publications/papers/view/181471

Engelgau, M. M., Okamoto, K., Rajan, V., El-Saharty, S., Rosenhouse, S., & Kudesia, P. (2011a). *Capitalizing on the Demographic Transition*. Washington DC: The World Bank. ISBN: 978-0-8213-8724-5.
DOI: 10.1596/978-0-8213-8724-5.

Engelgau, M., Rosenhouse, S., El-Saharty, S., & Mahal, A. (2011b). The economic effect of noncommunicable diseases on households and nations: a review of existing evidence. *Journal of health communication* **16** (S2), pp. 75–81. ISSN: 1087-0415.
DOI: 10.1080/10810730.2011.601394.

Ezzati, M., Lopez, A. D., Rodgers, A., & Murray, C. J. L., eds. (2004). *Comparitive Quantification of Health Risks*. Vol. 1–3. Geneva: World Health Organization. ISBN: 92-4-158031-3.
URL: http://www.who.int/healthinfo/global_burden_disease/cra/en/

Frank, A. W. (1995). *The Wounded Storyteller: Body, Illness and Ethics*. Chicago, IL: The University of Chicago Press. ISBN: 978-0-226-25993-2.

Free, C., Knight, R., Robertson, S., Whittaker, R., Edwards, P., Zhou, W., Rodgers, A., Cairns, J., Kenward, M. G., & Roberts, I. (2011). Smoking cessation support delivered via mobile phone text messaging (txt2stop): a single-blind, randomised trial. *Lancet* **378**(9785), pp. 49–55. ISSN: 1474-547X.
DOI: 10.1016/S0140-6736(11)60701-0.

Gupta, P. C. & Ray, C. S. (2003). Smokeless tobacco and health in India and South Asia. *Respirology* **8**(4), pp. 419–431. ISSN: 1323-7799.
DOI: 10.1046/j.1440-1843.2003.00507.x.

Haigh, C & Durham, S (2012). *Checkouts checked out - how supermarkets promote junk food to children and their parents.* London: Sustain: The alliance for better food & farming.
URL: http://www.sustainweb.org/publications/?id=212

Hawkes, C. (2004). *Nutrition labels and health claims: the global regulatory environment.* Geneva: World Health Organization.
URL: http://www.who.int/iris/handle/10665/42964

Henderson, C., Corker, E., Lewis-Holmes, E., Hamilton, S., Flach, C., Rose, D., Williams, P., Pinfold, V., & Thornicroft, G. (2012). England's time to change antistigma campaign: one-year outcomes of service user-rated experiences of discrimination. *Psychiatric Services* **63**(5), pp. 451–7. ISSN: 1557-9700.
DOI: 10.1176/appi.ps.201100422.

Human Development Network (2011). *The Growing Danger of Non-Communicable Diseases.* September. Washington DC: The World Bank.

Jha, P. & Chaloupka, F., eds. (2000). *Tobacco Control in Developing Countries.* Oxford University Press. ISBN: 978-0-19-263246-3.

John, R. M., Sung, H.-Y., & Max, W (2009). Economic cost of tobacco use in India, 2004. *Tobacco control* **18**(2), pp. 138–43. ISSN: 1468-3318.
DOI: 10.1136/tc.2008.027466.

John, R. M. & Ross, H. (2010). Economic Value of Disability Adjusted Life Years Lost to Cancers: 2008. *Journal of Clinical Oncology* **28**(s15), p. 1561.
URL: http://meetinglibrary.asco.org/content/41385-74

Kim, S, Moon, S, & Popkin, B. M. (2000). The nutrition transition in South Korea. *The American journal of clinical nutrition* **71**(1), pp. 44–53. ISSN: 0002-9165.
URL: http://www.ncbi.nlm.nih.gov/pubmed/10617945

Lee, J.-M., Hwang, T.-C., Ye, C.-Y., & Chen, S.-H. (2004). The effect of cigarette price increase on the cigarette consumption in Taiwan: evidence from the National Health Interview Surveys on cigarette consumption. *BMC public health* **4** p. 61. ISSN: 1471-2458.
DOI: 10.1186/1471-2458-4-61.

Lobstein, T., Landon, J., & Lincoln, P. (2007). *Misconceptions and misinformation: The problem with Guideline Daily Amounts (GDAs).* London: National Heart Forum.
URL: http://nhfshare.heartforum.org.uk/RMAssets/Reports/NHFGDAReport.pdf

Lovelock, C. H. & Wirtz, J. (2010). *Services Marketing.* 7th. Prentice Hall. ISBN: 978-0136107217.

