

The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait

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**THE CASE FOR INVESTMENT
IN PREVENTION AND CONTROL OF
NON-COMMUNICABLE DISEASES
IN
KUWAIT**



مجلس الصحة
لدول مجلس التعاون
Gulf Health Council



UN INTERAGENCY
TASK FORCE ON NCDs



@un_ncd



World Health
Organization





**THE CASE FOR INVESTMENT
IN PREVENTION AND CONTROL OF
NON-COMMUNICABLE DISEASES
IN
KUWAIT**

Prepared by

Ministry of Health Kuwait
Gulf Health Council
United Nations Development Programme
World Health Organization
Secretariat of the UN Inter-Agency Task Force on NCDs

February 2021



مجلس الصحة
لدول مجلس التعاون
Gulf Health Council



Why invest?



IN 2019, AROUND 4,768 PEOPLE DIED FROM THE FOUR MAJOR NON-COMMUNICABLE DISEASES (NCDs), CAUSING

65%

OF ALL DEATHS IN KUWAIT.



NEARLY ONE IN FIVE ADULTS ARE DYING FROM NCDs BEFORE THE AGE OF 70.



<70 YEARS



NCDS COST KUWAIT KD 1.6 BILLION (US\$ 5.2 BILLION) EVERY YEAR, EQUIVALENT TO

3.9% OF GDP IN 2019.

43.4%

OF THE MAJOR NCDS,
**CARDIOVASCULAR
DISEASE**

CAUSED THE MOST DEATHS IN 2019.

13.5%

FOLLOWED BY
CANCER

7.4%

DIABETES

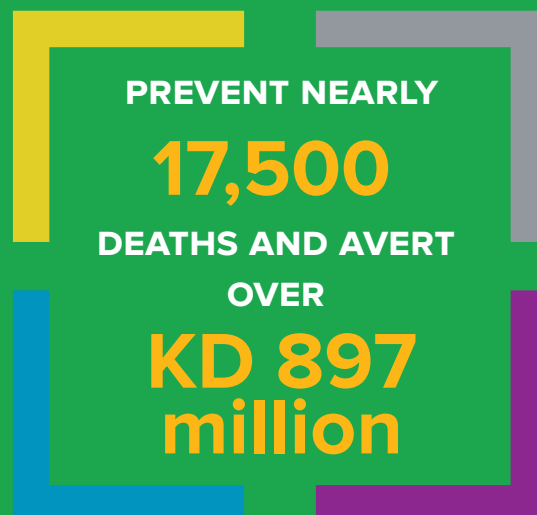
0.9%

AND
**CHRONIC RESPIRATORY
DISEASE**

Investing now

IN FOUR PROVEN AND HIGHLY COST-EFFECTIVE
policy and clinical interventions

WOULD



OR (US\$ 3 BILLION) IN ECONOMIC LOSSES BY 2034.

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ABBREVIATIONS

BMI	body mass index
CNPS	Community Nutrition Promotion Sector
COPD	chronic obstructive pulmonary disease
COVID-19	coronavirus disease 2019
CRD	chronic respiratory diseases
CVD	cardiovascular disease
DALY	disability-adjusted life-year
GATS	Global Adult Tobacco Survey
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GHC	Gulf Health Council
GYTS	Global Youth Tobacco Survey
ICA	Institutional Context Analysis
IMF	International Monetary Fund
KD	Kuwaiti Dinar
MENA	Middle East and North Africa
MI	myocardial infarction
MOH	Ministry of Health
MPOWER	monitor tobacco use and prevention policies; protect people from tobacco smoke; offer help to quit tobacco use; warn people about the dangers of tobacco; enforce bans on tobacco advertising, promotion and sponsorship; raise taxes on tobacco [WHO package]
NCD	non-communicable disease
NRT	nicotine replacement therapy
ROI	return on investment
SSBs	sugar-sweetened beverages
STEPS	WHO STEPwise approach to surveillance
UNDP	United Nations Development Programme
UNIATF on NCDs	United Nations Inter-Agency Task Force on Non-communicable Diseases
WHO	World Health Organization

EXECUTIVE SUMMARY

Overview

In 2019, the four major NCDs – cancer, cardiovascular diseases, diabetes and chronic respiratory diseases – caused 65 percent of deaths in Kuwait, and nearly one in five Kuwaitis die from NCDs before the age of 70. The premature death, morbidity and disability associated with NCDs are more than a health issue – they negatively affect socio-economic development and long-term fiscal sustainability of government and public services.

As in many parts of the world, NCDs in Kuwait are causing a surge in costs expended by the Government to provide healthcare, early retirement benefits, social care and welfare support needs. Moreover, NCDs contribute to reduced economic productivity when people in the workforce die prematurely and work at lower capacity due to illness. NCDs are exacerbated by COVID-19 and vice versa. NCDs and their risk factors – behavioural, environmental and metabolic¹ – increase, to varying degrees, susceptibility to COVID-19 infection and the likelihood of severe and fatal outcomes. NCDs therefore contribute to worse outcomes from COVID-19 including overwhelmed health systems, which, in turn, threaten to disrupt access to life-saving NCD services.

This report results from Kuwait's engagement in 2017 with the United Nations Interagency Task Force on the Prevention and Control of Non-communicable Diseases which provided recommended actions to implement United Nations Political Declaration on NCDs. Kuwait's Ministry of Health made it a priority to conduct the NCD investment case presented here, which provides evidence that NCDs reduce economic output and that Kuwait would benefit from investing in four policy intervention packages that reduce exposure to behavioural risk factors (tobacco use, harmful use of alcohol, unhealthy diet and physical inactivity). It also examines investments in key clinical interventions for the most prevalent NCDs – cardiovascular diseases and diabetes. The findings show that addressing NCDs is a matter of urgency to ensure significant social and economic returns.

Beyond the four policy packages modelled, the investment case discusses a range of issues that affect health and sustainable development in Kuwait. These include air pollution, the food system and urban design (see **Recommendation 4**), implementation of other cost-effective interventions such as bans on trans-fats and health taxes on sugar (see **Table 2**) and other health-harming products, and integrated responses to NCDs and COVID-19 (see recommendations and **Annex 1**). The policy and clinical interventions analysed in this investment case represent critical first actions needed to fundamentally reverse NCD trends in Kuwait. The responsibility for action, as well as the benefits that come from it, fall beyond the health sector alone.

¹ This includes metabolic risk factors such as overweight and obesity, behavioural risk factors such as alcohol and tobacco use as well as physical inactivity, and environmental risk factors such as air pollution (Annex 1).

Main findings

1 NCDs cost the Kuwait economy KD 1.6 billion (US\$ 5.2 billion), equivalent to 3.9 percent of its 2019 GDP.

These annual costs include a) 815 million KD (US\$ 2.66 billion) in healthcare expenditures, and b) 789 million KD (US\$ 2.56 billion) in lost productive capacities due to premature mortality, disability and workplace losses. The productivity losses from current NCDs account for 49 percent of all NCD-related costs – indicating that NCDs severely impede development in Kuwait beyond health. Multisectoral engagement is required for an effective response, and other sectors benefit substantially from supporting NCD investments.

2 Cardiovascular disease had the greatest impact on the economic burden of NCDs in Kuwait, causing 989 million KD in economic losses, or 62 percent of the total burden.

Indirect costs, including reduced workforce participation and loss in national productivity, contributed more than direct healthcare spending to the total CVD burden (70 percent and 30 percent respectively).

3 The four major NCDs killed around 4,768 people in Kuwait in 2019, with nearly one in five adults dying before the age of 70.

Cardiovascular disease is the leading cause of NCD deaths in Kuwait, accounting for 41 percent of all deaths in the country, followed by cancer (15 percent), other NCDs (10 percent). Diabetes and chronic respiratory diseases contribute the least to NCD deaths, each at 3 percent.

By acting now, the Government of Kuwait can reduce the burden of NCDs. The investment case findings demonstrate that investing in four cost-effective and proven policy packages would, over the next 15 years:

1 Avert KD 897,366,990 (US\$ 3 billion) in economic output losses.

The NCD prevention measures stimulate economic growth by ensuring that fewer people drop out of the workforce due to premature mortality and miss days of work due to disability or sickness.

2 Save 17,402 lives and reduce the incidence of disease.

Enacting the CVD and diabetes clinical intervention package would prevent the most deaths (9,278) followed by the salt reduction package (5,610). About 90 percent of the mortality averted for all interventions (17,402 deaths averted) would be premature deaths averted (15,656 of people <70 years of age).

3 Provide economic benefits (KD 897,366,990) that significantly outweigh the costs (KD 342,799,778) of implementation.

WHO-recommended 'best buy' intervention packages all have a positive economic return. The salt reduction package has the highest return on investment (8.2), followed by tobacco control (3.1), CVD and clinical interventions (1.8), and diet and physical activity (1.5).

Recommendations

1 > Invest and scale-up

Invest in new and scale-up current cost-effective clinical and population-based interventions, enhancing efficiency in the health sector and public sector fiscal sustainability. Increase taxes on health-harming products (tobacco, alcohol, sugar-sweetened beverages) and shift subsidies from health-harming products (e.g. polluting fuels) to health-promoting ones.

2 > Engage and collaborate

Strengthen multisectoral, whole-of-government and whole-of-society action on NCDs and increase public awareness of NCDs and their risk factors.

3 > Monitor and account

Strengthen monitoring and evaluation and accountability across sectors.

4 > Innovate

Implement novel policy approaches and test innovative solutions to increase utilization of existing services and incentivize healthy behaviour.

5 > Build back better

Ensure that prevention and control of NCDs is a central element of the COVID-19 response and recovery.



'It's therefore not a question of whether countries can afford to implement the best buys, but whether they can afford not to. We have all the pieces to save lives we just have to put them into place. The question is, will we? It's a question we must answer with the decisions we make today, and every day.'

Tedros Adhanom Ghebreyesus,
Director-General, WHO





INTRODUCTION

This report provides an overview of the current context of NCDs in Kuwait, describes the model used to estimate the NCD burden and policy benefits, and offers recommendations to improve NCD prevention and control. It discusses current levels and patterns of tobacco and salt consumption, physical inactivity, dietary patterns and the existing prevalence of metabolic risk factors within the population.

INTRODUCTION

Kuwait has made considerable progress in advancing the prevention and control of non-communicable diseases (NCDs) over the past several years. Still, NCDs remain the leading cause of mortality in Kuwait and their prevalence continues to rise. NCDs harm not only health in Kuwait but also the country's sustainable development.

The Joint Mission of the United Nations Interagency Task Force on the Prevention and Control of Non-communicable Diseases (UNIATF on NCDs) to Kuwait in 2017 found NCDs cause 73 percent of all deaths in Kuwait; this investment case estimates that the four major NCDs – cancer, cardiovascular diseases, diabetes and chronic respiratory diseases – account for 65 percent of all deaths. Cardiovascular disease alone accounts for about 43 percent of NCD deaths in Kuwait. The UNIATF Joint Mission in 2017 found that people in Kuwait have a 12percent chance of dying prematurely – that is, before the age of 70 years – from one of the four main NCDs. United Nations Sustainable Development Goals target 3.4 aims to reduce premature mortality from NCDs by one third by 2030.

The impact of NCDs on human health is clear, but this is only one part of the story. NCDs also result in high health-care costs as well as productivity losses. When individuals die prematurely, the labour output they would have produced in their remaining working years is lost. In addition, people who have a disease are more likely to miss days of work (absenteeism) or to work at a reduced capacity while at work (presenteeism). NCDs are estimated to cost over US\$ 30 trillion from 2011 to 2030, representing 48 percent of 2010 global GDP. [1] For individuals and governments, spending to treat health problems that could otherwise have been prevented can mean significant opportunity costs, including reduced investment in education, transport projects or other forms of human or physical capital that can produce long-term returns.

The COVID-19 pandemic is exacerbated by NCDs in Kuwait as elsewhere, adding to the urgency with which they must be addressed. In response to the pandemic, the Government of Kuwait has created an internet resource with COVID-19 information [3] and the Ministry of Health of the State of Kuwait has been active on social media via twitter to share not only COVID-19 updates, but also public health messaging to slow the spread of the virus. [4] NCDs and their risk factors – behavioural, environmental and metabolic² – increase both susceptibility to infection and the likelihood of severe symptoms and death. People living with NCDs are also at risk of adverse health outcomes due to disruption of prevention and treatment services for NCDs. The prevention and control of NCDs must therefore be a central element of the COVID-19 response and recovery. **Annex 1** briefly discusses interactions between NCDs and COVID-19 with integrated actions the Kuwait government can take.

2 This includes metabolic risk factors such as overweight and obesity, behavioural risk factors such as alcohol and tobacco use as well as physical inactivity, and environmental risk factors such as air pollution.

The 2017 UNIATF visit to Kuwait resulted in recommended actions in line with the Framework for Action to implement the United Nations Political Declaration on NCDs of the WHO Regional Committee for the Eastern-Mediterranean. **Annex 5** outlines the recommendations made during the 2017 UNIATF visit. As part of the 2017 mission, WHO and the Ministry of Health discussed the value of investigating the economic case for NCD action in Kuwait. Recommendations from the Joint Mission to Kuwait included conducting an NCD investment case. A multiagency, multidisciplinary team undertook initial data collection and analysis in Kuwait from 16–18 December 2019 to complete a three-tier economic NCD investment case, complemented by an institutional and context analysis (more information in the Methods section).

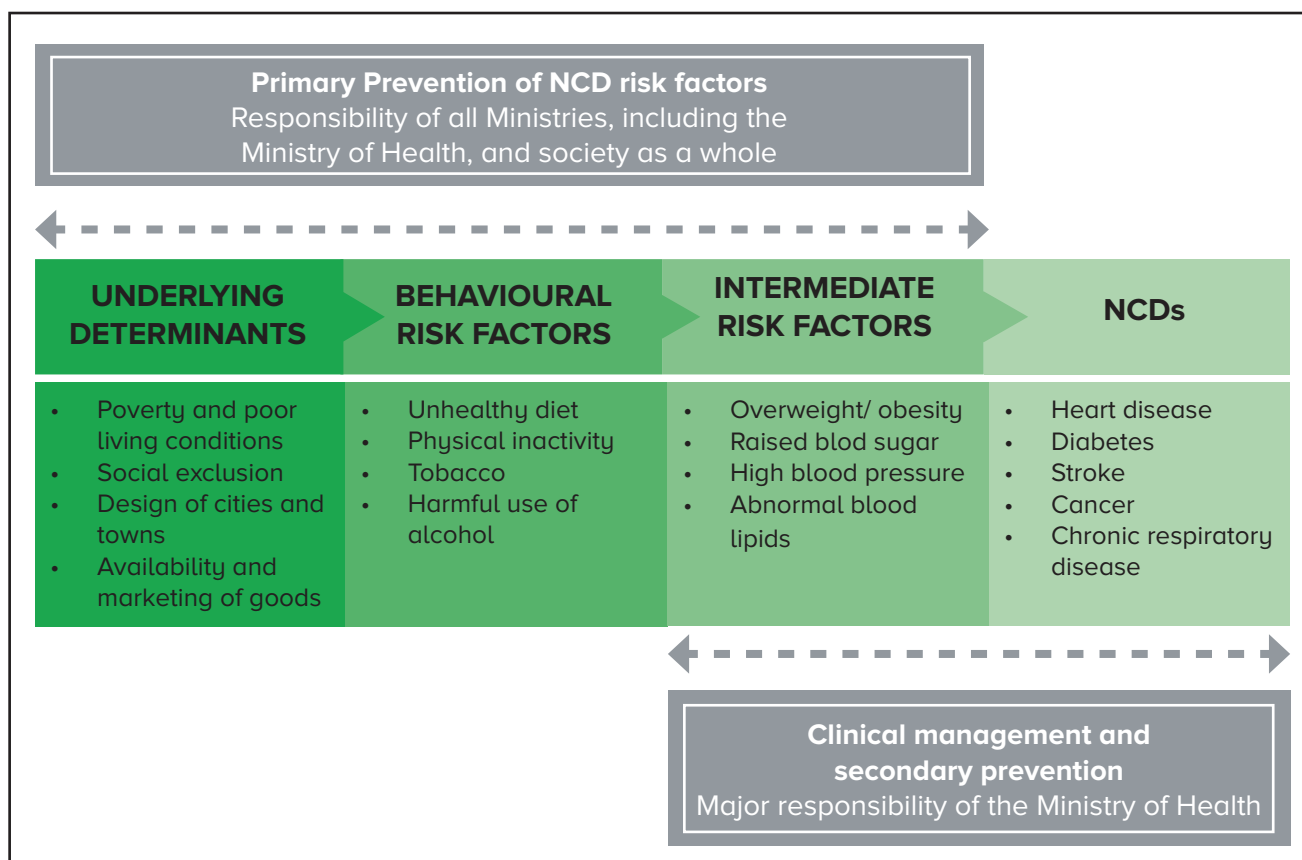
Box 1. Kuwait receives WHO Award in recognition of tobacco control [5] [6]

Kuwait boasts a strong history in tobacco control. Kuwait signed the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2006. In the following years Kuwait adopted the Labelling of Tobacco Product Packages standard in 2011, Smoke-Free Places decree in 2012 and Article 56 of the Environment Protection Act in 2014, regulating the advertisement of tobacco products. In 2013 Kuwait signed the Protocol to Eliminate Illicit Trade and ratified it later in 2019. Kuwait has achieved high levels of implementation on several tobacco control policies including monitoring tobacco use, bans on tobacco advertising, promotion and sponsorship, and provision of nicotine cessation services. In 2020, the Secretary-General of Kuwait Society for Preventing Smoking and Cancer, Anwar Borahma, was recognized by WHO with the no-tobacco award for his efforts in advancing strong tobacco control policies in Kuwait.

High human and economic costs of NCDs highlight the need to reduce their burden in Kuwait. The risk of developing NCDs can be reduced by modifying four types of behaviour (tobacco use, harmful use of alcohol, unhealthy diet and physical inactivity) and metabolic risk factors such as high blood pressure and cholesterol. According to the World Health Organization, at least 80 percent of premature heart disease, stroke, and diabetes and 40 percent of cancers can be prevented by eliminating risk factors. [7] Reducing risk for NCDs is possible through a healthy diet, regular physical activity and avoidance of tobacco products. Reducing people's exposure to environmental risks, such as outdoor air pollution, can also reduce deaths and disability from NCDs.

Figure 1 illustrates the determinants and risk factors that drive the development of NCDs, many of which are beyond the control of the health sector alone.

Fig. 1. Determinants of NCDs and responsibilities for response



WHO developed a menu of highly cost-effective policy options, referred to as ‘best buys’, and an additional set of cost-effective interventions to assist Member States to reduce the NCD burden. These interventions are laid out under the Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013–2030. These best buys were updated at the 2017 World Health Assembly and include measures to reduce behavioural and metabolic risk factors known to lead to NCDs as well as clinical interventions to prevent and treat disease.[9]

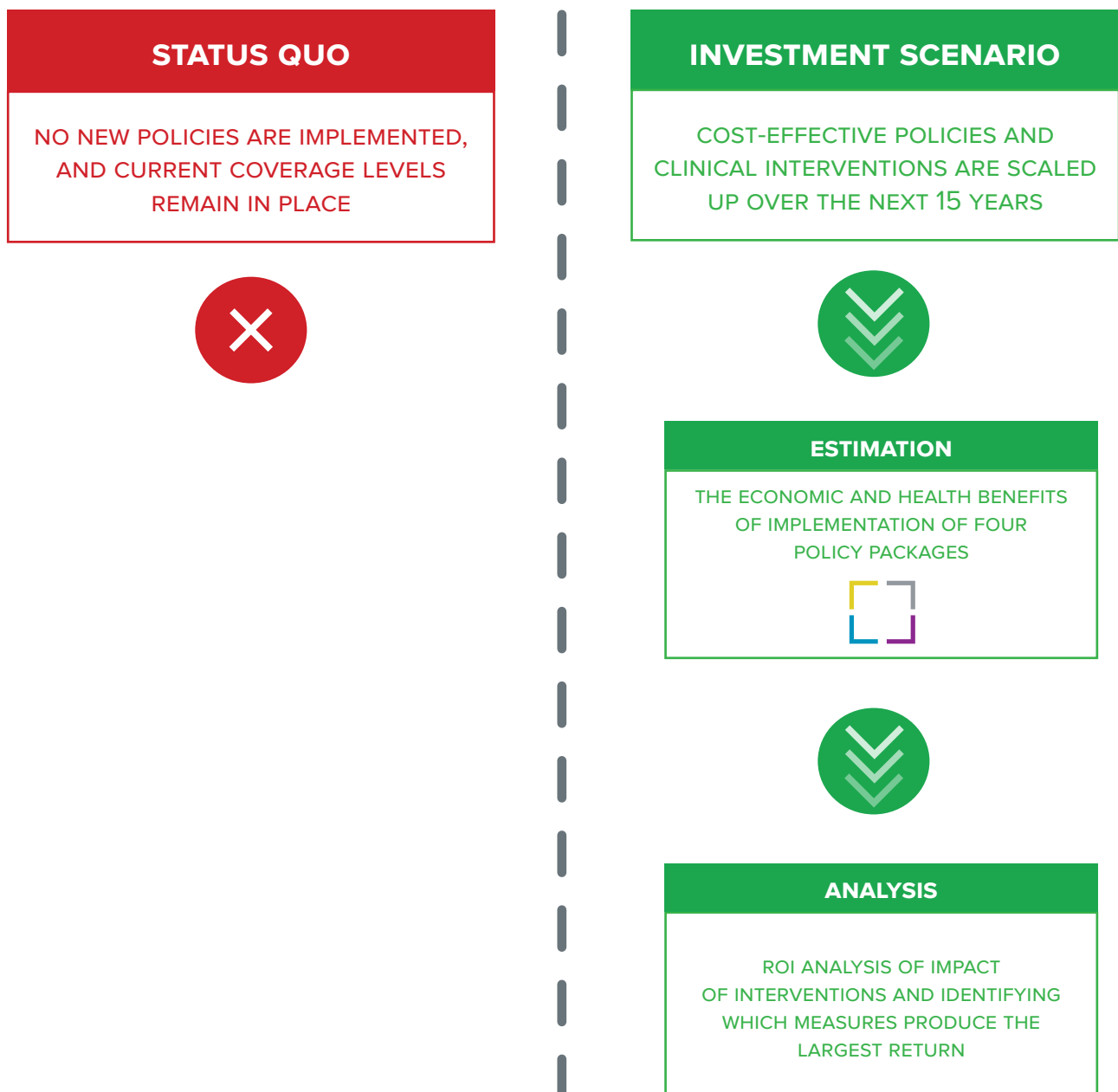
Despite the strong evidence of their cost-effectiveness, WHO best buys remain under-implemented globally. This is partly due to the hidden costs of NCDs (i.e. the economic impact) often being overlooked. Therefore, quantifying the costs of interventions to prevent and control NCDs, as well as their returns on investment, has been a high-priority request from Member States. Investment cases are designed to help countries make their own economic rationale for action to prevent and control NCDs.

The investment case models the health and economic costs of NCDs as well as the potential gains from scaled-up action, over five and 15 years. It compares two scenarios:

1. the **STATUS QUO**, in which no new policies are implemented, and current coverage levels remain in place, and
2. the **INVESTMENT SCENARIO**, where cost-effective policies and clinical interventions are scaled up over the next 15 years.

