Research Report

Impact of Non-Communicable Diseases (NCDs) on Socioeconomic and Welfare: Progress and Challenges of NCD Policy Implementation in Southeast Asia

Author: So Sovannarith

Editor: John Christopher, Former Director of Capacity Building Department

Notice of Disclaimer

The Parliamentary Centre of Asia (PCAsia) is an independent parliamentary support institution for the ASEAN Parliaments which, upon request of the parliamentarians and the parliamentary commissions, offers a wide range of research publications and trainings on current and emerging key issues, legislation and major public policy topics. This report provides information on subject that is likely to be relevant to parliamentary and constituency work but does not support to represent or reflect the views of the Parliamentary Centre of Asia, and parliaments and its members in the region.

The contents of this report, current at the date of publication, are for reference and information purposes only. This publication is not designed to provide legal or policy advice, and does not necessarily deal with every important aspect of the issues it considers.

Executive Summary

Non-communicable diseases (NCDs)—including cardiovascular diseases, diabetes, cancer, and chronic respiratory conditions—are the leading cause of death in Southeast Asia, accounting for approximately 74% of all deaths in the region in 2021. Factors such as rapid urbanization, industrialization, and lifestyle changes have increased risk factors for these diseases, overwhelming healthcare systems and hindering poverty reduction efforts. NCDs pose significant health and economic burdens across all age groups.

In children, rising exposure to risk factors such as unhealthy diets, physical inactivity, and tobacco smoke is driving up rates of obesity and early onset of NCDs. In adults, NCDs are linked to high morbidity and mortality, particularly in low- and middle-income countries. Key challenges in addressing NCDs include limited healthcare access, weak policy enforcement, low public awareness, and socioeconomic disparities.

This paper evaluates the progress and challenges of NCD policy implementation in Southeast Asia, highlighting successful countries like Thailand, Singapore, and Malaysia, and those facing difficulties, such as Laos, Myanmar, and Cambodia. It also explores the roles of key policy advocates and regional initiatives like the WHO's NCD Action Plan. It concludes with strategic recommendations to mitigate the socioeconomic impact of NCDs through improved healthcare infrastructure, stronger political commitment, and enhanced multisectoral collaboration.

Challenges Overcome by Southeast Asian Countries

1. **Thailand**:
    - **Challenges**: Thailand faced high tobacco usage and unhealthy dietary habits among its population. Political and economic constraints also posed challenges to implementing comprehensive NCD policies.
    - **Progress**: Thailand has been a leader in implementing tobacco control measures, including smoke-free policies, advertising bans, and increased taxes on tobacco products. These measures have led to a reduction in smoking rates and NCD-related health issues.
2. **Malaysia**:
    - **Challenges**: Malaysia struggled with widespread unhealthy lifestyles, including poor dietary choices and physical inactivity. The healthcare system also faced resource constraints.
    - **Progress**: Malaysia has developed a National Strategic Plan for NCD Prevention and Control, promoting healthy eating, physical activity, and regular health screenings. Enhanced regulations on advertising unhealthy food have also been implemented.
3. **Singapore**:
    - **Challenges**: Singapore's primary challenges included high levels of sedentary behavior and unhealthy eating habits among its urban population.
    - **Progress**: Singapore has successfully reduced NCD prevalence through robust public health campaigns and initiatives like the Health Promotion Board, which focuses on promoting healthy lifestyles through education and policy enforcement such as sugar taxes and restrictions on advertising unhealthy foods.
4. **Vietnam**:
    - **Challenges**: Vietnam faced challenges related to insufficient healthcare access and rising risk factors for NCDs such as tobacco and alcohol use.

- **Progress**: Vietnam implemented the National Action Plan for the Prevention and Control of NCDs, which includes promoting healthy lifestyles and improving access to early detection and treatment services.

5. **Indonesia**:
   - **Challenges**: Indonesia's challenges included limited healthcare infrastructure, inadequate funding, and resistance from the tobacco industry.
   - **Progress**: Although progress has been slower, Indonesia has made efforts to improve policy enforcement, such as banning tobacco sales near schools and workplaces, and has increased public awareness about NCDs.
6. **Philippines**:
   - **Challenges**: The Philippines dealt with high levels of tobacco and alcohol consumption, and poor healthcare access in rural areas.
   - **Progress**: The implementation of the Sin Tax Law, which increased taxes on tobacco and alcohol, has generated revenue for health programs and reduced consumption rates, aiding in NCD prevention.
7. **Laos**:
   - **Challenges**: Laos struggled with limited resources, inadequate healthcare infrastructure, and a lack of trained healthcare professionals.
   - **Progress**: Despite these constraints, Laos has made incremental progress by implementing tobacco control measures and promoting healthier lifestyles through public health campaigns.
8. **Cambodia**:
   - **Challenges**: Cambodia's challenges included limited healthcare access, weak policy enforcement, and a lack of public awareness about NCD risk factors.
   - **Progress**: Cambodia has taken steps such as implementing tobacco control measures and increasing efforts to promote physical activity among the population.
9. **Myanmar**:
   - **Challenges**: Myanmar faced political instability, limited healthcare infrastructure, and inadequate funding for NCD prevention programs.
   - **Progress**: The country has begun to develop national policies targeting NCD prevention, including promoting healthy diets and increasing public awareness campaigns.
10. **Timor-Leste**:
    - **Challenges**: Timor-Leste's challenges included limited healthcare infrastructure and low public awareness of NCDs.
    - **Progress**: The country is making gradual progress in enhancing healthcare services and promoting health education, though significant gaps remain.