Luecke, R. (2006). Market Customization: Segmentation, Targeting, and Positioning. In: *Marketer's Toolkit: The 10 Strategies You Need To Succeed.* Boston, MA: Harvard Business School Publishing. Chap. 4. ISBN: 978-1422160848.

Matsudo, V., Matsudo, S., Andrade, D., Araujo, T., Andrade, E., Oliveira, L. C. de, & Braggion, G. (2006). Promotion of physical activity in a developing country: The Agita São Paulo experience. *Public Health Nutrition* **5**(1a). ISSN: 1368-9800.
DOI: 10.1079/PHN2001301.

Mulligan, P. (2010). Corporate smoking cessation on Long Island. *Health promotion practice* **11**(2), pp. 182–7. ISSN: 1524-8399.
DOI: 10.1177/1524839908317666.

Nikolic, I. A., Stanciole, A. E., & Zaydman, M. (2011). *Chronic Emergency : Why NCDs Matter.* Health, Nutrition and Population (HNP) Discussion Paper July. Washington DC: The World Bank. ISBN: 2025223234.

Parry, C. D., Patra, J., & Rehm, J. (2011). Alcohol consumption and non-communicable diseases: epidemiology and policy implications. *Addiction (Abingdon, England)* **106**(10), pp. 1718–24. ISSN: 1360-0443.
DOI: 10.1111/j.1360-0443.2011.03605.x.

Peters, D. H., Garg, A., Bloom, G., Walker, D. G., Brieger, W. R., & Rahman, M. H. (2008). Poverty and access to health care in developing countries. *Annals of the New York Academy of Sciences* **1136** pp. 161–71. ISSN: 0077-8923.
DOI: 10.1196/annals.1425.011.

Powell, L. M., Slater, S., Mirtcheva, D., Bao, Y., & Chaloupka, F. J. (2007). Food store availability and neighborhood characteristics in the United States. *Preventive medicine* **44**(3), pp. 189–95. ISSN: 0091-7435.
DOI: 10.1016/j.ypmed.2006.08.008.

Puska, P. & Ståhl, T. (2010). Health in all policies — the Finnish initiative: background, principles, and current issues. *Annual review of public health* **31** pp. 315–28. ISSN: 1545-2093. DOI: 10.1146/annurev.publhealth.012809.103658.

Rettie, R., Grandcolas, U., & Deakins, B. (2005). Text message advertising: Response rates and branding effects. *Journal of Targeting, Measurement and Analysis for Marketing* **13**(4), pp. 304–312. ISSN: 0967-3237. DOI: 10.1057/palgrave.jt.5740158.

Richards, M. (2012). *Be Clear on Cancer — Update on activity*. Letter. Department of Health. URL: https://www.gov.uk/government/publications/be-clear-on-cancer-update-on-activity

Ross, H. & Al-Sadat, N. A. M. (2007). Demand analysis of tobacco consumption in Malaysia. *Nicotine & tobacco research* **9**(11), pp. 1163–9. ISSN: 1462-2203. DOI: 10.1080/14622200701648433.

Sargeant, A. (2009). *Marketing Management for Nonprofit Organizations*. 3rd. Oxford University Press. ISBN: 978-0199236152.

Sauvaget, C., Ramadas, K., Fayette, J.-M., Thomas, G., Thara, S., & Sankaranarayanan, R. (2011). Socio-economic factors & longevity in a cohort of Kerala State, India. *The Indian journal of medical research* **133** pp. 479–86. ISSN: 0971-5916. URL: http://www.ncbi.nlm.nih.gov/pubmed/21623031

Sen, A. (1999). *Development as Freedom*. Oxford University Press. ISBN: 978-0192893307.

South Asia Network for Chronic Disease (2009). *m-WELLCARE: an integrated mHealth system for the prevention and care of chronic diseases*. URL: http://sancd.org/display.php?id=97

Sport for Development and Peace International Working Group (2008). *Harnessing the Power of Sport for Development and Peace: Recommendations to Governments*. United Nations Office on Sport for Development & Peace. URL: http://www.un.org/wcm/content/site/sport/home/unplayers/memberstates/sdpiwg_keydocs

Stenberg, K., Elovainio, R., Chisholm, D., Fuhr, D., Perucic, A.-M., Rekve, D., & Yurekli, A. (2010). *Responding to the challenge of resource mobilization-mechanisms for raising additional domestic resources for health*. Geneva: World Health Organization.