The investment case model

The investment case models the health and economic costs of NCDs as well as the potential gains from scaled-up action, over five and 15 years. It compares two scenarios:



The investment case estimates the economic and health benefits from implementing the four recommended policy packages over five and 15 years. The analysis uses the WHO OneHealth Tool, an epidemiology-based population model developed by United Nations partners. The investment case identifies which measures can produce the largest health and economic returns for Kuwait. It analyses the following four packages of interventions and policies:



This report provides an overview of the current context of NCDs in Kuwait, describes the model used to estimate the NCD burden and policy benefits, and offers recommendations to improve NCD prevention and control. It discusses current levels and patterns of tobacco and salt consumption, physical inactivity, dietary patterns, and the existing prevalence of metabolic risk factors within the population. The **situation analysis** outlines the health system and institutional arrangements in Kuwait and details the current implementation level of evidence-based policies and clinical interventions. The **methods** section describes the development of the model, how it estimates the NCD burden and how it predicts the economic and health benefits of policy implementation. The **results** section describes the outcomes of the model, while the conclusion section further discusses the findings and the recommendation section offers suggestions specific to the context of Kuwait. The report also includes **five Annexes** to provide further guidance on effective NCD prevention and control measures to support Kuwait sustain improvements in population health.



'It's therefore not a question of whether countries can afford to implement the best buys, but whether they can afford not to. We have all the pieces to save lives we just have to put them into place. The question is, will we? It's a question we must answer with the decisions we make today, and every day.'

Tedros Adhanom Ghebreyesus,
Director-General, WHO

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NCDS AND RISK FACTORS IN KUWAIT

This section provides an overview of the most prevalent behavioural risk factors for NCDs in Kuwait: tobacco use, high salt intake, poor diet and physical inactivity. It also discusses the prevalence of metabolic risk factors, including raised blood pressure, high cholesterol, obesity and diabetes; and it reviews environmental risk factors as well.

NCDS AND RISK FACTORS IN KUWAIT

As a result of sustained economic growth and successful government efforts to treat and prevent communicable diseases, Kuwait has transitioned to an epidemiological profile typical of high-income countries, marked by an intense NCD disease burden. Today, approximately 65 percent of deaths in Kuwait are due to the four major NCDs – cardiovascular disease (43.4 percent), but also cancer, diabetes, and chronic respiratory diseases. [10] Cardiovascular diseases (e.g. ischemic heart disease and stroke), in particular, have risen dramatically over the last ten years and are the leading cause of NCD deaths in Kuwait. Other major contributors to NCD-related deaths are cancer³ (13.5 percent) and diabetes (7.4 percent). [11]

Kuwait nationals and expatriates in Kuwait (around 70 percent of population were expatriates in 2014) are exposed to multiple behavioural risk factors for NCDs, particularly tobacco consumption, low physical activity, high rates of overweight and obesity. A STEPS survey was conducted in 2014 to survey Kuwaitis aged 18–69 years.

This section provides an overview of behavioural risk factors for NCDs in Kuwait: tobacco use, high salt intake, poor diet and physical inactivity. It also discusses the prevalence of metabolic risk factors, including raised blood pressure, high cholesterol, obesity and diabetes.⁴



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Tobacco use

According to the most recent WHO STEPwise approach to surveillance (STEPS) survey conducted in Kuwait in 2014, 20.5 percent of Kuwaitis are tobacco smokers. [12] WHO estimates for 2017 expect this proportion to have declined to around 17percent. [5] Smoking is a characteristically male habit, and as many as 39.2 percent of males smoke, a proportion of smokers twelve times larger than that of women, reaching only 3.3 percent. This pattern is repeated across age groups and among daily smokers. The peak age-specific smoking rate is found among 30-44 year-olds (20.3 percent), at an age in which people are often at the height of their productivity. [12] Water pipe (hookah or shisha) smoking is also common, especially among women and unskilled manual workers. [13]

3 Strictly, the statistic for cancer presented here refers to the broader category of neoplasms. Since benign neoplasms represent a virtually null share of deaths by neoplasms, the figure is considered a robust proxy for cancer burden.

4 Although diabetes is a noncommunicable disease itself, it is also a risk factor for other NCDs, such as cardiovascular disease and cancer.

A particular cause for concern is that Kuwaiti men take up smoking at a very early age. Among the younger generation the mean age of initiation is 15.9, [12] indicating that they are obtaining cigarettes despite purchase being banned for minors. Early initiation is a widespread issue and has been found to be a key driver of cigarette uptake even among nursing students, who are profoundly aware of the harmful consequences of tobacco smoking. In practice, the high prevalence of smoking among these students – at around 18 percent among women and 25 percent among men – reduces the pool of health workers qualified to offer cessation services. [14]

Data from the 2009 and 2016 Global Youth Tobacco Surveys (GYTS) suggest that smoking and exposure among Kuwaiti youth remains a problem. The share of students (aged 13–15) who were current smokers of tobacco in 2009 dropped just barely, from 17.6 percent then to 16.7 percent in 2016. [15]-[16] The 2016 survey has also shown that nearly 40 percent of the students are exposed to second-hand smoke at home, and more than half in enclosed public places. The fact that the percentage of students who report being exposed to tobacco smoke outside their homes barely changed (indeed increased) since 2009 hints at gaps in enforcement. A similar issue can be noted with respect to access: 77.8 percent of students surveyed in 2016 reported not being prevented from buying cigarettes because of their age. [15]-[16] E-cigarettes have also gained prominence and are now consumed alongside cigarettes and more traditional hookah. A study conducted among high-school students (aged 16-19) in 2018–2019 in Kuwait found that 26.4 percent of students smoked e-cigarettes, 25.1 percent regular cigarettes, 20.9 percent hookah and one in three reported current use of at least one tobacco product. [17]

Physical inactivity

Physical activity is defined as any bodily movement that requires energy expenditure. Physical inactivity (lack of physical activity) has been found as the fourth leading risk factor for global mortality (6 percent of global death). Physical inactivity is estimated to be the main cause for approximately 21–25 percent of breast and colon cancers, 27 percent of diabetes and approximately 30 percent of ischemic heart disease worldwide.[18]



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The 2014 STEPS survey in Kuwait found that 62.6 percent of Kuwaitis were insufficiently physically active (insufficient being less than 150 minutes of exercise per week). [12] Such

lack of physical activity tends to be more common among women and older adults (60-69), with 72.8 percent of women reporting insufficient physical activity and 78.8 percent of older adults. The median time spent in physical activities every day is low among men, reaching only about 17.1 minutes day, and is virtually null among women. A recent study with a smaller sample (n = 858) revealed that roughly 52 percent of the individuals surveyed performed either low physical activity or none at all. Over 70 percent of participants identified hot weather and work duties as important barriers to regular physical exercise. [19]

Dietary risk factors

Dietary risk factors include but are not limited to high consumption of salt and sugar, consumption of trans fats, and low consumption of fruits and vegetables.

WHO recommends to reduce sugar intake to no more than 10 percent of total energy intake for both adults and children and suggests a further reduction to 5 percent.⁵ [20] Worryingly, Kuwaitis are avid consumers of sugar-sweetened beverages and other products with elevated sugar content. As reported in the 2014 STEPS survey, 99 percent of the population drinks at least one cup of carbonated beverages or fizzy drinks every day, and many also consume other high-sugar food and beverages. [12],[21] The survey also showed that about 40 percent of Kuwaitis habitually add two teaspoons or more of sugar for each hot or cold beverage, with men being more likely than women to add larger portions (46 percent vs 35 percent). [12]

A health survey conducted by the Medical City in partnership with Kuwait’s SAMA Medical Services surveyed 500 Kuwaitis on sugar intake. The survey revealed that 36 percent of respondents consumed at least 29g of added sugar from energy drinks and 23 percent consumed at least 38g of added sugar per day from soda.[21] Each contributes more than 5 percent of total energy intake on a 2,000 calorie daily diet. According to the 2014 STEPS survey, adult respondents consumed “fizzy drinks” (not including diet beverages) on average 2.2 days per week, with young adults (ages 18-29) being the highest consuming category. [12]

Excess salt consumption also poses a severe health risk as it contributes to high blood pressure and increases risk for heart disease and stroke. For these reasons WHO recommends no more than 5g of salt per day. WHO Member States set a goal to reduce the global population’s salt intake by 30 percent by 2025. [22] In 2010, Kuwaiti adults (20+) consumed on average 10g of salt per day (10g for men and 9g for women), twice the WHO recommendation. [23] A study from 2012 noted that the Kuwaiti diet was becoming increasingly westernized, mostly through higher consumption of fast food, and sodium intake tended to rise as a consequence. Overall, over 50 percent of individuals in all age ranges exceed recommended levels of sodium intake. Among boys aged 14–18, prevalence of high salt consumption is alarmingly high, reaching 80 percent. [13]. These findings are in line with those of another study, which found that over 80 percent of students in Kuwait University consumed fast food more than twice per week. [24]

5 On a 2,000-calorie daily diet, 10 percent would be 50g of sugar per day and 5 percent would be 25g of sugar per day (1 gram of sugar has 4 calories)

Trans-fats are detrimental to health and should not be consumed or produced in any manner. Consumption of trans-fats is estimated to lead to 500,000 annual deaths from cardiovascular disease. [25] In 2018, WHO released a plan to eliminate trans-fats from the food supply.[25] The 2014 STEPS reports a mean number of times per week of eating fried foods and crisps (both associated with trans-fats) of 2.3 and 2.0 respectively, and consumption is higher for both categories among young adults (18–29), who already consume less fruit and vegetables. [12] While accurate data on total fat, saturated fat and trans fatty acid (TFA) intake is not available, it has been reported that the intake of saturated fat (as a percentage of total calories) is almost 12 percent in Kuwait. This is significantly above the regional recommendation of 7 percent. Furthermore, trans-fat consumption is almost 2 percent, which exceeds the recommendation by WHO that states TFA intake should be less than 1 percent of total energy intake. [127]

WHO recommends five servings of fruits and vegetables per day (at least 400 grams). [26] Fruits and vegetables are part of a healthy diet for many reasons, one being they are a source of fibre, an important nutrient that can help improve cholesterol levels to reduce the risk of NCDs. Data from the STEPS survey showed that nearly 84 percent of respondents consumed insufficient levels of fruit and vegetables (according to WHO recommendations), and that older Kuwaitis were more likely to eat more servings of both. [12] Moreover, low fruit consumption has been associated with tobacco smoking and lower frequent exercise, pointing to the existence of clusters of mutually reinforcing unhealthy behaviour among Kuwaitis. [27]

Metabolic risk factors

High levels of metabolic risk factors – such as raised blood pressure, raised body mass index (BMI) related to overweight and obesity, and raised blood lipid levels – significantly increase the risk of having a cardiovascular event.

Overweight and obesity: Kuwait is among the countries with the highest rates of overweight and obesity in the world. [28] The 2014 STEPS Survey found that 77.2 percent of Kuwaitis were either overweight (37.1 percent) or obese (40.2 percent), [12] a number well above the already high Gulf Cooperation Council (GCC) average of 67.5 percent.⁶ A greater proportion of males (42.1 percent) than females (32.1 percent) is overweight, but obesity is more common amongst females (44.0 percent), than males (36.3 percent), and tends to rise with age. Disease burden data shows that obesity and overweight have been the top risk factors for disability and disease in Kuwait, with a growth of 52.8 percent in disability-adjusted life-years (DALYs) since 2007. [11] The prevalence of overweight and obesity has increased since the previous STEPS Survey in 2006, when the prevalence was observed at 75.4 percent among the overall population. These rates are expected to continue to increase without effective prevention and control measures in place. [23] Of high concern is the growing prevalence of obesity among adolescents in Kuwait. In 2016, nearly one quarter (22.9 percent) of adolescents (5–19 years) were obese, which has steadily increased from 19.9 percent in 2006. [29]

⁶ Data is from UNDP's NCD vulnerability index (unpublished). The obesity prevalence data is from the GHO and the population data used to calculate the weighted average was drawn from UN Department of Economics and Social Affairs Population Division (World Population Prospects).

Raised blood pressure: Raised blood pressure⁷ became more prevalent in Kuwait over the last decade, despite being overtaken by tobacco as one of the five major risk factors driving disability and disease in the country. Prevalence rates rose from 20.5 percent in 2006 to 25.1 percent in 2014, and it remains higher among men (27.7 percent) than women (22.6 percent). [12], [30] Access to medication for hypertension has improved considerably since 2006, when only 8.9 percent of Kuwaitis with raised blood pressure reported being on medication to control it. While this share rose to 47.7 percent in 2014, there is still ample room for improvement. [3] A cohort study published in 2013 found a higher prevalence of hypertension among Asian expatriates aged 30-60, at 37 percent, than among native Kuwaitis, at 28 percent [31]

High cholesterol: One in every two Kuwaitis have high cholesterol (> 5.0 mmol/L), which tends to be more prevalent in older age groups and among men (58.6 percent) than among women (53.5 percent), although an increase in cholesterol level was observed in women and not men. [12]

Diabetes: Diabetes is a relatively widespread condition in Kuwait, as in other Gulf countries. The 2014 STEPS survey reports an overall prevalence of 14.6 percent, with higher rates observed for older adults ages 45-59 (28.7 percent) and 60-69 (46.9 percent). [12] Men are only slightly more likely to be diabetic than women. Moreover, a 2013 study found a higher prevalence of type 2 diabetes among Asian expatriates aged 30-60, at 33.25 percent than among Kuwaitis, at 25.4 percent. [31] This relationship is inverted for people aged 55 or older (47.3 percent among Asian expats and 56.3 percent among natives). [31] The high prevalence of diabetes in Kuwait may be promoted by the high prevalence of overweight and obesity, the strongest risk factors for type 2 diabetes, affecting 77.2 percent of the population. [12]

Environmental risk factors

Climate conditions: Kuwait is a challenging setting for outdoor physical activity and workplace environments due to high summer temperatures for 6-7 months of the year, reaching typical highs of 42 °C in late summer. [32] Exposure to high temperatures, especially for long periods of time, causes physiological stress and may amplify pre-existing conditions and even premature death or disability. [33] In 2019, a Kuwaiti worker died by heatstroke at the beginning of an extended heatwave that saw temperatures rise to 63 °C under direct sunlight. [18] Ramadan during the summer months poses the need for further health considerations, considering individuals are fasting throughout the day, especially for those working or exercising in the hot weather. Working in high temperature environments, such as industrial environments, increases risk for heat stress and illness. [34]

Urban Environment: The pedestrian walkways in cities are considered unsafe, favouring driving instead of walking. Moreover, free walking or jogging on the streets may not be socially accepted or frowned upon. [35]

7 Systolic Blood Pressure ≥ 140 and/or Diastolic Blood Pressure ≥ 90

Air pollution: Air pollution is a mixture of pollutants, of which the fine fraction of particulate matter (PM_{2.5}) is the prime concern for health. Increased exposure to air pollution is related to an increased risk for certain NCDs, such as ischaemic heart disease, stroke, chronic obstructive pulmonary disease and cancer. [36] Air quality around Kuwait City is rated “Unhealthy for sensitive groups”, nearing the above category of “Unhealthy”, by the Real-time Air Quality Index (AQI). [19] This data is largely consistent with 2016 levels of PM_{2.5}, and PM₁₀ reported by the WHO. While PM_{2.5} concentrations were found to be more than five times greater than the WHO-recommended limit of 10 µg/m³ around Saad Al-Abdullah, but at safer levels (12 µg/m³) in Al-Jahra. PM₁₀ levels exceeded 100 µg/m³ in six out of the seven areas along the coast of Kuwait where measurements were taken. [37] Exposure to PM₁₀ is known to impair respiratory function, and PM_{2.5} exposure is strongly associated with mortality and morbidity including reduced lung function in children. It may also affect birth outcomes. [36]



Photo credit: © Ryan Lackey via Flickr

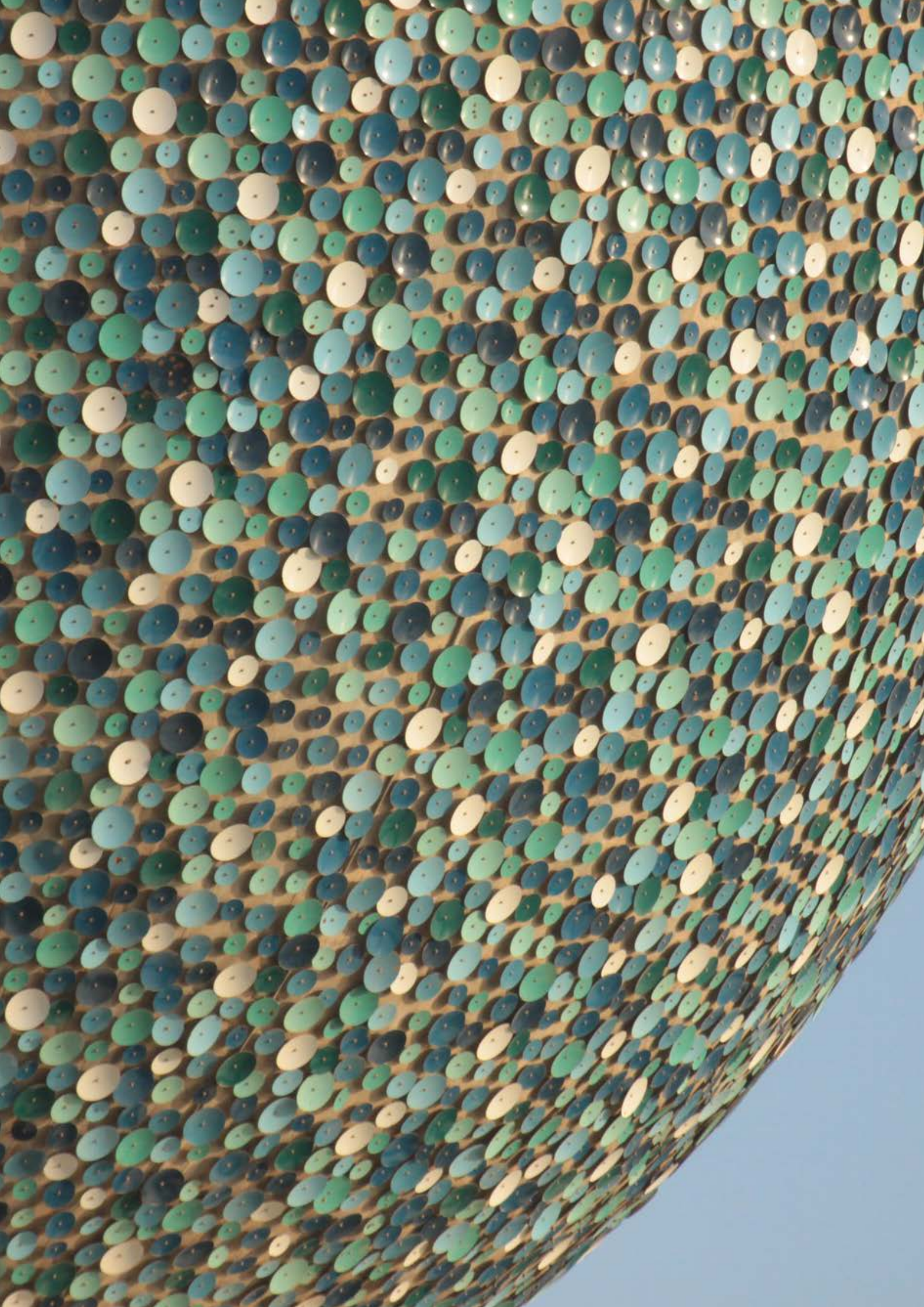
With a combination of renewable energy technologies and urban designs suitable for Kuwait’s environment, PM_{2.5} concentration can be reduced to provide healthier environment. [36]

Availability and affordability of nutritious foods: Citizens’ diets have changed rapidly over the past several years, in tandem with Kuwait’s economic development. In the Eastern Mediterranean Region, food consumption patterns have shifted towards more processed foods and animal products, and less fruits and vegetables. This represents a decrease in fibre intake and an increased intake in sugar, sodium, and unhealthy fats (saturated fats and trans-fats). [38] Furthermore, sustained population growth over the years has made Kuwait increasingly dependent on food imports. The reliance on imports can leave Kuwait vulnerable to price spikes for fruit and vegetable whenever there are major disruptions to trade, as there have been due to the COVID-19 pandemic. [39]

Local agriculture provides a steadily growing, yet relatively small, food supply in Kuwait. Production of vegetables grew from approximately 186 thousand tonnes in 2000 to over 300 thousand tonnes in 2018. [40] Much of this growth can be attributed to the Public Authority for Agricultural Affairs and Fish Resources’ (PAAAFR) efforts bolster local farming through improved irrigation and financing schemes. [41] Still, due to Kuwait’s limited arable land area, scarce water supply and unfavourable climate, most of its food is imported.

Seeking to secure a sustainable supply of food in the long-run, the Government makes substantial investments in farming abroad, in the form of initiatives like the Southeastern Anatolia Project (GAB), a greenhouse agriculture venture jointly undertaken with the government of Turkey. [42]

Another prominent feature of Kuwait's food landscape is the ubiquity of fast-food chains, principally from United States. Brands such as McDonald's, Wendy's, Domino's and Burger King are highly popular among Kuwaitis, and have prompted a major shift in local dietary preferences from traditional Gulf range of foodstuffs to a western, fast-food heavy diet. [43] This growth of fast-food restaurant businesses in Kuwait has led to the widespread consumption of high-fat and high-energy foods as well as soft drinks. [44] The rapid spread of fast-food chains was aided in part by rising incomes, low consumer awareness about the high-energy and low nutritional content of fast-food, as well the common perception that fast-food is tasty. [43]





SITUATION ANALYSIS

This section reviews Kuwait's institutional and governmental arrangements to combat NCDs and summarizes national efforts to implement WHO-recommended best buy and cost-effective interventions to reduce the burden of NCDs.

SITUATION ANALYSIS – HEALTH SYSTEM AND REFORMS

Kuwait has a developed health system with modern infrastructure capable of delivering a comprehensive package of services to the population. [45] The system is managed by the Ministry of Health, which regulates healthcare policies, financing, resource allocation, as well as healthcare provision. However, many of the administrative functions are performed by regional health units which enjoy a high degree of autonomy in implementing health protection measures and managing their resources and infrastructure.

NCDs are integrated in all levels of care - primary, secondary and tertiary. At the primary level, the primary health centres and family clinics have developed the capacity to offer asthma control, smoking cessation, nutrition and health promotion services. [45] Diabetes control is also available, as most of the facilities are equipped with the necessary laboratory and diagnostic equipment, as well as pharmaceutical supplies. [45] At the secondary and tertiary levels, a range of specialised institutions are available that can provide complex treatment for NCDs, including specialised hospitals for mental disorders, allergies, respiratory diseases and cancers. [45] In addition, many general hospitals have specialised departments and dispensaries for NCD care.

In the past decade, the Government has invested substantial resources in the expansion of the healthcare infrastructure, including the construction of new clinics and hospitals and the upgrading of existing ones.[46] There have also been important efforts in improving the availability of qualified health workforce.

Healthcare is free for Kuwaiti nationals at public health facilities, while migrants and foreigners, who constitute over 72 percent of the population [47] need to pay fees for accessing healthcare. Expatriates formally employed in Kuwait are obliged to enroll in employment-based health insurance plans or to purchase private health insurance. The cost of health services is subsidized and the Government runs special financing arrangements to support the most disadvantaged groups in accessing healthcare, including low-income expatriate workforce. The Ministry of Health collaborates with a number of civil society and non-governmental institutions (e.g. Patient Support Fund) towards this end. [45]

The Ministry of Health regularly collects data on healthcare needs and performance through surveys and by polling statistics from the national health providers and other relevant institutions. The Kuwaiti health information system is digitized, with a range of databases that maintain records about health service utilization, patient characteristics, treatment outcomes, and health resources and infrastructure. [45] There are several NCD-related databases, including a cancer registry. However, there remain some deficiencies in the collection, aggregation, and analysis of the information. In particular there is a need to improve the reporting on morbidity data and the streamlining of the information flow between primary, secondary, and tertiary health information registries. [45] Kuwait has a national health information strategy that partially addresses the above challenges.

NCD GOVERNANCE

Multisectoral coordination

The Ministry of Health considers NCDs as a strategic priority and positions NCD prevention and control as one of the main programmes of work.

Since 2012, NCD prevention and control in Kuwait is coordinated through a multisectoral high-level committee for NCDs, which is chaired by the Minister of Health and includes stakeholders from both within and outside the Ministry, including senior officials from ministries, governmental and non-governmental bodies, civil society and academia. [45]

One successful example of multi-sectoral collaboration is Kuwait's Community Nutrition Promotion Sector (CNPS), which has worked with local manufacturers of sweetened beverages since 2016, resulting in reduced sugar levels in fruit juices. CNPS has also created a salty snacks industry partnership, which resulted in four companies reducing the salt content of snack foods, which are particularly popular with school children.

The multisectoral high-level committee for NCDs has several thematic committees, which include: a committee on physical activity, a committee on NCDs in primary healthcare, and a committee on the reduction of salt in baked products. [45] These committees also engage non-health stakeholders, but it is not clear how well the work of these committees is coordinated and aligned. Notably, multisectoral action is highlighted as an important component of NCD response in the National Strategy for the Prevention and Control of NCDs, 2016–2025.

The Joint Mission of the United Nations Interagency Task Force on the Prevention and Control of NCDs conducted in May 2017, concluded that more efforts need to be made to strengthen multisectoral coordination and collaboration. In particular, a broader range of non-health actors need to be engaged in a coherent manner, and the inter-ministerial action should be informed by a uniform set of KPIs. The Mission also observed the lack of a clear mechanism for ensuring accountability for other ministries on upholding their NCD commitments, which could be addressed through the establishment of a stronger and fully functional High-Level Inter-Ministerial Committee.

Strategy and planning

[^] Kuwait has a National Strategy for the Prevention and Control of NCDs, 2016-2025, which is aligned with the WHO EMRO action plan and emphasizes the development and strengthening of regulatory instruments in the areas of tobacco use, nutrition and healthy lifestyles. It also highlights the importance of a whole-of-government and whole-of-society response to NCDs and their risk factors.

Box 2. Update from UNIATF mission (see Annex 5)

During 7–11 May 2017 the UN Interagency Task Force on NCDs completed a Joint Programming Mission in Kuwait. Representatives from UNDP, UNHABITAT, UNICEF, and WHO led the mission. After assessment of NCD prevalence, risk factors, prevention and control measures, and goals, UNIATF gave recommendations of actions to the State of Kuwait. These recommendations are outlined in Annex 5.

The Mission concluded that Kuwait was making progress scaling up national NCD control and that a widespread understanding of the magnitude of the problem and the need for multisectoral action had been reached by the Kuwaiti authorities and community, leading to a range of measures aimed at strengthening NCD prevention and control. Significant resources had been invested in the scaling of efforts at both national and community level to tackle NCD risk factors, including through promotion of new norms and practices, related to nutrition and lifestyle.

The Mission noted, in particular, the setting of dietary standards in schools, school-based programmes to promote physical activity, and collaboration with the national bakeries to reduce salt content in products. However, the Mission also found that, despite the progress achieved, many of the measures fell short of meeting the WHO recommendations. In the area of tobacco control, in particular, low levels of tobacco taxation were identified as a major impediment to reducing tobacco prevalence among the population of Kuwait. Mass media engagement in the promotion of healthy lifestyles was found insufficient. A range of other gaps was further identified in policies and measures pertaining to nutrition, physical activity, as well NCD governance and administration, many of which remain unaddressed.

The Mission noted that Kuwait is well-positioned to close these gaps thanks to strong leadership at the governorate level that provides platforms for multisectoral action, including a number of healthy city initiatives. In addition, the existence of relevant strategies and plans, as well as an intersectoral coordination mechanism on NCDs, was highlighted as an important facilitating factor, which should be leveraged to scale up the national NCD response.

- ^ In addition, NCDs are reflected in the National Health Sector Strategy, 2018-2022, which provides for a range of measures that will help address the national NCD burden, including through further development of the healthcare infrastructure.
- ^ Importantly, the need to address NCDs is highly prominent in the context of the Kuwait long term national development plan – Kuwait Vision 2035 “New Kuwait.” The plan identifies support for human and social development as one of its major goals and high quality healthcare as one of its main pillars. [48] Achieving progress in relation to the above goal and pillar would be impossible without meaningful advancements in the area of NCD prevention and control, as NCDs account for an increasingly large share of the healthcare needs of the population and constitute the major threat to the country’s human capital.

Local government

Kuwait is divided into six health regions, each with a regional health unit responsible for the administration of health in its respective area. [45] The regions, established through a ministerial decree in 1984 vary considerably in size, population and geography, and the regionalisation of the health system enables more efficient delivery of health services according to the needs of the residents in each region. All regional units enjoy considerable autonomy in terms of organisation, financial affairs, health workforce management and organisation of healthcare delivery. [49] The units are led by regional directors who report to the Ministry of Health.

Health financing

Current health expenditure in Kuwait amounts to around 5 percent of the GDP. The major share, estimated at 87 percent, is financed by the Government, while the remaining 13 percent are financed primarily by out-of-pocket payments. [50] Employers are required to pay an annual contribution on behalf of each of their employees to support healthcare funding, but there are no major statutory health insurance schemes, aside from government financing arrangements, although the Government works to implement targeted schemes for vulnerable population groups, including migrants.

Patients are required to pay fees when accessing health services, which vary depending on the type of service accessed. [51]

The Government allocates around 9 percent of its budget to health, which is greater than in most other GCC countries. Both the share of domestic general government health expenditure in public budget and the share of government funding in the current health expenditure increased between 2014 and 2017. [50]

IMPLEMENTATION STATUS OF MEASURES MODELLED UNDER THE INVESTMENT CASE

Tables 1 and 3 outline current implementation levels of interventions modelled under the investment case. These include WHO-recommended ‘best buys’, or highly cost-effective measures, as well as some cost-effective measures. The tables draw attention to areas that need to be strengthened and scaled up to achieve 100 percent coverage.

Table 1. Implementation status of population-based policies and interventions**TOBACCO****Intervention** *Monitor tobacco use/prevention policies***Current state of implementation**

Kuwait is compliant with the recommendations regarding monitoring of the tobacco epidemic. The Government has national and representative data on tobacco use for both adults and youth. A nation-wide STEPS Survey was conducted in 2014 and a Global Youth Tobacco Survey was carried out in 2016, resulting in estimates of current and daily tobacco use and tobacco smoking among adults aged 18-69 and children aged 13–15. [52]

Intervention *Protect people from tobacco smoke***Current state of implementation**

The law in Kuwait prohibits smoking in healthcare facilities, educational institutions (including universities), coffee shops and public transport. Violations can result in fines to both smokers and the establishments. However, smoking is not banned in restaurants and bars nor in any of the indoor offices and workplaces (including government establishments), which exposes thousands of people to the effects of the second-hand smoke. [52]

Intervention *Offer to help quit tobacco use: mCessation***Current state of implementation**

Kuwait has a toll-free tobacco help line which can be used by people seeking assistance for quitting. Smoking cessation services are available in most communities and some clinics and primary healthcare centers. Yet, most hospitals do not provide any cessation services. [52]

Intervention *Warn about danger: Warning labels***Current state of implementation**

The law mandates that warning labels are placed on tobacco product packages and that they take at least 50 percent of the total surface on both the front and the back. [52] The warnings are to include graphic elements and text of a specific font, size and style. This measure is obligatory for both domestic and imported tobacco products and applies to smoked as well as smokeless tobacco. However, the current regulations do not require the warning labels to appear on all types of outside packaging in the retail sale nor do they require the placement of warning on top of the principal display areas of packages. The tobacco industry can also use figurative or other signs, including colours or numbers, on packaging that may communicate misleading messages to consumers. [52]

TOBACCO

Intervention *Warn about danger: Mass media campaign*

Current state of implementation

There have been no large-scale mass-media campaigns against tobacco use in Kuwait. The engagement of mass media in the efforts to fight tobacco use was found insufficient by the UN Inter-Agency Task Force on NCDs during its Joint Mission to the country in 2017.

Intervention *Enforce bans on tobacco advertising*

Current state of implementation

Most bans on advertising, sponsorship and promotion are implemented in Kuwait, but there are few gaps in the regulations. [52] Advertisement of tobacco products on both national and international television, radio, and newspapers is not allowed, along with billboard advertisement and advertisement at point of sale. Promotional discounts on tobacco products are also banned. However, there is no ban on the appearance of tobacco products and brands in TV and/or films and no ban on tobacco product display at point of sale. Tobacco sales on the internet and through vending machines are both allowed, and the tobacco industry can sponsor events and social activities (without advertising its sponsorship), which creates opportunities for the tobacco industry to exercise influence and potentially engage in indirect promotion of its products.

Intervention *Enforce youth access restriction*

Current state of implementation

The law bans sales of cigarettes or other tobacco products to those who are under 21 years of age. [53] However, the regulation is poorly enforced as it is estimated that nearly 17 percent of children use some form of tobacco in Kuwait. [52]

Intervention *Raise taxes on tobacco*

Current state of implementation

The total amount of taxes as a percentage of price of a standard pack of cigarettes is estimated at only 21.2 percent, which is much lower than the WHO-recommended excise tax rate of 70 percent, or total tax share of 75 percent of retail price. [52] A Gulf Cooperation Council import duty of US\$ 27 per 1000 cigarettes is imposed, but it barely affects the demand for and the sales of tobacco. Overall, cigarettes remain very affordable for an average Kuwaiti consumer, ranging from US\$ 1 to US\$ 3.20 in price per pack of 20 cigarettes. [54]

TOBACCO

Intervention *Plain packaging of tobacco products*

Current state of implementation

Current regulations do not require plain packaging of tobacco products. [52]

PHYSICAL INACTIVITY

Intervention *Awareness campaigns to encourage increased physical activity*

Current state of implementation

There are measures taken in Kuwait to raise awareness about the importance of physical activity and to promote exercising, but the WHO recommendations in this regard are not fully met. The Ministry of Health, through the Department of Health Promotion, has developed a multisectoral plan of action, Towards a Physically Active Kuwait: National Plan of Action 2015–2020. [45] Several community-level campaigns have been conducted with support of a range of non-state actors, such as the Kuwait Obesity Association. However, limited mass media resources are utilised to raise awareness around the issue. The integration of physical activity promotion in school education is also limited.

Intervention *Brief advice as part of routine care*

Current state of implementation

SODIUM

Intervention *Surveillance*

Current state of implementation

There is limited scientific knowledge on the range of foods and their fat and salt content applicable to Kuwait's context. The food variety, local eating out preferences and the basic dietary statistics have not been transformed into a relevant aggregate data, which results in a lack of scientific evidence to inform public policy measures and awareness-raising campaigns.

However, according to the 2014 STEPS Survey, 21.2 percent of adult respondents always add salt to their meals, and 18.8 percent always eat salty appetizers (such as olives and pickles) with their meals and always add sauces to their food. [12] Given the influx of fast food options in Kuwait, a shift from traditional Gulf range of foodstuffs to a Western, fast-food heavy diet has been observed. [43]

Intervention *Harness industry for reformulation*

Current state of implementation

The Ministry of Health has cooperated with Kuwait Flour Mills and Bakeries Company, the major producer of baked goods in the country, and encouraged the latter to reduce the salt content in the produced breads. There are opportunities for a similar collaboration with the restaurant industry, but it has not yet been explored. However, Kuwait's CNPS, part of the Public Authority for Food and Nutrition, has launched a strategy in 2017 to reduce salt intake among school children. Crisps and other salty snacks were identified as a key unhealthy food that was very popular with school children. Collaborating with industry, the CNPS succeeded in bringing four companies to significantly reduce the salt content of their snack foods.

Intervention *Adopt standards: front-of-pack labelling*

Current state of implementation

SODIUM

Intervention *Adopt standards: strategies to combat misleading marketing*

Current state of implementation

According to the WHO NCD Progress Monitor 2020, Kuwait does not meet the WHO recommendations with regards to restricting marketing to children and fully meets the WHO recommendations with regards to restricting marketing of breast-milk substitutes. [23]

Intervention *Knowledge: education and communication*

Current state of implementation

Kuwait is improving policies on school canteens to adopt nutrition friendly schools, working with industry to eliminate trans-fatty acids and raising the nutrition and health awareness of the community by disseminating relevant education material. [45] For example, the Government implements a “Healthy Living” Programme under the “Kuwait National Programme for Healthy Living: First 5-Year Plan (2013–2017).” The programme provides advice and support to people living with diabetes and obesity, as well as hypertension, cancer and other chronic conditions. Kuwait also initiated a “Healthy Lifestyle” programme aimed at promoting changes in lifestyle choices and habits that are linked with NCDs, including diet and physical activity. Despite these efforts, a considerable share of the population has misperceptions about the issue and considers being overweight as being healthy. [55] This suggests that the strategy, content and coverage of the awareness-raising campaigns need to be improved.

Intervention *Environment: salt-reduction strategies in community-based eating spaces*

Current state of implementation

Dietary standards have been set in schools. No information found about restaurants and other public eating spaces.

In addition, the updated **Appendix 3** to WHO's Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013–2020 contains two effective interventions (with cost-effectiveness ratios >100 international dollars per DALY averted in low- and middle-income countries) on trans-fat and sugar, respectively. Though these are not modelled under the investment case, **Table 2** shows the current state of implementation for trans-fats and sugar-related policies.

Table 2. Current state of policies for trans-fat and sugar in Kuwait

TRANS-FAT	
Intervention	<i>Eliminate industrial trans-fat by developing legislation to ban their use in the food chain</i>
<i>Current state of implementation</i>	
<p>In 2015 the GCC Standard Organization also released a regulation on trans-fats. [56] No more than 2 percent of total fat is permitted in oils and margarine spreads and no more than 5 percent in other foods, including those sold to restaurants. Trans-fats are also required to be declared on the nutrition label and the quantity must be identified. In 2018, Kuwait completed the cycle of implementation of an action plan that includes policies geared towards trans-fat elimination, such as education campaigns, a cutback on subsidies for fats and an updated set of advertising and promotion regulations. [57] Measures are currently in place to monitor and inspect compliance of the food industry to trans-fat standards (GSO 2483/2015), by measuring trans-fat content in random samples of both locally produced and imported foods.</p>	
SUGAR	
Intervention	<i>Reduce sugar consumption through effective taxation on sugar-sweetened beverages</i>
<i>Current state of implementation</i>	
<p>Kuwait has announced its intention of applying the GCC-approved tax increases of 50 percent on carbonated high-calorie drinks (applicable to sodas and other sugar-sweetened beverages [SSBs]) and 100 percent on energy drinks. According to one report, the tax would be implemented starting April 2020. [58] The GCC may also consider how to modify the design of the tax on SSBs to be more effective (e.g. applied to sugar content of SSBs rather than based on volume, as is done in the UK). Counter to the aim of the tax, Kuwait subsidizes sugar imports. [59]</p>	

The WHO’s Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013–2020 lists multiple clinical interventions for cardiovascular diseases and diabetes. **Table 3** below lists a selection of those most relevant to this analysis and are included in the modelling.

Table 3. Implementation status of clinical interventions for cardiovascular disease and diabetes

SCREENING	
Intervention	<i>Screening for risk of cardiovascular disease and diabetes</i>
Current state of implementation	
More than 50 percent of primary health care facilities report offering CVD risk stratification and applying government-established CVD guidelines. [23]	
CARDIOVASCULAR DISEASE	
Intervention	<i>Treatment for those with high absolute risk of cardiovascular diseases and diabetes (>30 percent)</i>
Current state of implementation	
According to the WHO, 73 percent of persons with high risk of CVDs are receiving drug therapy and council to prevent heart attacks and strokes. Kuwait also reports having 10 out of 10 WHO-recommended essential medicines, and 6 out of 6 essential NCD technologies as “generally available”. [23]	
Intervention	<i>Treatment of new cases of acute myocardial infarction with aspirin; Treatment of cases with established ischaemic heart disease and post-myocardial infarction); Treatment for those with established cerebrovascular disease and post-stroke</i>
Current state of implementation	
The Gulf Committee for Cardiovascular Diseases Control released a plan for 2009–2019 which included an objective to improve the quality of health services to patients with cardiovascular diseases, as well as a goal to strengthen the means of monitoring and evaluation of cardiovascular diseases. [60]	

DIABETES

Intervention *Glycaemic control*

Current state of implementation

Kuwait broadly adopts comprehensive guidelines established by the American Diabetes Association (ADA), the International Diabetes Federation (IDF), and the Canadian Diabetes Association (CDA), along with local guidelines developed by doctors and nurses. [61] A recent cohort study found that glycaemic control is still low in Kuwait, and calls for more government action on public education on diabetes. [62] An earlier study using data from Kuwait's Dasman Diabetes Institute (DDI) corroborates these findings and point to further gaps in Type 2 diabetes treatment, such as insufficient measures for neuropathy and foot ulcer prevention. [31]

Intervention *Retinopathy and neuropathy screening, and photocoagulation (used to treat retinopathy) and preventive foot care*

Current state of implementation

As of 2016, retinal photoagulation, renal replacement procedures, as well as foot vibration perception technology were reported as "generally available" in Kuwait; Doppler exams of foot vascular status, on the other hand, were still scarce. [63]



METHODS

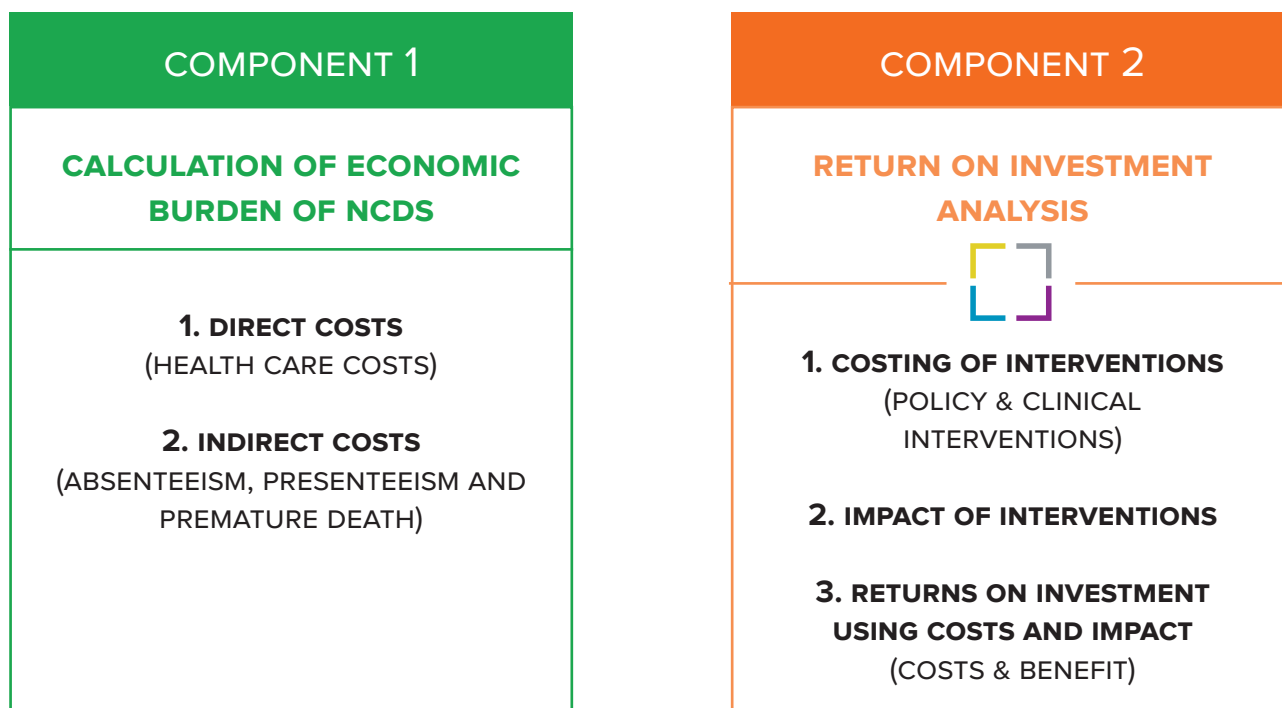
This section outlines the different methods and economic models applied at different stages of the economic analysis.

METHODS

A multiagency, multidisciplinary team comprising staff from WHO (headquarters, WHO Regional Office for the Eastern Mediterranean and WHO country Office), the United Nations Inter-Agency Task Force on the Prevention and Control of Non-communicable Diseases, the United Nations Development Programme (UNDP) and Gulf Health Council of the Cooperation Council for the Arab States of the Gulf undertook initial data collection and analysis in Kuwait from 16–18 December 2019 to complete a three-tier economic NCD investment case, complemented by an institutional and context analysis. The team consisted of health economists, epidemiologists and social development and public health experts. Intensive follow-up work (described below) was undertaken as part of the methods for collecting and analysing data.

The approach consisted of a desk review of materials, interviews with policy-makers across sectors and institutions, and collation and analysis of data. Further data analysis took place over subsequent months. This NCD investment case is one of six to be carried out in Gulf Cooperation Council Countries during 2019–2021. The work also benefited from a peer review and a methodological review by Research Triangle Institute International, as well as a quality assurance review by David Tordrup (Triangulate Health Ltd). This section outlines the different methods and economic models applied at different stages of the economic analysis:

Economic analysis



Component 1: Estimating the economic burden of NCDs

The starting point for the investment case is an analysis to determine the current and projected economic burden of NCDs. This requires assessing both the direct and indirect costs of NCDs using a cost of illness approach. The cost of illness component reveals the extent to which NCDs are affecting Kuwait economic growth, by calculating the cost of illness as a share of gross domestic product (GDP) which was lost due to NCDs in 2019. Direct and indirect costs are calculated independently of each other, and then added to calculate the total cost of NCDs to the Kuwait economy. WHO and the United Nations Development Programme developed the NCD economic burden model, which provides estimates of the current direct and indirect costs of NCDs.

a. Calculating the direct costs

Direct costs represent costs incurred within the health system to treat diseases. These are represented by government and private health spending on medical staff salaries, equipment and procedures such as diagnosis and distribution of treatment for cardiovascular diseases, cancers, diabetes mellitus and chronic respiratory diseases. The total health expenditure on each of these four NCDs was calculated by multiplying the estimated average cost per patient by the estimated number of patients using the health services. The average cost per patient for each of the four NCDs was estimated based on the local, regional and international literature and adjusted using the consumer price index. The number of patients using the health services was estimated based on Kuwait's annual health report, National Centre for Health Information, 2016 (**Table 4**).