Suhrcke, M., Nugent, R. A., Stuckler, D., & Rocco, L. (2006). *Chronic Disease: An Economic Perspective*. November. London: Oxford Health Alliance. ISBN: 9780955401818.

The Economist (2011). Getting on the treadmill. *The Economist*. URL: http://www.economist.com/node/21531407

The NCD Alliance (2011). *NCDs, Tobacco Control and the FCTC*. Briefing Paper. FCTC Publishing.

Townsend, J. (1996). Price and consumption of tobacco. *British Medical Bulletin* **52**(1), pp. 132–142. ISSN: 0007-1420. DOI: 10.1093/oxfordjournals.bmb.a011521.

Walker, N., Bryce, J., & Black, R. E. (2007). Interpreting health statistics for policymaking: the story behind the headlines. *Lancet* **369**(9565), pp. 956–63. ISSN: 1474-547X. DOI: 10.1016/S0140-6736(07)60454-1.

World Health Organization (2000). *The World Health Report 2000: Health Systems : Improving Performance*. Geneva: World Health Organization. ISBN: 978-92-4-156198-3.

World Health Organization (2003). *Policy recommendations for smoking cessation and treatment of tobacco dependence*. Ed. by V. d. C. e. Silva. Geneva: World Health Organization. ISBN: 92-4-156240-4. URL: http://www.who.int/tobacco/resources/publications/tobacco_dependence/en/

World Health Organization (2005). *Preventing Chronic Diseases: A Vital Investment*. World Health Organization. ISBN: 978-92-4-156300-0.

World Health Organization (2008). *The global burden of disease: 2004 update*. Geneva: World Health Organization. ISBN: 978-92-4-156371-0.

World Health Organization (2009a). *2008-2013 Action plan for the global strategy for the prevention and control of noncommunicable diseases*. Geneva: World Health Organization. ISBN: 978-92-4-159741-8.

World Health Organization (2009b). *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks*. Geneva: World Health Organization. ISBN: 978-92-4-156387-1.

World Health Organization (2011a). *Global Status Report on Alcohol and Health 2011*. Geneva: World Health Organization. ISBN: 978-92-4-156415-1. URL: http://www.who.int/substance_abuse/publications/global_alcohol_report/en/

World Health Organization, ed. (2011b). *Global Status Report on Noncommunicable Diseases 2010*. Geneva: World Health Organization. ISBN: 978-92-4-156422-9.

World Health Organization (2012a). *Prevention and control of NCDs: Guidelines for primary health care in low-resource settings*. Geneva: World Health Organization. ISBN: 978-92-4-154839-7.

World Health Organization (2012b). *WHO Global Report on Mortality Attributable to Tobacco*. Geneva: World Health Organization. ISBN: 978-92-4-156443-4.
URL: http://www.who.int/tobacco/publications/surveillance/rep_mortality_attributable/

World Health Organization (2013). *Global Health Observatory Data Repository*.
URL: http://www.who.int/gho/database/

World Health Organization (2013). *Noncommunicable diseases Fact sheet*.
URL: http://www.who.int/mediacentre/factsheets/fs355/en/

World Health Organization (2013). *Physical Inactivity: A Global Public Health Problem*.
URL: http://www.who.int/dietphysicalactivity/factsheet_inactivity/

Xie, F., Thumboo, J., Fong, K.-Y., Lo, N.-N., Yeo, S.-J., Yang, K.-Y., & Li, S.-C. (2008). A study on indirect and intangible costs for patients with knee osteoarthritis in Singapore. *Value in health : the journal of the International Society for Pharmacoeconomics and Outcomes Research* **11** (S1), S84–90. ISSN: 1524-4733.
DOI: 10.1111/j.1524-4733.2008.00371.x.

Xu, K. (2005). *Distribution of health payments and catastrophic expenditures methodology*. Geneva: World Health Organization.
URL: http://www.who.int/iris/handle/10665/69030

Xu, K., Evans, D. B., Kawabata, K., Zeramdini, R., Klavus, J., & Murray, C. J. L. (2003). Household catastrophic health expenditure: a multicountry analysis. *Lancet* **362**(9378), pp. 111–7. ISSN: 1474-547X.
DOI: 10.1016/S0140-6736(03)13861-5.