Table 4. Data used for calculating the direct costs of NCDs in Kuwait in 2019

NCDs	Average cost per patient in 2019		Estimated number of patients using the health services in 2019	
	Cost KD	Data source	Number	Data source
Diabetes	1,004	(Rabha, 2019)	249,367	No. of visits to diabetic care in 2016 was 997,469. We assume that each patient has four visits per year.
CVD	2,078	(Bahrain estimation used proxy for Kuwait, 2016)	123,721	No. of visits to cardiology outpatients and causality in 2016 was 123,721
Cancer	1,391	(Bahrain estimation used proxy for Kuwait, 2016)	30,999	Actual estimated number of existing cases of cancer based on IHME-GBD 2017
CRD	687	(Guarascio, 2013)	234,781	No. of existing chronic respiratory disease cases is 469,561 based on IHME-GBD 2017. We assume that 50% of them use the service.

Sources: [64]-[66]

b. Calculating the indirect costs

In our analysis, indirect costs are those associated with reduced workforce participation and the resulting reduction in national productivity, i.e. the costs of absenteeism, reduced capacity at work, i.e. presenteeism, and the economic losses due to premature deaths caused by NCDs. These costs were computed with the human capital approach, as follows:

Missed working days and working at reduced capacity

In this section, we detail the methods used to estimate the productivity losses due to absenteeism (missed working days) and presenteeism (working at reduced capacity) due to NCDs with the human capital approach. The fraction of the workforce in Kuwait with NCDs was estimated by applying the prevalence rates of the diseases to population figures and relevant economic indicators, such as unemployment rates and labour force participation rates. Then, the number of unproductive days worked was determined by applying rates of productivity loss derived from the academic literature.

The lost economic output to the Kuwait economy as a consequence of absenteeism and presenteeism was estimated as described below:

- ^ First, we estimated the number of people of working age (15-64 years) with NCDs based on data collected from Kuwait annual health report 2016, STEPS Survey 2015, and estimates from the Institute for Health Metrics and Evaluation.
- ^ We then multiplied the size of the working-age population with NCDs by the rate of participation in the labour force and employment to determine the prevalence of NCDs in workers. Similarly, the number of deaths from NCDs was multiplied by the rate of participation in the labour force and employment to estimate the number of workers who died from NCDs. The number of deaths was subtracted from the number of workers with prevalent NCDs to estimate the number of workers who survived despite their illness.
- ^ The figures for productivity losses associated with specific diseases (**Table 5**) were multiplied by the number of surviving workers to estimate the total number of unproductive days that resulted from NCDs.
- ^ In the final step, GDP per worker was used to approximate each worker's productive output in a given year. GDP per worker was multiplied by the total number of unproductive working days.

Table 5. Rates of absenteeism and presenteeism due to common health complications associated with the four main NCDs

	Absenteeism rate* Reduction in working days (%)	Presenteeism rate Working at reduced capacity	Labour force participation rate reduction
Hypertension	0.6% (Mitchell RJ, 2011)	3.7% (Wang PS, 2003)	2% (Barnay, 2006)
Stroke	6.3% (Mitchell RJ, 2011)	3.7% (Wang PS, 2003)	18% (Barnay, 2006)
Acute MI	1.3% (Mitchell RJ, 2011)	3.7% (Wang PS, 2003)	11% (Barnay, 2006)
Diabetes	0.3% (Salman, 2019)	0.5% (Bommer C, 2017)	10% (Barnay, 2006)

*Based on the number of days worked per year in Kuwait (209 days)

Sources: [64], [67]–[70]

Premature deaths

The loss of GDP due to premature death of workers was estimated using the human capital approach. This assumes that forgone economic output is equivalent to the total output that would have been generated by workers throughout their lives until reaching retirement age. In this method, all future potential income lost by a worker who dies during his or her working lifetime is calculated from the number of working years lost between the age at death and the age at which the deceased employee would have reached the average retirement age. Productivity losses due to premature deaths were calculated as the product of the total working years lost in all age groups multiplied by the labour force participation rate, age-specific employment rate and GDP per worker.

Component 2: Return on investment (ROI) analysis

Step 1: Estimating the costs of policy and clinical interventions

The return on investment is a performance measure used to evaluate the efficiency of health-care investment. It compares the magnitude and timing of benefits from health intervention directly with the magnitude and timing of investment costs. The return on investment is the ratio of the discounted (present) value of the benefits to the investment costs. Future benefits are discounted at 3 percent since a unit of currency in the future is worth less than a unit today owing to the time value of money.

A return on investment analysis, based on a spreadsheet model developed by WHO, provided estimates of the economic gains that accrue from investing in the set of cost-effective interventions identified during the visit.

The method used is the NCD return on investment model developed in 2015 for use by the United Nations Development Programme/WHO Joint Programme on Governance of NCDs using the OneHealth Tool and WHO Costing Tool. More detail on the use of these tools is available from the OneHealth Tool Manual [73] and is discussed in detail in a new guidance note for investment cases for preventing and controlling NCDs. [74]

Costs of policy and clinical interventions were calculated using the WHO Costing Tool for NCD prevention and control. [71] The tool identifies, quantifies and values each resource required for the intervention as follows:

- ^ For each policy intervention, the WHO Costing Tool costs human resources, training, external meetings, mass-media campaigns (e.g. television and radio time, newspaper ads) and other miscellaneous equipment needed to enact policies and programmes.
- ^ Each policy intervention contains assumptions, set by WHO experts, about the quantity of inputs required to implement and enforce it – the Costing Tool estimates the quantity of resources needed at the national, regional and district levels.
- ^ The costs of clinical interventions were calculated using the WHO Costing Tool, which has built-in functionality that estimates costs of interventions.
- ^ For each clinical intervention, the WHO Costing Tool estimates the cost of primary care visits, ancillary care visits, lab and diagnostic tests, and drugs for the total number of NCD cases who are expected to be covered each year.
- ^ Intervention-specific data on current effective coverage are not available. Current and target coverage of clinical interventions was estimated in line with previous WHO analyses in the area of NCD's [72], aiming to reach 80% coverage by 15 years.
- ^ For each clinical intervention, the WHO Costing Tool takes as input data points such as the salaries of medical staff and the quantities of drugs and supplies needed, as well as their prices.
- ^ Each clinical intervention contains assumptions, set by WHO experts, about the quantity of inputs required to provide it. The unit costs for resource items are taken from the WHO-CHOICE database and from available local data.
- ^ In the absence of local data, default data based on global estimates was used for the computations.
- ^ The interventions scale-up scenario for policy interventions is Front Growth scale-up. This pattern assumes that much of the capacity to scale-up policy interventions is already in place, meaning that coverage can escalate rapidly, within two years. For clinical interventions we are using linear scale-up. This pattern assumes a gradual but sustained increase in coverage.

Step 2: Estimating the impact of interventions

To determine the overall impact of the set of interventions in terms of the increase in GDP, productivity measures were assessed using the following steps:

- ^ The One Health Tool was used to assess the health benefits of implementing and scaling up policy and clinical interventions by modelling the number of disease cases averted, healthy life years gained, and lives saved over the 15 years under study. Local data from the STEPS survey were fed into the tool to determine the prevalence of risk factors disaggregated by age group and gender.
- ^ Data on the amount by which NCDs reduce worker productivity were incorporated, as noted for the NCD economic burden model. Since interventions reduce the projected incidence of ischemic heart disease and stroke, there is an associated increase in the number of healthy life-years of the population.
- ^ By considering the increase in healthy life-years, GDP per employed person and the reduction in rates for absenteeism and presenteeism, avoided economic losses can be determined, attributed to the value of avoided absenteeism and presenteeism.
- ^ By considering the labour force participation rate in Kuwait and the projected number of deaths avoided, the increase in labour force participation resulting from avoided deaths was calculated. An increase in economic output was therefore attributed to the value of avoided mortality.
- ^ The projected economic gains from implementing the cost-effective interventions were therefore the value of avoided presenteeism, the value of avoided absenteeism and the value of avoided mortality.
- ^ Total economic benefits of an intervention were calculated by combining the three types of gains in addition to the value of not replacing staff.
- ^ Following Stenberg et al [75], we estimated the social benefit of improved health by applying a value of 0.5 times GDP per capita to each healthy life-year gained from the interventions to estimate the intrinsic value of longevity. We used the net present value approach to future social value, with 3 percent discounting.

Step 3: Calculating the returns on investment

The return on investment for Kuwait was reached by comparing the total economic benefits (avoided economic losses) of the interventions with the total costs of setting up and implementing the interventions. This was calculated using the net present value approach to future costs and economic gains, with 3 percent discounting.

Institutional context analysis

- ^ UNDP country office Kuwait
- ^ UN Country Team and Resident Coordinator's Office
- ^ Ministry of Health
- ^ Ministry of Finance
- ^ Kuwait National Assembly
- ^ Supreme Council of Health
- ^ Kuwait Municipality
- ^ Ministry of Commerce and Industry
- ^ Central Statistical Bureau
- ^ Civil society and academia
- ^ Ministry of Social Affairs and Labour

Members discussed how NCDs can be prioritized in government policies, the priorities of various sectors and stakeholders and how these could support a strengthened whole-of-government NCD response in Kuwait including implementing investment case findings. The valuable insights gained from these discussions are incorporated throughout this report and informed its findings and conclusions.

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'It's therefore not a question of whether countries can afford to implement the best buys, but whether they can afford not to. We have all the pieces to save lives we just have to put them into place. The question is, will we? It's a question we must answer with the decisions we make today, and every day.'

Tedros Adhanom Ghebreyesus,
Director-General, WHO

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RESULTS

This section assesses the economic burden of NCDs before summarizing the component parts of the return on investment analysis – including health benefits, economic benefits and total costs – and discussing the return on investment for each package of interventions.

RESULTS

1. Economic burden assessment

a. Direct costs

The estimate of the direct costs of the economic burden considered the total health expenditure which include the government health-care expenditure and the private health-care expenditure (out-of-pocket, voluntary and other health insurance schemes), and excluded non-health care costs such as transport.

Total healthcare expenditures for Kuwait in 2018 was KD 2,162,758,251 (US\$ 7.1 billion). Government health expenditure was KD 1,889,969,906 (US\$ 6.2 billion) and accounted for 87.4 percent of the total healthcare expenditures.

National Health Account data in Kuwait are not available at the disease subgroup account level by NCD. Our estimates suggest that the government spent KD 711,940,999 (US\$ 2.32 billion) on the four major NCD groups under study, so that more than 37.3 percent of all government health expenditure is attributable to the four disease groups. We estimated that private healthcare costs of the four major NCD is KWD 102,757,831 (US\$ 336 million). The total healthcare expenditures on these four major NCD groups is KD 814,698,829 (US\$ 2.66 billion). This proportion is consistent with other international estimates which, based on average numbers from nine countries, found that the four major NCDs were responsible for 30 percent of health care expenditure. [76]

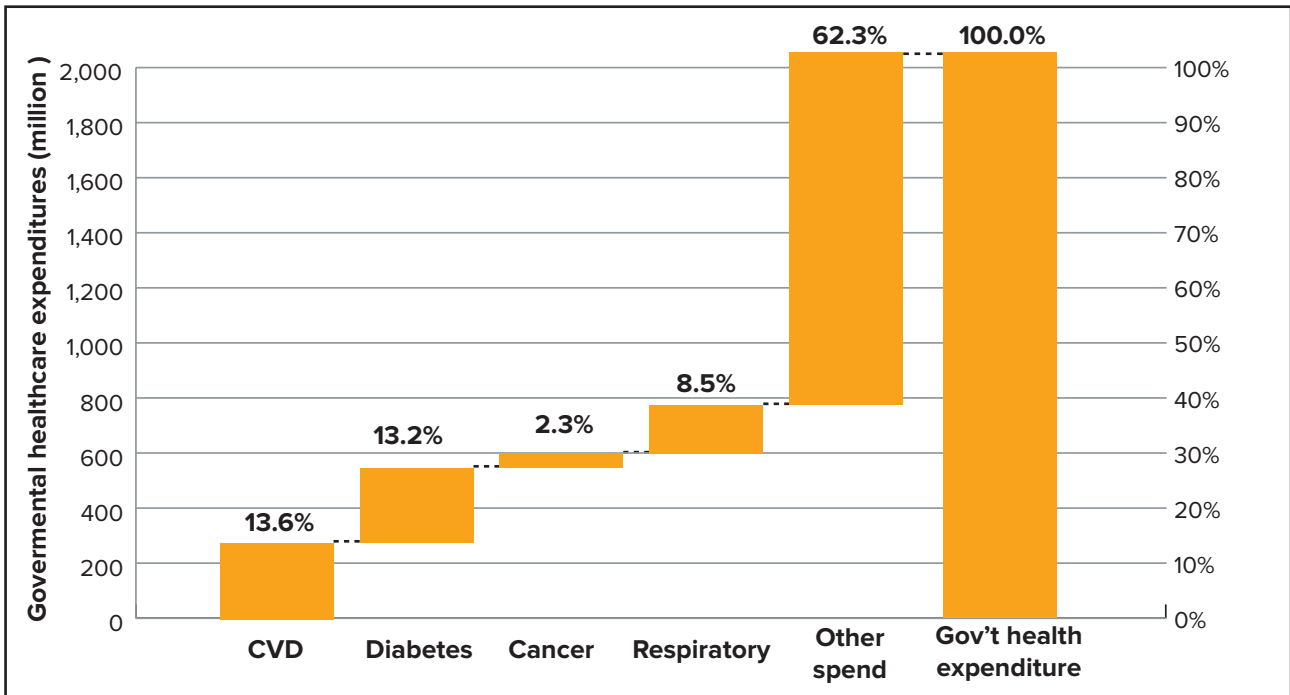
CVD accounted for the major share (13.6 percent of total health expenditure in Kuwait in 2019), at KD 294,136,423 (US\$ 961 million), followed by diabetes which accounted for 13.2 percent of total health expenditure, at 286,544,090 (US\$ 936 million).⁸

Total expenditure on chronic respiratory diseases and cancers was estimated at KD 184,665,733 (US\$ 603 million) (8.5 percent), and KD 49,352,583 (US\$ 161 million) (2.3 percent), respectively.⁹

8 Note: Because the investment case applies the percentage of government and private health expenditure as a percentage of total health expenditure to all estimates of direct costs, the relative expenditure pattern for the four major NCDs is the same for government, private and total health expenditures.

9 Our estimation of cost didn't include patients who were treated abroad. However, it was estimated by the Kuwait Cancer Control Center that in 2017 about 424 cancer patients received treatment abroad. The average cost of the treatment of each patient was estimated at KD 60,000 in addition to KD 11,000 for travel and accommodation. It was estimated that the 424 patients costed the country a total of KD 30,104,000 (US\$ 100 million)..

Fig. 2. Kuwait government health expenditure in 2019 on the four major NCD groups



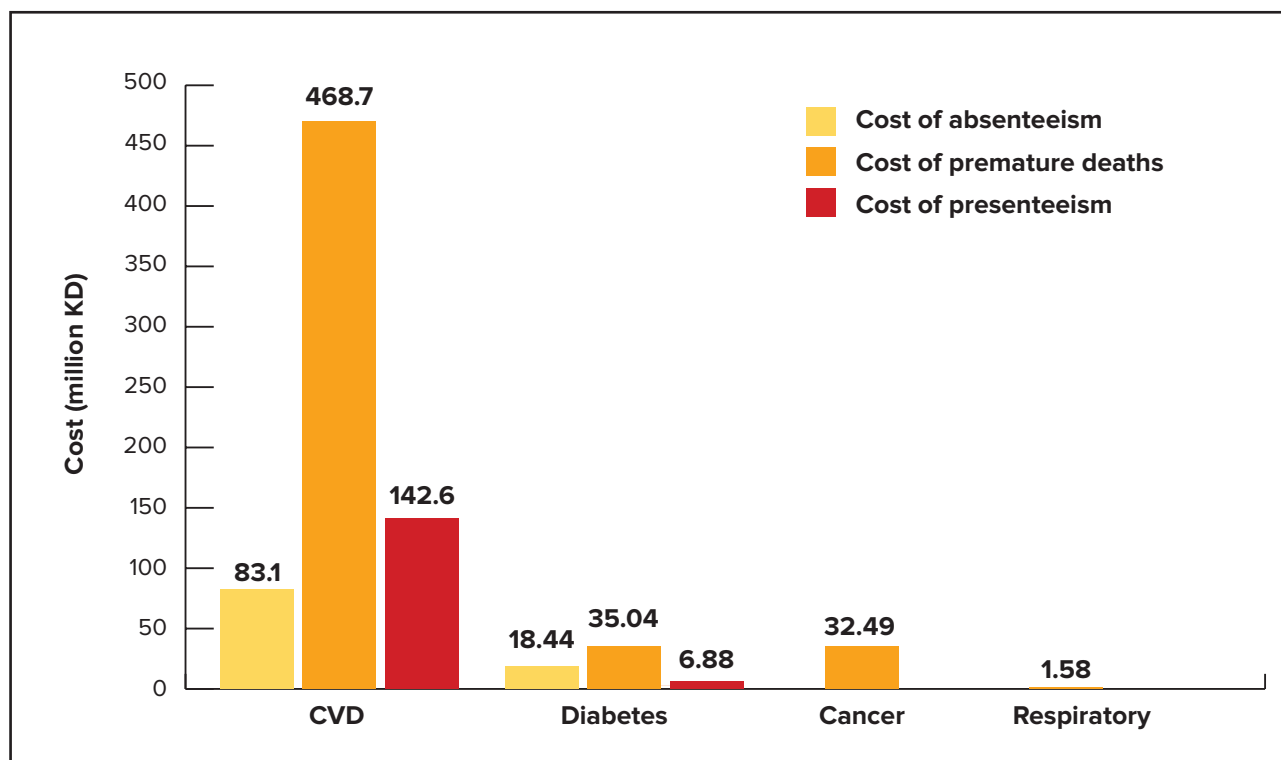
b. Indirect costs

For Kuwait, indirect economic losses caused by NCDs were modelled from reduced labour force participation, increased absenteeism and presenteeism and losses caused by premature death.

The calculation of absenteeism and presenteeism is based on the surviving workforce. **Figure 3** shows the results for 2019. They could only be calculated for cardiovascular diseases and for diabetes because data are lacking on the impact of cancer and chronic respiratory diseases for these parameters. The cost of absenteeism resulting from cardiovascular diseases was an estimated KD 83,118,368 (US\$ 272 million). For presenteeism, the corresponding calculation found that the burden is KD 468,666,326 (US\$ 1.53 billion). For diabetes, the cost of absenteeism was an estimated KD 18,440,138 (US\$ 60 million). For presenteeism, the corresponding calculation found that the burden is KD 35,036,262 (US\$ 115 million).

The cost of premature deaths was computed by considering the total output that would have been generated by workers during their lives before retirement. The total cost of premature deaths was estimated to be KD 183,519,943 (US\$ 600 million). The loss was the highest for cardiovascular diseases, at KD 142,581,532 (US\$ 466 million), followed by cancer, at KD 32,485,892 (US\$ 106 million).

Fig. 3. Cost of absenteeism, presenteeism and premature death due to NCDs in Kuwait, 2019



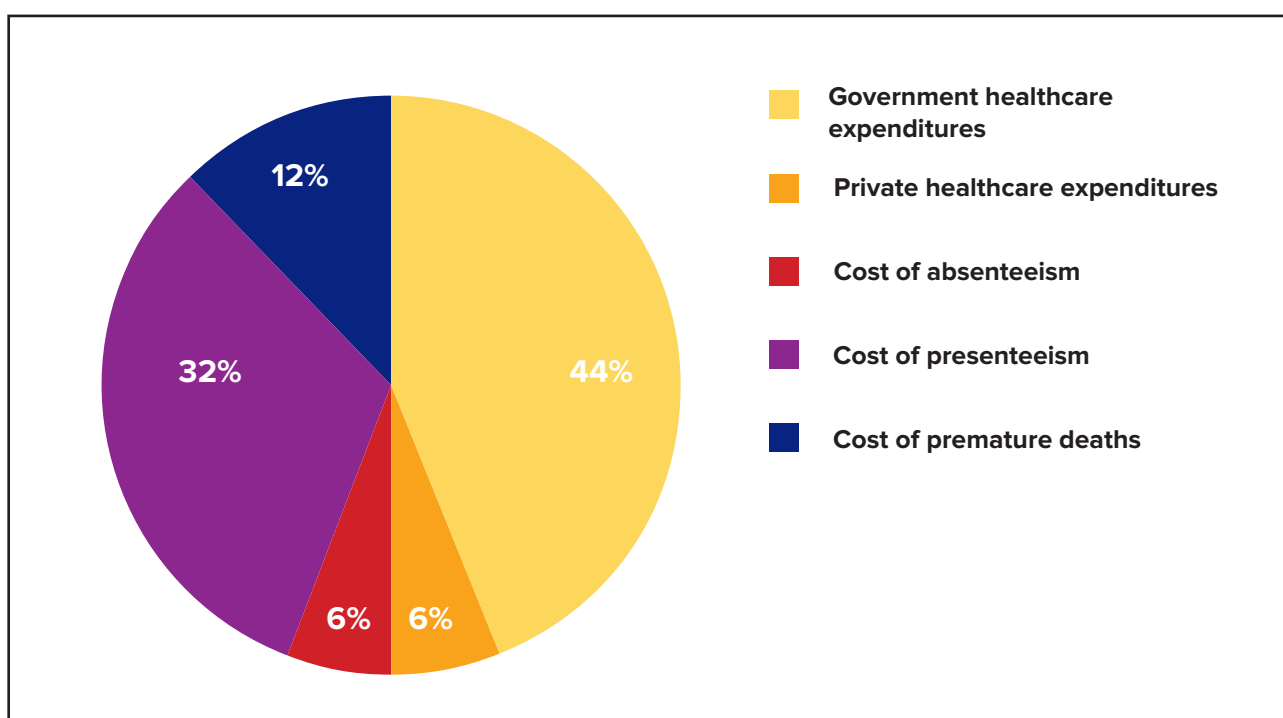
c. Total economic costs

Table 6 summarizes the total direct and indirect costs of NCDs in Kuwait. The total health care spending on the four major NCDs in 2019 was already KD 814,698,829 (US\$ 2.66 billion) but additional losses to the economy (absenteeism, presenteeism, premature deaths) brought the total economic burden of NCDs to KD 1,603,479,866 (US\$ 5.2 billion), of which 50.8 percent was direct costs and 49.2 percent indirect costs. This would be even larger if the costs of absenteeism and presenteeism could be estimated for cancer and chronic respiratory diseases. The estimated total burden of NCDs is equivalent to 3.9 percent of GDP in 2019.

Table 6. Economic burden of NCDs in Kuwait in 2019, Kuwaiti Dinar

Cost	Cardiovascular diseases	Diabetes	Cancer	Chronic respiratory diseases	Total	Per GDP
Direct cost						
Government	257,037,044	250,402,331	43,127,750	161,373,874	711,940,999	1.74%
Private	37,099,379	36,141,759	6,224,833	23,291,859	102,757,831	0.25%
Total direct cost	294,136,423	286,544,090	49,352,583	184,665,733	814,698,829	1.99%
Indirect cost						
Absenteeism	83,118,368	18,440,138	No data	No data	101,558,506	0.25%
Presenteeism	468,666,326	35,036,262	No data	No data	503,702,588	1.23%
Premature death	142,581,532	6,875,029	32,485,892	1,577,490	183,519,943	0.45%
Total indirect cost	694,366,226	60,351,429	32,485,892	1,577,490	788,781,037	1.93%
Total burden	988,502,649	346,895,519	81,838,475	186,243,223	1,603,479,866	3.92%

Fig. 4. Structure of the economic burden of NCDs in Kuwait, 2019



2. Return on investment analysis

a. Costs of intervention

The costs of intervention were estimated for the period 2020–2034. **Table 7** shows the costs for each of the first five years of this period and the five-year and 15-year totals.

The cardiovascular disease clinical interventions produced the largest estimated costs. Treating people who have cardiovascular diseases and diabetes costs KD 2,388,396 (US\$ 7.8 million) in the baseline year and increases to KD 12,797,480 (US\$ 42 million) in 2024. Implementing the entire cardiovascular disease and diabetes clinical intervention package over the five-year scale-up period would cost KD 38,316,375 (US\$ 125 million).

The total costs for the tobacco package based on MPOWER guidelines are 10,016,233 KD (US\$ 33 million) for five years and KD 28,283,170 (US\$ 92 million) for 15 years. The physical activity awareness interventions would cost an estimated KD 11,547,798 (US\$ 38 million) in five years and the salt reduction package, KD 16,278,470 (US\$ 53 million).

Table 7. Estimated costs of policy and clinical interventions, 2020–2034, Kuwaiti Dinar

Intervention package	2020	2021	2022	2023	2024	Total for 5 years	Total for 15 years
Policy interventions							
Tobacco control	2,107,296	2,026,750	1,917,684	2,046,819	1,917,684	10,016,233	28,283,170
Diet and Physical activity awareness	1,456,444	2,458,106	2,450,297	2,539,123	2,643,828	11,547,798	49,250,085
Salt reduction	4,441,261	3,100,367	2,959,302	2,888,770	2,888,770	16,278,470	47,283,691
All policy interventions	8,005,001	7,585,224	7,327,283	7,474,711	7,450,281	37,842,500	124,816,947
Clinical interventions							
CVD and diabetes clinical interventions	2,388,396	5,061,869	7,739,047	10,329,584	12,797,480	38,316,375	317,806,650
Total	10,393,398	12,647,093	15,066,330	17,804,295	20,247,761	76,158,876	442,623,596

b. Health benefits

All interventions significantly reduce the number of lives lost to causes related to cardiovascular diseases over 15 years (**Table 8**). Salt interventions and cardiovascular disease and diabetes clinical interventions have the greatest impact in terms of mortality averted (5,610 and 9,278 lives saved, respectively), followed by and tobacco interventions (1,333 lives saved) and diet and physical activity awareness (1,181 lives saved). About 90% of the mortality averted is premature mortality (<70 years).

Each set of interventions also adds healthy life-years to the population. The cardiovascular disease clinical interventions and tobacco and salt reduction packages prevent strokes and cardiovascular events, and thus individuals avoid disabling states (such as partial paralysis from stroke) that can increase pain and suffering, reduce mobility and impair speech and thought. Thus, the largest gains in healthy life-years are achieved with the cardiovascular disease and diabetes clinical interventions (54,062 healthy life-years gained), the salt reduction intervention (43,079 healthy life-years gained), the tobacco interventions (10,213 healthy life-years gained), and diet and physical activity awareness interventions (9,794 healthy life-years gained).

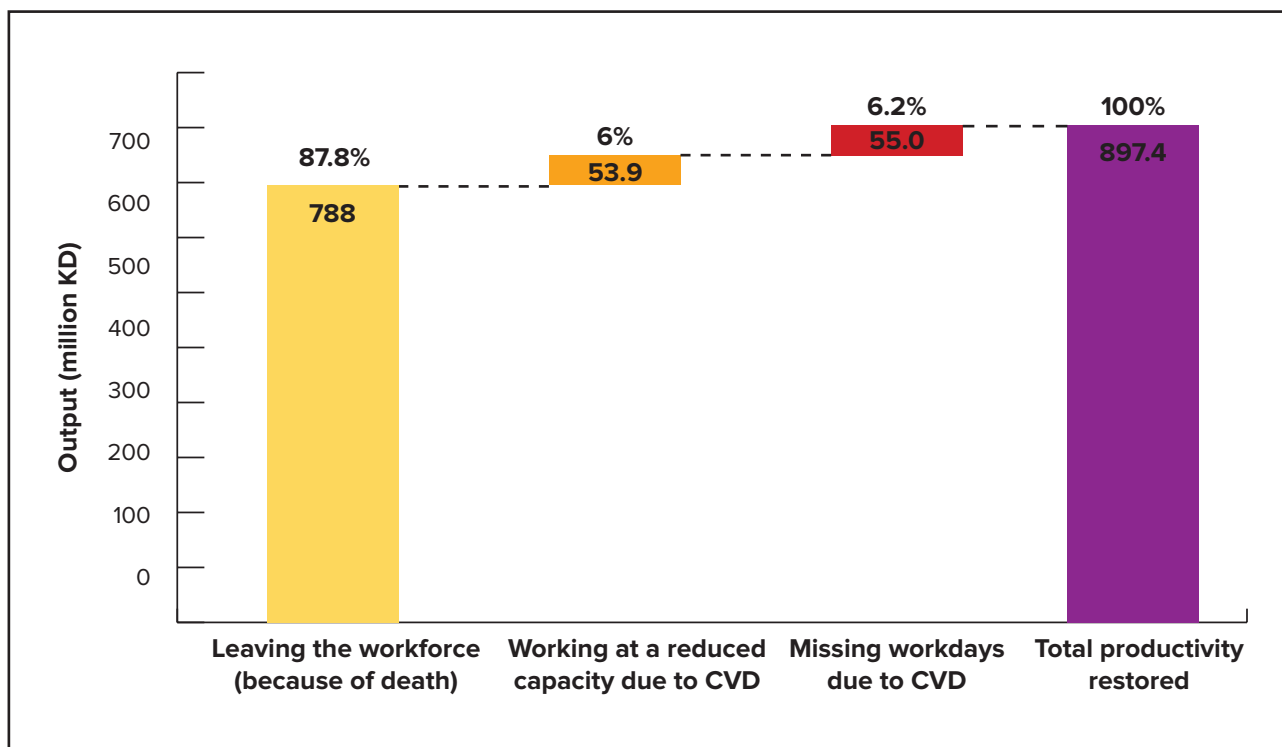
Table 8. Estimated health benefits over a 15-year time horizon, 2020–2034

Intervention package	Strokes averted	Acute IHD averted	Mortality averted (total deaths, includes premature deaths)	Mortality averted (premature deaths)	Healthy life-years gained
Tobacco control	1,078	1,380	1,333	1,235	10,213
Salt reduction	5,642	5,914	5,610	5,108	43,079
Diet and physical activity awareness	722	1,500	1,181	1,022	9,794
CVD and diabetes clinical intervention	6,800	4,638	9,278	8,291	54,062
Total	14,242	13,432	17,402	15,656	117,148

c. Economic benefits

The NCDs included in this analysis reduce the labour workforce and productivity through premature deaths, fewer days of work (absenteeism) and reduced productivity while at work (presenteeism). **Figure 5** demonstrates the labour productivity gains that would result from the prevented deaths and disease cases over 15 years, described in **Table 8**.

Fig. 5. Recovered economic output expected from tobacco, physical activity, salt and cardiovascular diseases primary prevention interventions over 15 years



The combined recovered economic output from both the clinical and the policy intervention packages in net present-value terms would be KD 897,366,990 (US\$ 3 billion) in labour productivity gains over the 15-year period or equivalent to 2.2 percent of Kuwait’s 2019 GDP over 15 years.

The highest labour productivity gains are derived from reduced premature deaths (87.8 percent of recovered economic output), followed by reduced absenteeism and reduced presenteeism (6.2 percent and 6 percent of recovered economic output, respectively).

d. Social benefits of increased years of healthy life

Healthy life-years gained is a measure in health economics. It expresses the additional number of years of life that a person lives in a healthy condition as a result of receiving a treatment or avoiding a disease. It is common when estimating the benefits of improved health to put a value on being alive. We estimated that the combined social value from both the clinical and the policy intervention packages in net present-value terms would be KD 386,012,369 (US\$ 1.26 billion) over the 15-year period.

The highest social benefits are derived from the monetary value of healthy life-years gained as a result of full implementation of salt reduction package and clinical interventions.

Table 9. Social value of the investment over 5- and 15-years, in KD and US\$

Intervention package	5 years		15 years	
	KD	US\$	KD	US\$
Tobacco control	1,808,060	5,910,703	33,784,498	110,444,393
Salt reduction	8,718,600	28,501,845	143,108,949	467,835,306
Diet and physical activity awareness	1,612,764	5,272,261	32,312,468	105,632,201
CVD and diabetes clinical interventions	7,069,986	23,112,384	176,806,455	577,995,314
Total	19,209,410	62,797,194	386,012,369	1,261,907,214

e. Return on investment

Comparing the costs and benefits of each package of interventions shows that all the NCD prevention interventions at the population level for risk behaviour included in the analysis – for tobacco control, salt reduction and increasing physical activity – have returns on investment greater than KD 1 for each KD 1 invested over 15 years (**Table 10**).

Table 10. Costs, benefits and return on investment at five and 15 years, by intervention package (in Kuwaiti Dinar, not including social value)

Intervention package	5 years			15 years		
	Total discounted costs	Total productivity benefits	ROI	Total discounted costs	Total productivity benefits	ROI
Tobacco control	9,459,582	2,147,462	0.23	23,311,358	71,680,067	3.07
Salt reduction	15,451,020	11,271,357	0.73	39,071,697	321,396,627	8.23
Diet and physical activity awareness	10,825,259	1,552,030	0.14	38,909,074	59,995,555	1.54
CVD and diabetes clinical interventions	35,421,053	14,829,340	0.42	241,507,649	444,294,741	1.84
Total	71,156,914	33,991,838		342,799,778	950,427,581	

The salt reduction package has the highest return on investment of any intervention: for KD 1 invested in the salt reduction package, the expected return is KD 8.23 for 15 years. Tobacco control also produces a high return on investment over 15 years (3.07), as does the physical activity package (1.54).

The package of clinical interventions is estimated to provide a return on investment of KD 1.84 per KD 1 invested. Although highly effective and resulting in the most lives saved (8,291 total deaths averted, see **Table 8**), the clinical interventions entail the highest costs of medical treatment necessary under clinical interventions. Further, these treatment options (treatment, secondary prevention after acute events and other) have low potential to increase labour force participation after stroke, myocardial infarction and diabetes. These two factors keep the ROI for the clinical interventions from being higher.

Adding the values of social benefits due to increased years of healthy life to the total productivity values increases the return on investments as described in **Table 11**.

Table 11. Costs, benefits and return on investment at five and 15 years, by intervention package (in Kuwaiti Dinary, including social value)

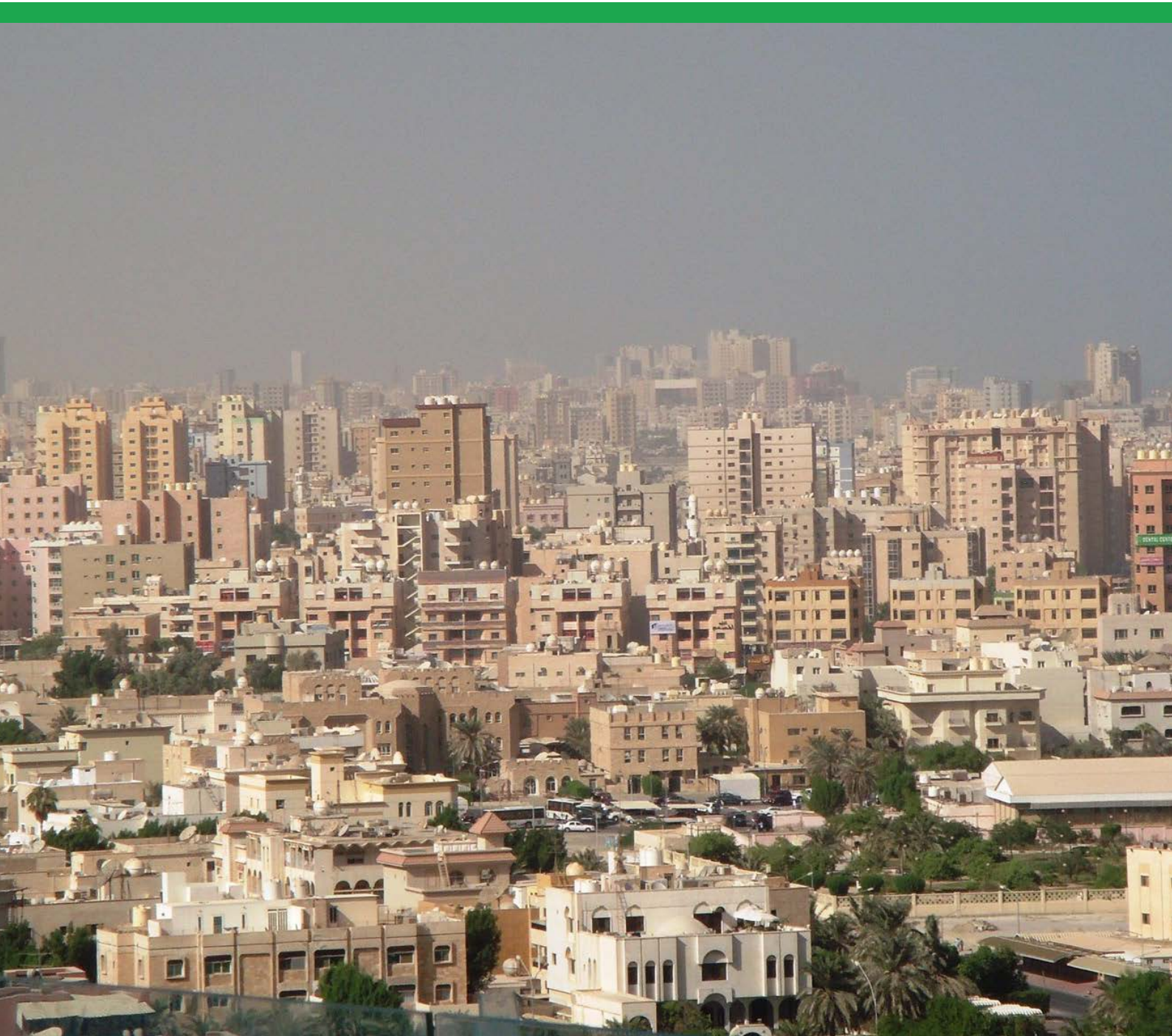
Intervention package	5 years			15 years		
	Total discounted costs	Total productivity + social benefits	ROI	Total discounted costs	Total productivity + social benefits	ROI
Tobacco control	9,459,582	3,955,523	0.42	23,311,358	105,464,565	4.52
Salt reduction	15,451,020	19,989,958	1.29	39,071,697	464,505,576	11.89
Diet and physical activity awareness	10,825,259	3,164,793	0.29	38,909,074	92,308,023	2.37
CVD and diabetes clinical interventions	35,421,053	21,899,326	0.62	241,507,649	621,101,196	2.57
Total	71,156,914	53,175,780		342,799,778	1,335,928,150	



‘It’s therefore not a question of whether countries can afford to implement the best buys, but whether they can afford not to. We have all the pieces to save lives we just have to put them into place. The question is, will we? It’s a question we must answer with the decisions we make today, and every day.’

Tedros Adhanom Ghebreyesus,
Director-General, WHO

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CONCLUSION & RECOMMENDATIONS

Investing in four proven and cost-effective intervention packages (best buys) can significantly reduce the burden of cardiovascular disease as well as cancer, chronic respiratory disease, and diabetes.

CONCLUSION

The four major NCDs impede Kuwait's efforts to increase efficiency in the health sector, helping to achieve fiscal balance. They also hinder the country's broader development priorities of increasing human capital and strengthening inclusive economic growth. NCDs are a leading health and development challenge in Kuwait, and they are making the COVID-19 pandemic worse and vice versa. Addressing NCDs and COVID-19 together can reduce the health and economic burdens of both.

The findings from the investment case model show that NCDs cost the Kuwait economy KD 1.6 billion (US\$ 5.2 billion), equivalent to 3.9 percent of its 2019 GDP. Cardiovascular disease contributes the most to the economic burden of NCDs in Kuwait, 62 percent (KD 988,502,649) with 30 percent attributable to direct healthcare spending and 70 percent due to indirect costs including reduced workforce participation and loss in national productivity. Cardiovascular disease is followed by diabetes, chronic respiratory diseases and cancer. Government healthcare spending was equal to 44 percent of the total economic burden, followed by presenteeism (32 percent), premature death (12 percent), private health expenditure (6 percent), and absenteeism (6 percent).

Investing in four proven and cost-effective intervention packages (best buys) can significantly reduce the burden of the four major NCDs. Furthermore, these best buys can increase people's life expectancy and quality of life while decreasing the burden on the national economy and accelerating economic growth. Thus, these investments contribute to the overall socio-economic development of the country.

The investment case assessed the four cost-effective intervention packages of best buys within the Kuwaiti context: three policy packages to reduce the prevalence of behavioural risk factors for NCDs – tobacco use; physical inactivity and poor diet; and excessive salt consumption – and one clinical intervention package related to cardiovascular diseases and diabetes.

Prioritizing investing in the salt reduction and tobacco control packages would lead to the greatest return. Even these strong returns outlined in this report understate the case for increased investment, as they consider only the economic benefits of improved health outcomes. They do not account for the significant additional revenue that would come from the recommended increases in excise tax rates on health-harming products including tobacco, alcohol and sugar-sweetened beverages, that can be significantly higher than the costs needed to implement the recommendations (see **Annex 3**).

Summary of main findings

The economic modelling considers baseline coverage levels for each intervention and assumes a significant but realistic scale-up of coverage levels. The main findings regarding the intervention packages are as follows:

OVER 15 YEARS, INVESTING IN ALL FOUR COST-EFFECTIVE INTERVENTION PACKAGES WOULD...

PREVENT NEARLY
17,500
DEATHS

ADD ALMOST
117,000
HEALTHY LIFE-YEARS TO
PEOPLE IN KUWAIT

OVER 15 YEARS, THE PACKAGES TO PREVENT NCDs, SALT REDUCTION AND TOBACCO CONTROL HAVE THE HIGHEST RETURNS ON INVESTMENT (ROI)

	YIELD FOR EVERY KD	TOTAL COST OF POLICY PACKAGE (MILLION KD)	TOTAL BENEFIT (MILLION KD)
SALT REDUCTION INTERVENTION	8.2	39	321
TOBACCO CONTROL	3.1	23	72
CVD & DIABETES CLINICAL INTERVENTIONS	1.8	242	444
DIET & PHYSICAL ACTIVITY AWARENESS	1.5	39	60

RECOMMENDATIONS

The analysis drew attention to specific areas that need to be strengthened and scaled up to implement the WHO-recommended cost-effective NCD preventive and clinical interventions. The following actions would help Kuwait reap significant health and economic benefits from scaled-up investments to reduce NCDs:

1 >

A. Invest in new and scale- up current cost-effective clinical and population-based interventions, enhancing efficiency in the health sector and overall public sector fiscal sustainability.

Since the salt reduction and tobacco control packages largely provide the greatest return on investment, scaling up tobacco control and effective salt reduction initiatives should be of high priority.

To improve salt reduction policies, Kuwait can increase surveillance of salt consumption patterns beyond the most recent STEPS survey conducted in 2014 that only collected data on the prevalence of adding salt or salty items to meals. Kuwait can also expand initiatives with bakeries to reduce salt content in breads to other industries and food products. Next steps should also be taken to monitor and reduce sodium content in foods with the restaurant industry. Nutrition labelling, such as front-of-pack (FOP) labelling specifically, should be explored and implemented to alert consumers how much sodium is in a product. Kuwait can use guidance from neighbouring countries that have successfully implemented FOP labelling or are currently in the process. Saudi Arabia and the United Arab Emirates have introduced traffic light labelling systems to indicate healthiness of nutrient levels by colour (red, amber or green). [77]

Although Kuwait has achieved the highest level of implementation [5] on monitoring, bans on tobacco advertising, promotion and sponsorship, and cessation/dependence services, there is still room for improvement. Kuwait can expand smoking bans to include restaurants, bars, coffee shops, indoor offices and workplaces (including governmental establishments) and address any barriers, such as tobacco industry interference, to better understand why implementing these bans is a challenge. While there is a toll-free tobacco help line, Kuwait can increase provision of adequate cessation services in hospitals. Graphic warning labels should be required to appear on all types of outside packaging and be placed on top of the principal display areas of packages. Figurative or other signs, including colours or numbers, and misleading messages on packaging should be banned.

There should also be a ban on appearance of tobacco products and brands in TV and/or films and on tobacco product display at point of sale. Tobacco sales on the internet and through vending machines should be banned. The law banning sales of tobacco products to those under 21 years of age, should be strictly enforced as nearly one fifth of youth in Kuwait use some form of tobacco. Kuwait currently bans e-cigarettes but not e-shisha. With the growing popularity of novel tobacco and nicotine products, they must be regulated as per decisions of the Conference of the Parties of the WHO FCTC and WHO recommendations.

At 21 percent of retail price, tobacco taxation in Kuwait is very low and the lowest among all the Gulf Cooperation Council members. Kuwait should increase its tobacco excise tax-rate to the WHO-recommended level of 70 percent, with an overall tax-share of 75 percent of retail price. Kuwait can also consider earmarking resulting revenue for further improving health. Finally, plain packaging of tobacco projects should be considered, especially after the successful implementation in the Kingdom of Saudi Arabia.

To improve diet and physical activity, Kuwait should adopt a more robust system to monitor and report the nutrition of food in Kuwait. Not only should Kuwait implement food labelling policies, but also menu labelling in restaurants and cafes. The Saudi Food and Drug Authority of the Kingdom of Saudi Arabia adopted a menu labelling policy in 2019. [78] Kuwait should also set dietary standards in schools where unhealthy foods high in salt, sugar, saturated fat or trans-fats are restricted. Kuwait should restrict marketing of unhealthy food products to children, especially in or around schools. The WHO recommendations for physical activity are not fully met in Kuwait. The multisectoral action plan Towards a Physically Active Kuwait: National Plan of Action 2015–2020, should be evaluated, expanded and continued until 2025 and beyond. Campaigns with the Kuwait Obesity Association and other community organizations should continue and include other organizations to expand reach, perhaps with a focus on women who are particularly affected by obesity. Advice on physical activity should be part of routine healthcare offering specific guidance on how to exercise healthily in the intense heat of Kuwait.

One setting which lends itself to application of several of the above mentioned recommendations and initiatives is the Healthy Cities Programme. [79] This citizen-led programme aims to promote healthy living in an urban setting by mobilizing the community for health development, education, capacity building, and intersectoral collaboration. Healthy Cities in the Eastern Mediterranean Region have been demonstrated to increase community involvement and empowerment in planning and monitoring urban development. [80] Kuwait has had its first “Healthy City” accredited in 2014, with eight further cities awaiting evaluation. [81] Kuwait should nurture and expand this programme, with a particular focus on addressing health issues relating to pollution. For example, future cities should be designed to minimize environmental risk factors to health, and to offer a safe and healthy environment for living and working.

To improve clinical interventions for cardiovascular disease and diabetes, all primary health care facilities across all six governorates in Kuwait should offer screening services for early detection and effective management of CVD and diabetes. Adequate NCD education should also be provided to healthcare workers in Kuwait. Kuwait can look to neighbouring countries for guidance, such as Oman, which boasts an impressive national NCD screening service integrated in primary healthcare services that covers adults 40 and older. In terms of healthcare measures to monitor NCD risk factors, there needs to be a focus on treatment of the short-term and long-term health issues associated with excess weight, considering Kuwait is one of the most obese countries in the world and misperceptions surrounding weight persist in Kuwait. However, these measures should offer support and guidance to patients to better

understand the behavioural and environmental risk factors, and healthy habits to mitigate NCD risks. Considering the relevant issue of weight stigmatisation, supportive measures, such as support groups, should be put in place to improve health and avoid any sense of placing blame solely on the patient. All of those at a high risk for CVD and diabetes should have access to drug therapy, especially since Kuwait has all essential NCD medicines and technologies, according to WHO. Kuwait should continue to strive to reach the objectives established by the Gulf Committee for Cardiovascular Diseases Control in the 2009–2019 plan to improve the quality of health services to patients with cardiovascular diseases and the means of monitoring of cardiovascular diseases.

B. Increase taxes on health-harming products (tobacco, alcohol, sugar-sweetened beverages) and shift subsidies from health-harming products (e.g. polluting fuels) to health-promoting ones. Beyond tobacco taxation, Kuwait should increase taxation on other health-harming products including sugar-sweetened beverages. Kuwait should follow up on the initiative to apply the GCC-approved tax increases of 50 percent on carbonated high-calorie drinks (applicable to sodas and other SSBs) and 100 percent on energy drinks. This commendable initiative will help reduce SSB consumption and associated health and economic costs. The Kingdom of Saudi Arabia implemented the GCC excise tax on carbonated beverages at 50 percent and energy drinks at 100 percent in 2017. [82] A recently published paper examined the impact of the tax finding a decrease in sales volume of soft drinks. [83] However, because the tax in Kuwait would be based on price alone consumers are likely to choose cheaper options instead of healthier ones. WHO recommends an excise tax based on sugar content or volume. [84] Modifying the tax structure to the amount of sugar or size of the beverage may support consumers to choose smaller beverages with less sugar, while still generating revenue.¹⁰

Furthermore subsidies that exist on unhealthy products could be shifted to health-promoting ones such as fresh fruits and vegetables. For example, energy, including oil and electricity are heavily subsidized in Kuwait, and with subsidies approaching 8 percent of GDP in 2016. [8] Reducing these subsidies would not only reduce air pollution and associated NCDs, but could also finance the policy packages outlined in this report.

The Gulf Cooperation Council (GCC) makes tax decisions as a regional block. The GCC is inclined towards health taxes and considering how to design and implement a tax on sugar-sweetened beverages. Kuwait can present the GCC with evidence on the fiscal and health benefits of health-taxes, defending proposals for tax increases that would align those in Kuwait to more impactful levels. Earmarking revenue from excise taxation for health systems strengthening and/or the SDGs broadly increases public support for such measures and has become standard practice in many countries. The Philippines, for instance, earmarks excise tax revenues from health-harming products for universal health coverage [85] and Egypt allocates tax revenue from tobacco products to health insurance schemes for students. [86]

¹⁰ The UK has successfully introduced a tiered excise tax structure based on the sugar content of beverages to discourage consumers from purchasing drinks with high quantities of sugar.


2 >

Engage and collaborate by strengthening multisectoral, whole-of-government and whole-of-society action on NCDs.


Fully finance the National NCD plan and increase public awareness of NCDs and their risk factors. As the cause and effects of NCDs are not limited to health, the health sector should not be the only sector to respond to these chronic ailments. A whole-of-government and whole-of-society approach is needed for effective prevention and control of NCDs and their risk factors. As described in the UNIATF 2017 Joint Mission Report, more efforts are needed in Kuwait's multisectoral high-level committee for NCDs to successfully prevent and control NCDs. More non-health sectors need to be engaged if not already, such as Finance and Economy, Environment and Energy, Food and Agriculture, Labour and Employment, Communication, Education, Youth and Sports, Social and Economic Development, Gender and Family Welfare, Legislative and Executive branches, Investment, Trade and Industry, and Tourism. Additionally, clear mechanisms to ensure accountability for each ministry need to be established to uphold NCD commitments. Inter-ministerial action throughout the committee should be informed by a uniform set of key performance indicators (KPIs). The multisectoral committee can also put in place and track KPIs for a national NCD action plan in line with the National Strategy for the Prevention and Control of NCDs, 2016-2025. A multisectoral NCD response should also engage key actors alongside the Ministry of Health including the Dasman Diabetes Institute, Kuwait Institute for Scientific Research, the Public Authority for Food and Nutrition, the Public Authority for Youth and Sports, the International Diabetes Foundation (IDF)/Middle East and North Africa (MENA), the World Heart Association, the Gulf Federation for Cancer Control and the Executive Board of the Health Ministers' Council for GCC States. The NCD committee should take measures to prevent the tobacco, fast food or pharma industries from being involved in NCD governance. The NCD committee should give equal attention to both prevention and control of NCDs, with goals and targets both to prevent and manage NCDs. For a whole-of-society approach, Kuwait should also expand the NCD scientific community and increase efforts in NCD research and academia. The Government of Kuwait could also increase international and regional collaboration, by documenting progress (e.g. through annual progress reports) and sharing good and innovative practice across the GCC and beyond.

In general, to increase public awareness of NCDs, Kuwait can increase media campaigns to spread awareness of NCD prevalence in the country and how reducing NCD risk factors can help minimize risk for development and complications of NCDs. The Government can engage civil society in monitoring the progress of NCD policies and share success stories with the public to strengthen support. It can also involve organizations and the public in the development and dispersal of media campaigns and other outlets to share NCD-related information, while keeping the public updated on the status of NCD prevention and control programmes through government websites and social media platforms. With the increase in misinformation circulating online, it becomes even more important that the Government and Ministry of Health circulate its own highly trustworthy information, while flagging false information or countering myths about NCDs and health.

Kuwait can expand the “Healthy Living” and “Healthy Lifestyle” programmes aimed at promoting changes in lifestyle choices and habits that are linked with NCDs. Campaigns on nutrition and physical activity should be scaled-up and reach children and adults of all ages to increase education and understanding of a healthy lifestyle. Physical activity campaigns should target women especially as nearly three fourths reported insufficient physical activity in the STEPS survey. Campaigns should also address fruit and vegetable consumption since the STEPS survey reported that 84 percent of Kuwaitis consumed insufficient daily quantities (less than 5 servings) of fruits and vegetables per day. Education materials should include different types of fruits and vegetables, what constitutes a serving and how many servings are needed per day. While campaigns should address the issue of weight, they should offer support services to manage weight status in a healthy manner and can be accompanied by information for telephone help lines, mobile apps for healthy lifestyle behaviours, or contacts for support groups. Kuwait should initiate media campaigns along with food and menu labelling, to raise awareness on the negative health effects of unhealthy foods, in particular fast food. Food courts in malls are a potential area to display messages on how an unhealthy diet contributes to NCD risk factors. Kuwait also needs to initiate a large-scale mass-media campaign awareness on the harmful effects of tobacco use. This campaign should target youth as current prevention measures are insufficient considering nearly 20 percent use tobacco and the tobacco industry still is able to reach children and adolescents.

3  **Strengthen monitoring and evaluation and accountability across sectors.**
In general, as Kuwait has a high population of expatriates (around 70 percent of total population) Kuwait can collect data on the entire population in Kuwait, not only Kuwaiti nationals. Kuwait should continue to conduct and update nationwide surveys such as the STEPS survey, and youth and adult tobacco surveys on a routine basis. Beyond monitoring of NCDs and their risk factors, Kuwait should research both the direct and indirect costs of NCDs. While data on absenteeism is currently available, presenteeism should also be assessed, particularly as it often contributes a large share to the indirect economic burden of NCDs. To achieve this increased monitoring, training on surveillance of disease prevalence and related economic burden should be increased and expanded.

Kuwait should also continue plans to monitor salt content in bakeries and expand to other nutrients and food products. Kuwait should in general adopt a more robust system to monitor nutrition in food, specifically trans-fats with the goal to eliminate trans-fats in the food supply. In terms of healthcare, not only should weight status and biochemical markers be monitored, but also dietary habits by dietitians and appropriate healthcare practitioners, especially when a dietary regime is prescribed. Adolescents should be prioritized as rates of adolescent obesity in Kuwait are among the highest in the world and continue to increase.

4  **Implement novel policy approaches and test innovative solutions to increase utilization of existing services and incentivize healthy behaviour.**
In addition to adopting the best-buys and modelled interventions, Kuwait can benefit from applying innovations in key areas.

Urban planning to promote health: As the climate in Kuwait makes exercise difficult, purposeful urban planning can incentivize healthier habits (e.g. mobility systems which encourage walking and/or cycling). Kuwait can look to “Khalifa Town” in Bahrain for innovative urban designs that promote physical activity. Khalifa Town is a housing project that utilizes “built environment measures” such as wide streets and green spaces. [87] Other examples include a national network of public recreation areas and the creation of outdoor walking/exercising facilities in neighbourhoods. Kuwait should evaluate similar existing investments for impact and consider incorporating new urban design measures to promote physical activity in both new and older neighbourhoods.

Improving air quality: Kuwait should develop a long-term plan to reduce emissions and air pollution. Kuwait can utilize renewable energy sources, such as solar and wind to reduce emissions and improve air quality.

Behavioural nudges towards healthy choices: Under the Ministry of Education’s leadership, public schools can adopt innovative measures (see **Annex 4**) such as pre-ordering for school meals with embedded nudges to prompt children to consume healthier food and changing food placement and labels in school cafeterias to encourage healthy eating. School food menus can include nutrition information highlighting salt, fat, and sugar content. Schools can also ensure responsible food marketing towards children which encourages healthy food choices such as fruits and vegetables and discourages consumption of unhealthy items. Dietary standards can also be adopted in other community settings.

Food environment: Addressing access and availability to healthy food is key within a holistic approach to health. Kuwait can prioritize the agriculture sector, ensuring food security while promoting local food production of health-promoting foods. Kuwait can continue to fund the Public Authority for Agricultural Affairs and Fish Resources’ (PAAAFR) efforts to increase local farming while prioritizing production of healthy foods. As Kuwait makes substantial investments in farming abroad, the Government should ensure these investments are going to health-promoting foods and not items like sugar or tobacco. Initiatives like the greenhouse project the “Southeastern Anatolia Project (GAB)” in Turkey can be considered for implementation locally in Kuwait, if they are suitable to the local climate. Other innovative approaches include local food markets, urban and community gardens and incentivizing consumption of health-promoting foods (see **Annex 4**). Kuwait may also want to consider “healthy restaurant” and “healthy malls” initiatives to promote healthy eating habits when dining out.

5 >

Build back better to ensure that prevention and control of NCDs is a central element of the COVID-19 response and recovery (see Annex 1 for more details). [88] COVID-19 is another major reason to address NCDs urgently.

NCDs and their risk factors, to varying degrees, increase susceptibility to both COVID-19 infection and more severe outcomes. At the same time, impacts from the pandemic on health systems and prevention approaches threatens to stall progress on NCDs.

People living with or at risk of NCDs face significant disruptions in access to prevention and treatment services for NCDs. The NCD-COVID 19 double pandemic is a major cost to health and well-being as well as to the economy, with each issue causing significant economic impact.¹¹

There are initial steps Kuwait can take to ensure NCDs and COVID-19 are addressed together, both in the immediate response and in longer-term efforts to rebuild. These include:

- ^ Ensure NCDs and NCD health and development experts are represented on COVID-19 taskforces [89] to support sensitization of actors and integration of NCDs into immediate and longer-term responses.¹² Ensure COVID-19 experts are represented on NCD coordination mechanisms in turn.
- ^ Optimize regional and global coordination and information sharing on the nexus of NCDs and COVID, leveraging existing key platforms for example the GCC joint operations room for COVID-19.
- ^ Integrate NCDs into the country's National COVID-19 Strategic Preparedness and Response Plan, especially around pillar 9: maintaining essential services. Refer to WHO's Interim guidance on Maintaining essential services during an outbreak. [90]
- ^ Different sectors review the WHO and UNDP NCD sectoral briefs to analyse how their COVID-19 response and recovery can be sensitive to NCDs and to further integrate NCDs into longer-term development work including efforts for universal health coverage and the SDGs (see **Annex 1** of this document for further details).

11 3.9 percent of GDP burden due to NCDs, and 1.1 percent GDP contraction forecasted due to COVID-19 according to the International Monetary Fund, Real GDP growth, IMF Data Mapper.

12 For example, many governments have been cognizant of the implications of social isolation on physical and mental health and have allowed people to take exercise outside for a short period during the movement restriction.



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ANNEXES

ANNEX 1: NCDs AND COVID-19

Prevention and control of NCDs is of increased importance during the COVID-19 pandemic. In addition to an increased vulnerability to severe outcomes from COVID-19, patients with NCDs suffer from disruption of or limited access to NCD prevention and treatment services. [91] A recent WHO survey across 155 countries found that the majority of countries are encountering disruptions to the delivery of NCD services, correlating with the severity of the COVID-19 outbreak. [92] In the early stages of the pandemic, Kuwait initiated a curfew that was expanded to 16 hours per day in April and most non-essential work was shifted to remote work. [93]

Interactions between NCDs and COVID-19

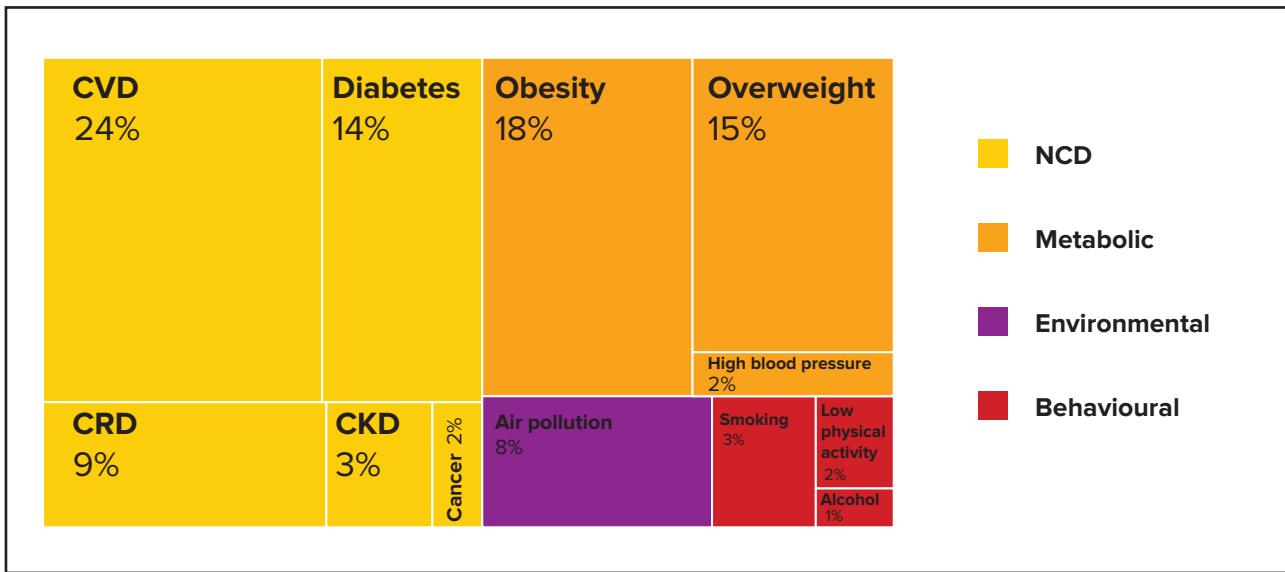
Persons with NCDs are more vulnerable to developing severe illness of or dying from COVID-19, with diabetes, cancer, chronic respiratory disease or cardiovascular diseases being key risk factors for adverse outcomes, [94] [95] as well as exposure to risk factors including smoking, [96] alcohol consumption, [97] obesity, [98] and exposure to air pollution. [99] This strong interconnection between NCDs and COVID-19 highlights the necessity to integrate considerations for NCDs into the pandemic response on all levels.

Kuwait scores 6.09 in the NCD/COVID-19 Vulnerability Index indicating a vulnerability to COVID-19 owing to NCDs and risk factors above the global median, and the second highest in the Gulf region after the United Arab Emirates. The index is a weighted average of the normalized prevalence indicators for a set of NCDs and risk factors with established links to COVID-19.¹³

The key NCD-related factors driving vulnerability to COVID-19 in Kuwait, indicated in the index breakdown (**Figure 6**) are cardiovascular diseases (accounting for about a quarter of the total vulnerability), obesity and overweight (one third of total vulnerability), and chronic respiratory diseases (CRD). The prevalence of CRD – a major risk factor for severe COVID-19 – above the GCC average makes the Kuwaiti population particularly vulnerable. The data also suggests that while Kuwaitis are less likely to suffer from diabetes than residents of other GCC countries, the prevalence of this disease is nevertheless high and puts the Kuwaiti population at increased risk for COVID-19. The vulnerability to COVID-19 caused by these conditions is compounded by high CVD prevalence and the fact that men – who are about twice as likely as women to suffer from severe COVID-19 – make up nearly 61 percent of the Kuwaiti population according to the World Bank.

¹³ For further data and details on the Index methodology, please refer to the NCD COVID-19 Vulnerability Dashboard and Theoretical Framework.

Fig. 6. NCD-driven COVID-19 Vulnerability Index – breakdown of risks



Recommendations & governance strategy

Addressing NCDs as risk factors for COVID-19 contraction and severity is crucial for reducing the pandemic’s strain on the healthcare system and economy. Kuwait should communicate the elevated vulnerability of affected individuals. The Government of Kuwait should also devise policies to encourage a healthy lifestyle and reduce exposure to factors linked to development of NCDs including smoking, alcohol use, physical inactivity and air pollution. An effective and sustainable COVID-19 response requires an intersectional, multi-faceted, ‘whole-of-society’ and ‘whole-of-government’ approach. The main building blocks are:

- ^ **An interdisciplinary task force** should devise policies and responses strategies. This should consider and meet the needs of all groups of society, with a particular focus on those who are the most vulnerable.
- ^ **Coordinate with global and regional efforts** to allow for exchange of ideas and ensure the selection of most suitable approaches on all levels of society.
- ^ **Integrate considerations** for NCDs into COVID-19 response, including identification of essential NCD services, and the need for service delivery adaptations to maintain essential services. Prioritize NCD patients for COVID-19 testing and early care, and protect supply chains for NCD medicines and technologies.
- ^ **Leave no one behind.** Identify vulnerable groups at risk for COVID-19, including marginalized population groups with high rates of NCDs and including migrant workers. Incorporate their needs into the COVID-19 response plan. [100]
- ^ **Implement multisectoral action.** COVID-19 action is not confined to the health sector alone, but requires cooperation from a multitude of sectors to ensure that the pandemic response and recovery is sensitive to NCDs.

Other innovative COVID-19 policy solutions

In addition, Kuwait can incorporate more innovative approaches to help reduce risk factors for NCDs and COVID-19 infection and complications. Advanced technological approaches can be used to identify vulnerable groups at risk for severe disease. For example, finding geographical groups at higher risk of severe symptoms of COVID-19 by mapping areas of high prevalence of certain pre-existing conditions or areas of high levels of pollution. [101]

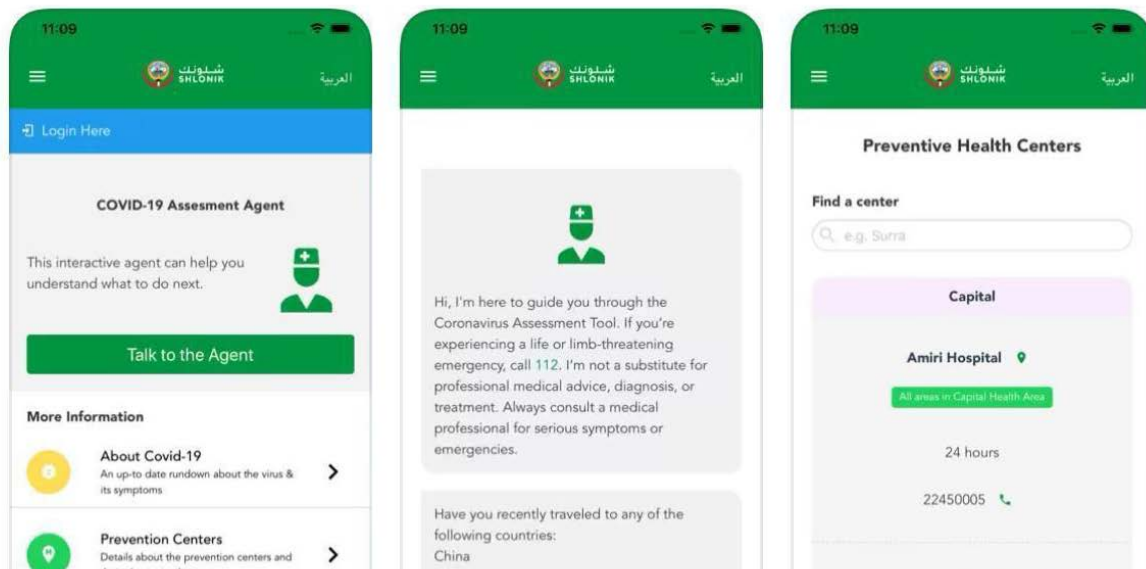


Image credit: © Kuwait News Agency (KUNA)

Contact tracing apps are becoming a commonly used tool to help contain the spread of COVID-19 and Kuwait has joined an ongoing list of countries implementing this technology. [102]–[104] Kuwait launched the “Shlonik” app to monitor those in mandatory quarantine, detect those that have come in contact with COVID, and provide the option to speak to a doctor about their health. [105] The tracing functions and alerts of the app should emphasize vulnerable groups, such as persons with NCDs, by prioritizing these groups when contact tracing and offering useful information on the interaction between NCDs and COVID-19 on the app. The app should also provide advice and support on how to stay healthy during a mandatory 14-day quarantine.

As mentioned, government efforts to promote physical activity and mental health, to reduce alcohol use, exposure to air pollution and tobacco usage are of critical value. The Ministry of Health of the State of Kuwait has taken initiative to provide the public with useful up-to-date, accurate information on COVID-19. [3] Notably, the Ministry of Health is active on twitter, providing public health messaging and COVID updates to the public. [4] These efforts should utilize scientifically backed information could be further expanded with media campaigns, apps and other forms of technology that can be utilized to communicate about the novel coronavirus as well as suggestions on how to maintain a healthy lifestyle during times of self-isolation and quarantine. For example, Kuwait can implement resources on healthy diet [106] and exercise [107] on their Ministry of Health website or “Shlonik” mobile app in addition to the provided information on COVID-19. These initiatives help address concerns of both NCD and COVID-19 prevention.

ANNEX 2: ESTIMATED CURRENT COVERAGE OF NCD INTERVENTIONS TO BE COSTED WITHIN THE ONEHEALTH TOOL

	Current implementation levels	Modeled implementation levels in 2030
Tobacco use		
<i>Monitor tobacco use and prevention policies</i>	Level 4	Level 4
<i>Protect people from tobacco smoke</i>	Level 2	Level 4
<i>Offer to help quit tobacco use: Brief intervention</i>	Level 4	Level 4
<i>Offer to help quit tobacco use: mCessation</i>	Level 1	Level 4
<i>Warn about danger: warning labels</i>	Level 1	Level 4
<i>Warn about danger: mass-media campaign</i>	Level 1	Level 4
<i>Enforce bans on tobacco advertising</i>	Level 3	Level 4
<i>Enforce youth access restriction</i>	Level 3	Level 4
<i>Raise taxes on tobacco</i>	Level 2	Level 4
<i>Plain packaging of tobacco products</i>	Level 1	Level 4
Physical inactivity		
<i>Public awareness campaigning on physical activity</i>	Level 1	Level 4
<i>Brief advice</i>	Level 1	Level 4
High salt consumption		
<i>Surveillance</i>	Level 1	Level 4
<i>Harness industry for reformulation</i>	Level 1	Level 4
<i>Adopt standards: front-of-pack labelling</i>	Level 1	Level 4
<i>Adopt standards: strategies to combat misleading marketing</i>	Level 1	Level 4
<i>Knowledge: education and communication</i>	Level 1	Level 4
<i>Environment: salt-reduction strategies in community-based eating spaces</i>	Level 1	Level 4

Clinical interventions: cardiovascular diseases		
<i>Screening for risk of cardiovascular diseases and diabetes</i>	5%	80%
<i>Treatment for those with high absolute risk of cardiovascular diseases and diabetes (>30%)</i>	5%	80%
<i>Treatment of new cases of acute myocardial infarction with aspirin</i>	5%	80%
<i>Treatment of cases with established ischaemic heart disease and post-myocardial infarction</i>	5%	80%
<i>Treatment for those with established cerebrovascular disease and post-stroke</i>	5%	80%
Clinical interventions: diabetes		
<i>Standard glycaemic control</i>	5%	80%
<i>Retinopathy screening and photocoagulation</i>	5%	80%
<i>Neuropathy screening and preventive foot care</i>	5%	80%

ANNEX 3: HEALTH TAX MODELLING

Health taxes are considered the most effective policy measure to reduce consumption of health-harming products. Additionally, they generate revenue and reduce the burden on the health system. The Addis Ababa Action Agenda on Financing for Development [108] recognizes price and tax measures on tobacco as an important revenue stream for financing for development, and the WHO Global Action Plan for SDG 3 – to ensure healthy lives and promote well-being at all ages – emphasizes the role of taxes on cigarettes, tobacco and sugar in improving population health while reducing healthcare expenditures and increasing government revenue.

There is a consensus among the 194 United Nations Member States to promote fiscal measures to reduce main risk factors for NCDs and promote healthy diets and lifestyles. [109] Health taxes are a fiscal measure that can help finance health systems whose funding levels for health are currently insufficient to sustain progress towards SDG 3. [110] Summan and Laxminarayan estimated that a tax on tobacco, alcohol and sugar-sweetened beverages (SSBs) that increases retail prices by 50 percent could “avert over 50 million premature deaths while raising over US\$ 20 trillion of additional revenues worldwide over the next 50 years.” [111], [112] Identifying and increasing sustainable domestic revenue streams is more important now than ever, with COVID-19 causing economic contraction worldwide [113] and placing an additional strain on health-systems.

While health taxes hold great potential, they remain under-implemented, including in Kuwait. While the sale and import of alcohol is banned, [114] the country has also implemented taxes on tobacco and initiated steps to implement taxes on SSBs. Still, these products remain either very affordable or the tax structure could be improved. Increasing the excise tax on these products and altering the SSB tax structures to be specific to sugar content is an effective means to reduce consumption and prevent NCDs in Kuwait.

ANNEX 4: INNOVATIVE POLICY SOLUTIONS TO ENHANCE DIETS IN KUWAIT

Fruits and vegetables are important components of a healthy diet. Insufficient intake is linked to poor health and increased risk of NCDs. An estimated 3.9 million deaths worldwide were attributable to inadequate fruit and vegetable consumption in 2017. [115] WHO recommends that an adequate intake of fruit and vegetables is about 400g of fruit and vegetables. [116] Four or five servings of fruits and vegetables is typically recommended to reach the 400g recommendation. Data from the STEPS survey in Kuwait however, showed that 84 percent of respondents reported having insufficient daily (less than 5 servings) intake of fruits and vegetables per day. [12] The following table reviews a number of innovative interventions, including subtle ‘nudge solutions’, to increase fruit and vegetable consumption to help prevent NCDs.

SCHOOLS

Foster healthy dietary habits in schools



Photo credit: © The California Endowment via Flickr

Children form the core of their dietary preferences in the places where they spend most of their time – at home and school. Some schools have successfully experimented with innovative “nudge” interventions that prompt children to make (and internalize) healthier choices. [117] In one such intervention, researchers from the University of Florida created a software programme that children could use to preorder their school meals. While some children simply placed their orders as usual, others were given a “tweaked” version of the software with gentle cues, such as showing a screen with a smiley face when children choose all five foods recommended by the U.S. Department of Agriculture, or designing on-screen buttons that make the healthy choices more natural. Another experiment, carried out by researchers at Cornell University, found that children were more inclined to order foods with appetizing or even quirky descriptors such as “tender grilled chicken” (instead of simply “grilled chicken”) or the more over-the-top “X-ray vision carrots.”

Integrating nutrition policies in school canteens



Photo credit: © Zsuzsanna Schreck

Changing the food offered or the shifting the menus may help promote healthier options. Kuwait can encourage healthy choices in schools by shifting subsidizing towards fruits and vegetables, similar to Finland where milk subsidies exclude products high in fat or salt. Bans on salty snacks in schools and banning sugary beverages in schools and shops around schools may help deter unhealthy purchases. In California in the United States, state legislation bans the sale of SSBs on school campuses. [118]

SCHOOLS

**> Innovative approaches
in primary schools**



Photo credit: © Zsuzsanna Schreck

Parental involvement, taste testing and games are simple ways to encourage healthy eating in children. In England, children who attended schools where parents were involved in efforts to promote fruits and vegetables ate more vegetables compared to schools that did not have a high parental involvement. [119] In the United States, an evaluation of a nutrition education programme that utilizes a taste testing component found that adding taste testing to the programme resulted in higher student consumption rates of fruits and vegetables compared to without taste testing. [120] In Utah in the United States, a school used a game-based approach by promising rewards when the school met a fruit or vegetable consumption goal. Results showed students and teachers enjoyed the game and fruit and vegetable consumption increased when it was played. [121]

**> Reduce salt, sugar, and
trans-fats in school meals**



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Countries have made initiatives to reformulate foods to reduce trans-fat, added sugar and salt in processed foods. Tunisia has demonstrated a successful public-private partnership to achieve food reformulation. [126] Given biscuits are commonly consumed in schools in Tunisia, sweet biscuits filled with jam were reformulated to reduce fat, salt and sugar and eliminate trans-fat.¹²

14 WHO Regional Office for the Eastern Mediterranean, "NCD prevention and control in the Eastern Mediterranean Region Country Case study, Tunisia", presentation given at the High level EMR Policy Dialogue in preparation of the 3rd High-level Meeting of the United Nations General Assembly on the Prevention & Control of Noncommunicable Diseases, Cairo, Egypt, July 2018.

REFORMULATING FOODS AND BEVERAGES

Reduce sugar in soft drinks



In the United Kingdom, the Government set a goal for food industry to reduce sugar content in food by 20 percent by 2020 and implemented a tiered tax on sugar-sweetened beverages in 2018, encouraging reformulation of products. These policies were also accompanied by awareness campaigns. Sugar sold per capita coming from soft drinks decreased by 30 percent between 2015 and 2018. [122]

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GROCERY SHOPPING

Front-of-Pack (FOP) labelling



While limited, FOP nutrition labelling schemes, such as traffic light labelling, Nutri-score, and health or endorsement logos, are in use or under development in the WHO Eastern Mediterranean Region. For example, Saudi Arabia and United Arab Emirates have introduced traffic light labelling systems to indicate healthiness of nutrient levels by colour (red, amber or green), Morocco is developing a Nutri-score system which gives an overall rating of a food on a scale from A to E, and Tunisia uses a healthy logo to indicate healthier foods. [77]

Photo credit: © Betarice Murch via Flickr

GROCERY SHOPPING

> **Highlight healthy foods through strategic positioning**



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A well-established environment nudge for increasing consumer propensity for buying healthy foods involves placing healthy foods next to the cash register (or at the desk) while keeping unhealthy foods elsewhere on the premises. This intervention has been found to increase sales of healthy products (although not necessarily to curb sales of unhealthy products). [117]

> **Shopping cart designs and product placement in supermarkets**



Photo credit: © Hyacinth50 via Flickr

In a pilot experiment led by a researcher at the New Mexico (US) State University College of Business, shopping carts were decorated with a yellow tape and a sign, indicating a space reserved for fruit and vegetables. The research found that this simple intervention made shoppers more inclined to buy more fruit and vegetables. Evidence suggests that customers could be further incentivized by making the cart even more appealing (e.g. by including pictures of fresh fruit). [123]

> **Supporting local markets**



Photo credit: © WHO

In Montreal, a seasonal outdoor fruit and vegetable market receiving funding from the Public Health Department was placed in a disadvantaged neighbourhood near a subway station. [124] Integrating alternate food sources, such as local markets, in disadvantaged areas offers a useful strategy to promote consumption of fruits and vegetables while addressing health inequalities. Additionally, placing these markets on travel routes may help increase awareness and access.

RESTAURANTS



Making healthy meals the rule with default menus

In some cities, restaurants have tried to nudge consumers towards choosing more nutritious and less caloric meals by presenting healthy foods as the default option in their menus. This could entail, for instance, swapping the French fries for a salad as the default side dish for a protein. Here, the government can play a coordinating role in engaging with restaurants and offering workshops on how to design healthier default menus.



Photo credit: © WHO

MEDIA



Mass media campaigns

Providing nutrition information through various outlets may help promote fruit and vegetable consumption. Adolescents in Austria report television most often as a source of nutrition information. However, those who used newspaper articles, booklets and the internet as a source were more likely to consume fruit and vegetables. [125] This highlights the importance of using a variety of media when developing a public health nutrition campaign.



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ANNEX 5: RECOMMENDATIONS FROM THE JOINT MISSION OF THE UNITED NATIONS INTERAGENCY TASK FORCE ON THE PREVENTION AND CONTROL OF NON-COMMUNICABLE DISEASES, 7–11 MAY 2017

GOVERNANCE

Recommendations

The MoH NCD unit is established as a matter of urgency in order to provide Kuwait with the necessary strong and strategic leadership.

Guidance, communication, action and accountability for other ministries are strengthened through: (i) the MoH NCD unit; (ii) a stronger and fully functional coordination mechanism for NCDs across government with high-level participation; and (iii) a separate mechanism for bringing non-State actors together.

Establishing an High Level Inter-Ministerial Committee, possibly led by the Supreme Council of Planning, where all key health actors are represented, to guide health policy development, multisectoral collaboration and Health in All Policies.

Review and update the National NCDs Action plan, ensuring alignment of the Key Performance Indicators (KPIs) with: NCD-related targets in the SDGs and the Kuwaiti National Development Plan and its various sectoral projects.

A coordination mechanism be established within the UN Country Team, bringing together the necessary technical and political support from the UN system in order to provide catalytic support for national NCD action, advocacy and accountability.

PREVENTION AND REDUCTION OF RISK FACTORS

Recommendations

Urgent action to implement the WHO Framework Convention on Tobacco Control, including the set of evidence-based, feasible and cost effective interventions for tobacco control. This should include a significant increase in tobacco taxation – which has the support of the Ministry of Finance.

The government looks to embark on a sugar tax. Again this has the support of the Ministry of Finance.

An NCD Investment Case be developed for Kuwait in order to better understand the economic impact of NCDs on the national economy, and the results of such investment case be used for advocating for the need for greater investment in the prevention and control of NCDs.

Maintain progress on population-based measures to reduce salt intake.

Scale up action on eliminating trans fats in domestic and imported food: the Gulf Cooperation Council (GCC) policy on food labelling and elimination of trans fats should be fully adopted and implemented.

Government works with governorates to ensure that future cities are healthy cities. Health impact assessments need to be undertaken at the planning stage and healthy standards for cities should also be included in the Kuwaiti Master Plan 2040.

The media highlight NCDs in Kuwait and the need for pro-NCDs policies in the country.

SURVEILLANCE, MONITORING AND EVALUATION**Recommendations**

Complete the WHO NCD country capacity survey for the 2018 Progress Monitor as soon as possible.

Develop a monitoring and evaluation framework based on nationally agreed NCD targets with clear alignment with the SDGs and National Development Plan key performance indicators .

Monitor the performance of primary health care through regular reporting based on agreed quality indicators.

Monitors mechanisms enabling spatial disaggregation of information, in order that inequalities in both NCD prevalence and access to treatment are better understood .

HEALTHCARE**Recommendations**

Configure the country's primary care network so that it provides a stronger service for the early detection and management of NCDs, complementing intersectoral efforts made at population level.

Consider adopting a more systematic cardiovascular risk stratification for early detection of CVDs, using WHO Global HEARTS initiative tools.

Undertakes a complete transition from paper-based to electronic recording system, i.e. installing a full primary care information service.

RECOMMENDATIONS FOR ACTION FOR THE UN SYSTEM

Recommendations

Resident UN agencies should provide political and technical support for the above with UN partners at regional and global level. Specifically, WHO, the World Bank and the Islamic Development Bank should provide support for the health system in line with the WHO-led rapid health system situation analysis that was conducted in April 2017.

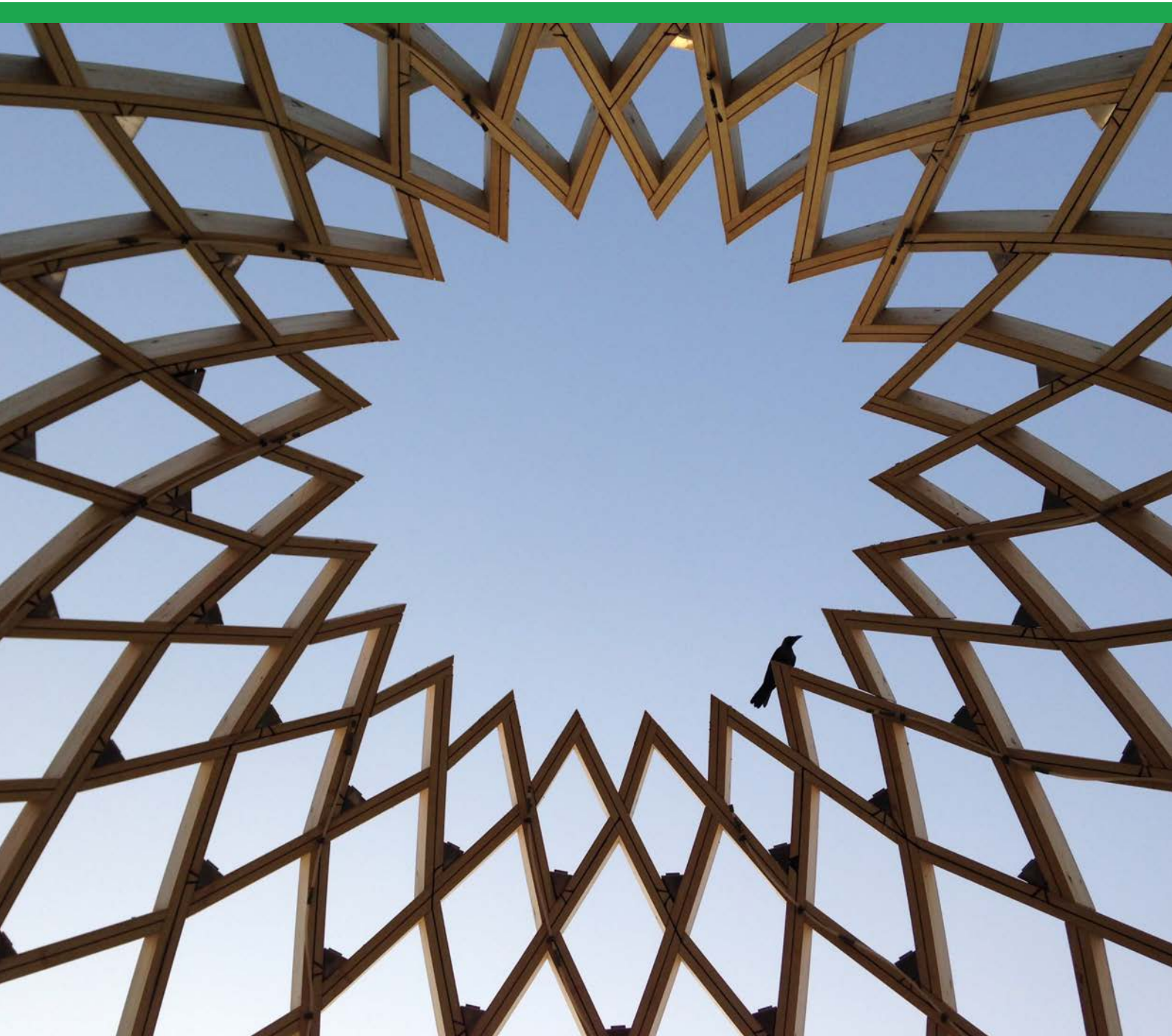
Take forward UN support in Kuwait in the area of NCDs through the WHO-UNDP led Joint Programme to activate national responses to NCDs.



'It's therefore not a question of whether countries can afford to implement the best buys, but whether they can afford not to. We have all the pieces to save lives we just have to put them into place. The question is, will we? It's a question we must answer with the decisions we make today, and every day.'

Tedros Adhanom Ghebreyesus,
Director-General, WHO

Photo credit: © Zsuzsanna Schreck



BIBLIOGRAPHY

- [1] D. E. Bloom et al., "The Global Economic Burden of Noncommunicable Diseases. Geneva: World Economic Forum," 2011. Available at http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf.
- [2] Worldometers, "Kuwait Coronavirus Cases," 2020. Available at <https://www.worldometers.info/coronavirus/country/kuwait/>.
- [3] State of Kuwait, "COVID-19 Updates," 2020. Available at <https://corona.e.gov.kw/En>.
- [4] Twitter, "Kuwait MOH Twitter," 2020. Available at https://twitter.com/KUWAIT_MOH.
- [5] World Health Organization, "WHO Report on the Global Tobacco Epidemic, 2019 Offer help to quit tobacco use," Geneva, 2019. [Online]. Available at <https://apps.who.int/iris/bitstream/handle/10665/326043/9789241516204-eng.pdf?ua=1>.
- [6] Arab Times, "Kuwait Wins WHO Anti-Smoking Award," 2020. Available at <http://www.arabtimesonline.com/news/kuwaiti-wins-who-anti-smoking-award/>.
- [7] World Health Organization, "Overview - Preventing chronic diseases: a vital investment, Misunderstanding #4." .
- [8] United Nations Development Programme, "Kuwait Energy Outlook," 2019. Available at https://www.arabstates.undp.org/content/rbas/en/home/library/Sustainable_development/kuwait-energy--outlook.html.
- [9] World Health Organization, "Tackling NCDs: 'best buys' and other recommended interventions for the prevention and control of noncommunicable diseases," 2017. Available at <https://apps.who.int/iris/handle/10665/259232>.
- [10] World Health Organization, "United Nations Interagency Task Force on the Prevention and Control of Noncommunicable Diseases, Joint Mission, Kuwait 7-11 May 2017," Geneva, 2017.
- [11] Institute for Health Metrics and Evaluation - IHME, "Global Burden of Disease Study 2017," 2020. .
- [12] State of Kuwait, "Kuwait STEPS Survey 2014," 2015. Available at https://www.who.int/ncds/surveillance/steps/Kuwait_2014_STEPS_Report.pdf.
- [13] H. R. Mohammed, Y. Zhang, I. M. Newman, and D. F. Shell, "Waterpipe smoking in Kuwait," *East. Mediterr. Heal. J.*, 2010, doi: 10.26719/2010.16.11.1115.
- [14] F. E. Omu, R. Al-Marzouk, I. Al-Kandari, D. Paulraj, M. Rajagopal, and P. John, "The Prevalence of Tobacco Products Use among Kuwait Nursing College Students," *Int. J. Nurs.*, vol. 2, no. 2, 2015, doi: 10.15640/ijn.v2n2a15.
- [15] Ministry of Health Kuwait, "Kuwait - Global Youth Tobacco Survey 2009." Available at <https://extranet.who.int/ncdsmicrodata/index.php/catalog/303>.
- [16] Ministry of Health Kuwait, "Kuwait Global Youth Tobacco Survey 2016," 2016. Available at <https://extranet.who.int/ncdsmicrodata/index.php/catalog/304>.
- [17] A. Esmail et al., "Patterns of electronic cigarette, conventional cigarette, and hookah use and related passive exposure among adolescents in Kuwait: A cross-sectional study," *Tob Induc Dis*, vol. 18, no. 59, 2020, doi: 10.18332/tid/123499.
- [18] World Health Organization, "Global Recommendations on Physical Activity for Health.," 2010. .

- [19] A. K. Al-Baho, A. Al-Naar, H. Al-Shuaib, J. K. Panicker, and S. Gaber, "Levels of Physical Activity among Kuwaiti Adults and Perceived Barriers," *Open Public Health J.*, 2016, doi: 10.2174/1874944501609010077.
- [20] World Health Organization, "Reducing free sugars intake in children and adults," 2010. Available at https://www.who.int/elena/titles/guidance_summaries/sugars_intake/en/.
- [21] Arab Times, "'Eating Habits' Make Kuwaitis Prone to Very High Sugar Intake," 2016. Available at <https://www.arabtimesonline.com/news/eating-habits-make-kuwaitis-prone-high-sugar-intake/>.
- [22] World Health Organization, "Salt Reduction," 2020. Available at <https://www.who.int/news-room/fact-sheets/detail/salt-reduction>.
- [23] World Health Organization, "NCD Country Profile Kuwait," 2018. Available at https://www.who.int/nmh/countries/kwt_en.pdf?ua=1.
- [24] L. Shaban and D. Alkazemi, "Trends in fast-food consumption among kuwaiti youth," *Int. J. Prev. Med.*, 2019, doi: 10.4103/ijpvm.IJPVM_480_18.
- [25] World Health Organization, "WHO plan to eliminate industrially-produced trans-fatty acids from global food supply." Available at <https://www.who.int/news-room/detail/14-05-2018-who-plan-to-eliminate-industrially-produced-trans-fatty-acids-from-global-food-supply>.
- [26] World Health Organization, "Healthy Diet," 2020. Available at <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>.
- [27] S. Zaghloul, C. Waslien, M. Al Somaie, and P. Prakash, "Low adherence of Kuwaiti adults to fruit and vegetable dietary guidelines," *East. Mediterr. Heal. J.*, 2012, doi: 10.26719/2012.18.5.461.
- [28] World Health Organization, "Prevalence of obesity among adults, BMI \geq 30, crude Estimates by country," Global Health Observatory Data Repository. Available at <https://apps.who.int/gho/data/view.main.BMI30Cv>.
- [29] World Health Organization, "Prevalence of obesity among children and adolescents, BMI>+2 standard deviation above the median, crude Estimates by country, among children aged 5-19 years," Global Health Observatory Data Repository. Available at <https://apps.who.int/gho/data/node.main.BMIPLUS2C?lang=en>.
- [30] Ministry of Health Kuwait, "Kuwait STEPS Survey 2006," 2008. Available at https://www.who.int/ncds/surveillance/steps/STEPS_Report_Kuwait.pdf.
- [31] A. M. Channanath, B. Farran, K. Behbehani, and T. A. Thanaraj, "State of diabetes, hypertension, and comorbidity in Kuwait: Showcasing the trends as seen in native versus expatriate populations," *Diabetes Care*. 2013, doi: 10.2337/dc12-2451.
- [32] National Center for Environmental Information, "Climate Data Online," 2020. Available at <https://www.ncdc.noaa.gov/cdo-web/>.
- [33] World Health Organization, "Information and public health advice: heat and health," 2011. Available at <https://www.who.int/globalchange/publications/heat-and-health/en/>.
- [34] G. Manjunath, R. Aravindhakshan, and S. Varghese, "Effect of fasting during ramadan on thermal stress parameters," *East. Mediterr. Heal. J.*, 2019, doi: 10.26719/emhj.18.013.
- [35] K. Behbehani, "Kuwait national programme for healthy living: First 5-year plan (2013-2017)," 2014, doi: 10.1159/000358884.

- [36] World Health Organization Regional Office for Europe, “Noncommunicable Diseases and Air Pollution,” 2019, [Online]. Available at http://www.euro.who.int/__data/assets/pdf_file/0005/397787/Air-Pollution-and-NCDs.pdf?ua=1.
- [37] World Health Organization, “Ambient Air Quality Database,” 2016. Available at <https://whoairquality.shinyapps.io/AmbientAirQualityDatabase/>.
- [38] A. Musaiger, “Food Consumption Patterns in the Eastern Mediterranean Region,” 2011. Available at <https://www.acnut.com/v/images/stories/pdf/cov2.pdf>.
- [39] Arab Times, “Chaos seen at Kuwait’s fruits, vegetables market as price of onions & other goods spiral,” 2020. Available at https://www.zawya.com/mena/en/legal/story/Chaos_seen_at_Kuwait's_fruits_vegetables_market_as_price_of_onions__other_goods_spiral-SNG_171281286/.
- [40] Knoema, “Production of Vegetables in Kuwait,” 2018. Available at <https://knoema.com/data/agriculture-indicators-production+vegetables+kuwait>.
- [41] Food and Agriculture Organization, “Irrigation in the Middle East Region in figures - AQUASTAT Survey 2008: Kuwait,” 2008. .
- [42] Mordor Intelligence, “KUWAIT FRUITS AND VEGETABLES INDUSTRY - GROWTH, TRENDS, AND FORECAST (2020 - 2025),” 2020. Available at <https://www.mordorintelligence.com/industry-reports/fruits-and-vegetables-industry-in-kuwait-industry>.
- [43] I. Balkhy, “Fast-food delivery is the strangest new fad in Kuwait,” Vice News, 2017. Available at https://www.vice.com/en_nz/article/yp7bem/fast-food-delivery-is-the-strangest-new-fad-in-kuwait.
- [44] World Health Organization, “Country Cooperation Strategy for WHO and Kuwait 2012–2016,” 2014. Available at <https://apps.who.int/iris/handle/10665/113231>.
- [45] World Health Organization Regional Office for the Eastern Mediterranean, “Health Profile 2015: Kuwait,” 2016. Available at https://rho.emro.who.int/sites/default/files/Profiles-briefs-files/EMROPUB_EN_19271-KUW.pdf.
- [46] H. Kelendar and M. Mohammed, “Hospital Bed Occupancy and Utilisation: Is Kuwait on the Right Track?,” J Hosp Med Manag., vol. 5, no. 2, 2019, [Online]. Available at <https://hospital-medical-management.imedpub.com/hospital-bed-occupancy-and-utilisation-is-kuwait-on-the-right-track.pdf>.
- [47] United Nations, “United Nations Population Division: International migrant stock 2019,” 2019. Available at <https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp>.
- [48] M. of F. A. Kuwait, “Kuwait Vision 2035 ‘New Kuwait,’” 2020. Available at <https://www.mofa.gov.kw/en/kuwait-state/kuwait-vision-2035/>.
- [49] World Health Organization Europe, “Kuwait: Country Cooperation Strategy at a Glance.,” 2017. Available at https://apps.who.int/iris/bitstream/handle/10665/136906/ccsbrief_kwt_en.pdf;jsessionid=F6A183F1F7AC7AD19328960D71E185A6?sequence=1.
- [50] World Health Organization, “Global Health Expenditure Database,” 2020, [Online]. Available at <https://apps.who.int/nha/database/ViewData/Indicators/en>.
- [51] Oxford Business Group, “Reforms to Kuwait’s health sector aim to reduce expenditure in face of shifting demographics,” 2017. Available at <https://oxfordbusinessgroup.com/news/reforms-kuwait's-health-sector-aim-reduce-expenditure-face-shifting-demographics>.

- [52] World Health Organization, "WHO report on the global tobacco epidemic, 2019. Country Profile: Kuwait," 2019. Available at https://www.who.int/tobacco/surveillance/policy/country_profile/kwt.pdf?ua=1.
- [53] Tobacco Control Laws, "Kuwait Tobacco Law No. 15 of 1995.," 1995. Available at <https://www.tobaccocontrolaws.org/files/live/Kuwait/Kuwait - Law No. 15.pdf>.
- [54] Oxford Economics, "GCC Illicit Tobacco Indicator 2017," 2018. Available at https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.oxfordeconomics.com/publication/open/308127&ved=2ahUKewi8oIrA_OfoAhUyyKYKHYPuCwsQFjAAegQIAhAB&usg=AOvVaw1YBTe-0sZPMq90wxBqLWLF.
- [55] S. Alfadhli, S. Al-Mazeedi, M. E. Bodner, and E. Dean, "Discordance between Lifestyle-Related Health Practices and Beliefs of People Living in Kuwait: A Community-Based Study," *Med. Princ. Pract.*, 2017, doi: 10.1159/000452670.
- [56] Gulf Cooperation Council Standardization Organization, "Trans Fatty Acids," 2015. Available at [https://extranet.who.int/ncdccs/Data/OMN_B17_Transfatty acids GSO-2483-2015-E.pdf](https://extranet.who.int/ncdccs/Data/OMN_B17_Transfatty%20acids%20GSO-2483-2015-E.pdf).
- [57] State of Kuwait, "Kuwait Action Plan for SFA intake reduction and TFA Elimination. Action Plan from 2012 -2018." Available at [https://extranet.who.int/ncdccs/Data/KWT_NCD_KWT_B17_Action Plan for SFA reduction and TFA Elimination 2012-2018.pdf](https://extranet.who.int/ncdccs/Data/KWT_NCD_KWT_B17_Action%20Plan%20for%20SFA%20reduction%20and%20TFA%20Elimination%202012-2018.pdf).
- [58] L. Charalambous, "Kuwait Again Tables Expat Tax Proposal," *Tax News*, 2019. Available at https://www.tax-news.com/news/Kuwait_Again_Tables_Expat_Tax_Proposal___97098.html.
- [59] Kuwait Times Newspaper, "Kuwait's food prices: When saving money harms you," *Albawaba*, 2012. Available at <https://www.albawaba.com/business/food-subsidies-kuwait-423320>.
- [60] Gulf Committee for Cardiovascular Diseases Control, "The integrated executive Gulf plan to prevent cardiovascular diseases 2009- 2018." .
- [61] M. Alshammari, W. Bowskill, and G. Adams, "Diabetes Treatment Guidelines and Nurses' Adherence to Them: A Case of the UK and Kuwait," *Nurs. Healthc. Int. J.*, 2020, doi: 10.23880/nhij-16000214.
- [62] A. Abdullah et al., "Glycemic control in Kuwaiti diabetes patients treated with glucose-lowering medication," *Prim. Care Diabetes*, 2020, doi: 10.1016/j.pcd.2019.12.001.
- [63] World Health Organization, "WHO Diabetes Country Profile: Kuwait," 2016. Available at https://www.who.int/diabetes/country-profiles/diabetes_profiles_explanatory_notes.pdf?ua=1.
- [64] R. A. Salman, A. S. Alsayyad, and C. Ludwig, "Type 2 diabetes and healthcare resource utilisation in the Kingdom of Bahrain," *BMC Health Serv. Res.*, 2019, doi: 10.1186/s12913-019-4795-5.
- [65] Gulf News, " spent more than Dh57.24m on cancer medicine in 2015," 2016. Available at <https://gulfnews.com/world/gulf/ / -spent-more-than-dh5724m-on-cancer-medicine-in-2015-1.1675885>.
- [66] A. J. Guarascio, S. M. Ray, C. K. Finch, and T. H. Self, "The clinical and economic burden of chronic obstructive pulmonary disease in the USA," *ClinicoEconomics and Outcomes Research*. 2013, doi: 10.2147/CEOR.S34321.
- [67] R. J. Mitchell and P. Bates, "Measuring health-related productivity loss," *Popul. Health Manag.*, 2011, doi: 10.1089/pop.2010.0014.

- [68] P. S. Wang et al., “Chronic Medical Conditions and Work Performance in the Health and Work Performance Questionnaire Calibration Surveys,” *J. Occup. Environ. Med.*, 2003, doi: 10.1097/01.jom.0000100200.90573.df.
- [69] C. Bommer et al., “The global economic burden of diabetes in adults aged 20–79 years: a cost-of-illness study,” *Lancet Diabetes Endocrinol.*, 2017, doi: 10.1016/S2213-8587(17)30097-9.
- [70] T. Barnay and T. Debrand, “Effects of health on the labour force participation of older persons in Europe,” 2006, [Online]. Available at https://www.who.int/ncds/management/c_NCDs_costing_estimation_tool_user_manual.pdf?ua=1.
- [71] D. Chisholm D, Mendis S, Abegunde, “Costing Tool – User Guide,” 2012, [Online]. Available at https://www.who.int/ncds/management/c_NCDs_costing_estimation_tool_user_manual.pdf?ua=1.
- [72] World Health Organization, “Scaling up action against NCDs: how much will it cost,” 2011. Available at https://apps.who.int/iris/bitstream/handle/10665/44706/9789241502313_eng.pdf?sequence=1.
- [73] Avenir Health, “One Health Tool,” 2017. Available at <http://www.avenirhealth.org/software-onehealth.php>.
- [74] World Health Organization and United Nations Development Programme, “Non-Communicable Disease Prevention and Control: A Guidance Note For Investment Cases,” 2019. Available at <https://apps.who.int/iris/bitstream/handle/10665/311180/WHO-NMH-NMA-19.95-eng.pdf?sequence=1>.
- [75] K. Stenberg et al., “Advancing social and economic development by investing in women’s and children’s health: A new Global Investment Framework,” *The Lancet*. 2014, doi: 10.1016/S0140-6736(13)62231-X.
- [76] C. Garg and D. Evans, “What is the impact of non-communicable diseases on national health expenditures: a synthesis of available data,” 2011, [Online]. Available at <http://www.who.int/healthsystems/NCDdiscussionpaper3.pdf>.
- [77] A. Al-Jawaldeh, M. Rayner, C. Julia, I. Elmadfa, A. Hammerich, and K. McColl, “Improving nutrition information in the Eastern Mediterranean Region: Implementation of front-of-pack nutrition labelling,” *Nutrients*. 2020, doi: 10.3390/nu12020330.
- [78] K. Gillett, “Saudi Arabia brings in mandatory calorie labels on menus,” *The National UAE*, 2019. Available at <https://www.thenational.ae/uae/health/saudi-arabia-brings-in-mandatory-calorie-labels-on-menus-1.808556>.
- [79] Elfeky S, El-Adawy M, Rashidian A, Mandil A, Al-Mandhari A. Healthy cities programme in the Eastern Mediterranean Region: Concurrent progress and future prospects. *East Mediterr Heal J*. 2019;25(7):445-446. doi:10.26719/2019.25.7.445
- [80] Mohamed N, Elfeky S, Khashoggi M, et al. Community Participation and Empowerment in Healthy Cities Initiative: Experience from the Eastern Mediterranean Region. *Soc Behav Res Heal*. 2020;4(2):553-565. doi:10.18502/sbrh.v4i2.4684
- [81] Ministry of Health Kuwait. Ministry of Health Healthy Cities Office. Available at <https://healthycities.moh.gov.kw/en/Pages/default.aspx>. Accessed December 2, 2020.
- [82] Arabian Business, “Saudi Arabia introduces ‘sin tax’ from today,” 2017. .
- [83] R. Megally and A. Al-Jawaldeh, “Impact of sin taxes on consumption volumes of sweetened beverages and soft drinks in Saudi Arabia,” *F1000Research*, vol. 9, p. 1117, Sep. 2020, doi: 10.12688/f1000research.25853.1.

- [84] A. M. Thow, S. M. Downs, C. Mayes, H. Trevena, T. Waqanivalu, and J. Cawley, "Fiscal policy to improve diets and prevent noncommunicable diseases: From recommendations to action," *Bull. World Health Organ.*, 2018, doi: 10.2471/BLT.17.195982.
- [85] R. Marten et al., "Sugar, tobacco, and alcohol taxes to achieve the SDGs," *The Lancet*. 2018, doi: 10.1016/S0140-6736(18)31219-4.
- [86] Tobacco Free Kids, "Strategic Investment of Tobacco Tax Revenue," 2020. Available at https://www.tobaccofreekids.org/assets/global/pdfs/en/strategic_investment_tobacco_tax_revenue.pdf.
- [87] Weetas, "Khalifa Town: The Southern Governorate's housing project," 2018. Available at <https://www.weetas.com/insights/en/khalifa-town.html>.
- [88] World Health Organization, "Responding to non-communicable diseases during and beyond the COVID-19 pandemic," Geneva, Switzerland, 2020. [Online]. Available at https://www.who.int/publications/i/item/WHO-2019-nCoV-Non-communicable_diseases-Evidence-2020.1.
- [89] D. Rajan et al., "Governance of the Covid-19 response: a call for more inclusive and transparent decision-making," *BMJ Glob. Heal.*, 2020, doi: 10.1136/bmjgh-2020-002655.
- [90] World Health Organization, "Maintaining essential health services: operational guidance for the COVID-19 context, Interim guidance," 2020.
- [91] H. H. P. Kluge et al., "Prevention and control of non-communicable diseases in the COVID-19 response," *The Lancet*. 2020, doi: 10.1016/S0140-6736(20)31067-9.
- [92] World Health Organization, "Rapid assessment of service delivery for NCDs during the COVID-19 pandemic." Geneva, 2020, [Online]. Available at <https://www.who.int/publications/m/item/rapid-assessment-of-service-delivery-for-ncds-during-the-covid-19-pandemic>.
- [93] A. Hagagy, "Kuwait imposes 20-day 'total curfew' from May 10 to curb coronavirus," *Reuter*, 2020. Available at <https://www.reuters.com/article/us-health-coronavirus-kuwait/kuwait-imposes-20-day-total-curfew-from-may-10-to-curb-coronavirus-idUSKBN22K1TT>.
- [94] Z. Zheng et al., "Risk factors of critical & mortal COVID-19 cases: A systematic literature review and meta-analysis," *Journal of Infection*. 2020, doi: 10.1016/j.jinf.2020.04.021.
- [95] World Health Organization, "Information note on COVID-19 and NCDs," 2020. Available at <https://www.who.int/who-documents-detail/covid-19-and-ncds>.
- [96] J. S. Alqahtani et al., "Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: A rapid systematic review and meta-analysis," *PLoS ONE*. 2020, doi: 10.1371/journal.pone.0233147.
- [97] World Health Organization Europe, "Alcohol and COVID-19: what you need to know. The World Health Organization Europe," 2020. Available at http://www.euro.who.int/data/assets/pdf_file/0010/437608/Alcohol-and-COVID-19-what-you-need-to-know.pdf.
- [98] A. Tamara and D. L. Tahapary, "Obesity as a predictor for a poor prognosis of COVID-19: A systematic review," *Diabetes Metab. Syndr. Clin. Res. Rev.*, 2020, doi: 10.1016/j.dsx.2020.05.020.

- [99] Y. Zhu, J. Xie, F. Huang, and L. Cao, "Association between short-term exposure to air pollution and COVID-19 infection: Evidence from China," *Sci. Total Environ.*, 2020, doi: 10.1016/j.scitotenv.2020.138704.
- [100] World Health Organization, "NCDs, poverty and development," 2014. Available at <https://www.who.int/global-coordination-mechanism/ncd-themes/poverty-development/en/>.
- [101] B. Leo, "Technology to fight COVID-19 in the Developing World, The Africa Report," 2020. Available at <https://www.theafricareport.com/26184/technology-to-fight-covid-19-in-the-developing-world/>.
- [102] Malay Mail, "Covid-19: 'MyTrace' app to help in contact tracing, says senior minister," 2020. Available at <https://www.malaymail.com/news/malaysia/2020/05/03/covid-19-mytrace-app-to-help-in-contact-tracing-says-senior-minister/1862624>.
- [103] S. Chabba, "Coronavirus tracking apps: How are countries monitoring infections?," *Deutsche Welle*, 2020. Available at <https://www.dw.com/en/coronavirus-tracking-apps-how-are-countries-monitoring-infections/a-53254234>.
- [104] ITU News, "Ghana launches COVID-19 Tracker App," 2020. Available at <https://news.itu.int/ghana-launches-covid-19-tracker-app/>.
- [105] G. Sadek, "Saudi Arabia; ; Kuwait: Ministries of Health Begin Using Mobile Apps to Combat COVID-19," *Library of Congress Law*, 2020. Available at <https://www.loc.gov/law/foreign-news/article/saudi-arabia--kuwait-ministries-of-health-begin-using-mobile-apps-to-combat-covid-19/>.
- [106] World Health Organization Europe, "Food and nutrition tips during self-quarantine," 2020. Available at <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/technical-guidance/food-and-nutrition-tips-during-self-quarantine>.
- [107] World Health Organization Europe, "Stay physically active during self-quarantine," 2020. Available at <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance-OLD/stay-physically-active-during-self-quarantine>.
- [108] UN General Assembly, "Addis Ababa Action Agenda of the Third International Conference on Financing for Development," 2015, [Online]. Available at https://sustainabledevelopment.un.org/content/documents/2051AAAA_Outcome.pdf.
- [109] UN General Assembly, "Resolution adopted by the General Assembly on 10 October 2018," 2018. Available at <https://undocs.org/A/RES/73/2>.
- [110] World Health Organization, "Accelerator Discussion Frame 1," 2018. Available at <https://www.who.int/docs/default-source/global-action-plan/accelerator1.pdf>.
- [111] A. Summan, N. Stacey, J. Birckmayer, E. Blecher, F. J. Chaloupa, and R. Laxminarayan, "The potential global gains in health and revenue from increased taxation of tobacco, alcohol and sugar-sweetened beverages: A modelling analysis," *BMJ Glob. Heal.*, 2020, doi: 10.1136/bmjgh-2019-002143.
- [112] The Task Force on Fiscal Policy for Health. Chairs: Michael R. Bloomberg and Lawrence H. Summers, "Health Taxes to Save Lives, Employing Effective Excise Taxes on Tobacco, Alcohol, and Sugary Beverages," New York: Bloomber Philanthropies, 2019. [Online]. Available at <https://www.bbhub.io/dotorg/sites/2/2019/04/Health-Taxes-to-Save-Lives.pdf>.

- [113] G. Gopinath, "The Great Lockdown: Worst Economic Downturn since the Great Depression," 2020, [Online]. Available at <https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/>.
- [114] Kuwait Visa, "Understanding Alcohol Laws in Kuwait: A Guide for Foreigners." Available at <https://kuwaitvisa.com/alcohol-laws-in-kuwait/>.
- [115] World Health Organization, "Increasing fruit and vegetable consumption to reduce the risk of noncommunicable diseases," 2019, [Online]. Available at https://www.who.int/elena/titles/fruit_vegetables_ncds/en/.
- [116] World Health Organization, "Promoting fruit and vegetable consumption around the world." Available at <https://www.who.int/dietphysicalactivity/fruit/en/>.
- [117] L. Samuel, "5 creative ways to trick people into eating healthy," 2016, [Online]. Available at <https://www.statnews.com/2016/09/22/healthy-food-nudges/>.
- [118] World Health Organization, "Fiscal policies for diet and prevention of noncommunicable diseases: technical meeting report.," 2020.
- [119] J. K. Ransley, E. F. Taylor, Y. Radwan, M. S. Kitchen, D. C. Greenwood, and J. E. Cade, "Does nutrition education in primary schools make a difference to childrens fruit and vegetable consumption?," *Public Health Nutr.*, 2010, doi: 10.1017/S1368980010000595.
- [120] A. Gold, M. Larson, J. Tucker, and M. Strang, "Classroom Nutrition Education Combined With Fruit and Vegetable Taste Testing Improves Children's Dietary Intake," *J. Sch. Health*, 2017, doi: 10.1111/josh.12478.
- [121] B. A. Jones, G. J. Madden, and H. J. Wengreen, "The FIT Game: Preliminary evaluation of a gamification approach to increasing fruit and vegetable consumption in school," *Prev. Med. (Baltim).*, 2014, doi: 10.1016/j.ypmed.2014.04.015.
- [122] L. K. Bandy, P. Scarborough, R. A. Harrington, M. Rayner, and S. A. Jebb, "Reductions in sugar sales from soft drinks in the UK from 2015 to 2018," *BMC Med.*, 2020, doi: 10.1186/s12916-019-1477-4.
- [123] F. M. Kroese, D. R. Marchiori, and D. T. D. De Ridder, "Nudging healthy food choices: A field experiment at the train station," *J. Public Heal. (United Kingdom)*, 2016, doi: 10.1093/pubmed/fdv096.
- [124] S. Chaput, G. Mercille, L. Drouin, and Y. Kestens, "Promoting access to fresh fruits and vegetables through a local market intervention at a subway station," *Public Health Nutr.*, 2018, doi: 10.1017/S1368980018001921.
- [125] H. Freisling, K. Haas, and I. Elmadfa, "Mass media nutrition information sources and associations with fruit and vegetable consumption among adolescents," *Public Health Nutr.*, 2010, doi: 10.1017/S1368980009991297
- [126] WHO Regional Office for the Eastern Mediterranean. (2018). Summary report on the Regional high-level policy dialogue in preparation for the Third UN High-level Meeting on NCDs, and the Fifth annual regional meeting to scale up implementation of the UN Political Declaration on NCDs. Cairo. Available at https://applications.emro.who.int/docs/IC_Meet_Rep_2018_20732_en.pdf?ua=1.
- [127] World Health Organization. Regional Office for the Eastern Mediterranean. (2019). Strategy on nutrition for the Eastern Mediterranean Region 2020–2030. World Health Organization. Regional Office for the Eastern Mediterranean. Available at <https://apps.who.int/iris/handle/10665/330059>.



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