Policy Options for Preventing and Controlling NCDs in Southeast Asia

1. **Enhance Public Awareness and Education**: Implement nationwide campaigns to raise awareness about NCD risk factors and promote healthy lifestyles.
2. **Strengthen Health Systems**: Invest in healthcare infrastructure and workforce development to improve access to prevention, early detection, and management of NCDs.
3. **Implement and Enforce Robust Policies**: Strengthen the enforcement of existing policies on tobacco control, alcohol regulation, and healthy food marketing.
4. **Promote Multisectoral Collaboration**: Foster collaboration between governments, the private sector, and civil society to address the social determinants of health.

5. **Leverage Technology and Innovation**: Utilize digital health solutions to enhance NCD prevention and management, including mobile health apps and telemedicine.
6. **Secure Sustainable Funding**: Explore innovative financing mechanisms, such as sin taxes and public-private partnerships, to fund NCD prevention and control initiatives.

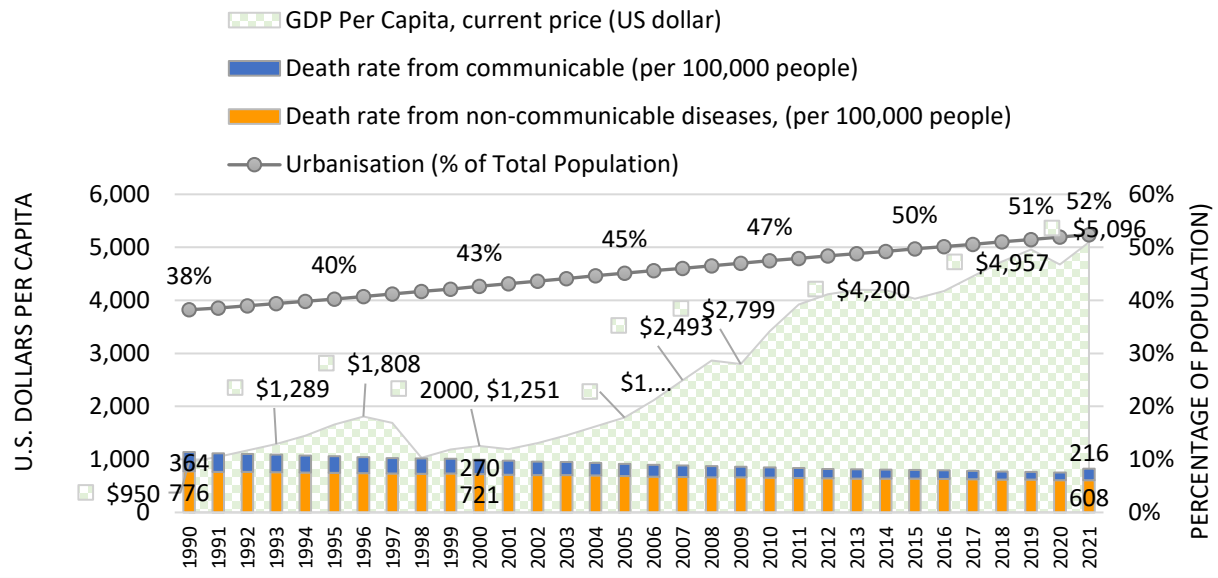
Conclusion

Southeast Asian countries have made varied progress in overcoming challenges related to NCD prevention and control. By implementing tailored strategies and fostering regional collaboration, these countries can continue to build on their successes and address remaining challenges to reduce the burden of NCDs and improve public health outcomes across the region.

1. Southeast Asia's Economic and Health Progress

The eleven countries in Southeast Asia (SEA)—Brunei, Cambodia, East Timor (full membership is pending), Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam—have experienced robust economic growth over the past decades. This economic progress is reflected in the region's GDP per capita, which increased from $950 in 1990 to $5,096 in 2021 (Figure 1). The positive trends in economic and health indicators across Southeast Asia suggest the region's resilience in economic and social development. However, the region is not immune to recent global economic uncertainties, including the trade war between the US and China, the COVID-19 pandemic, and geopolitical tensions[1]. Despite these challenges, all ASEAN member states remain committed to working together with optimistic views, aiming to make this region the world's fourth-largest economy by 2030[2].

Figure 1: Trends in Death Rate per 100,000 People, GDP per Capita at Current Prices, and Urbanization, 1990–2021
(Source: Our World in Data for Death Rate from Communicable Diseases and NCDs, IMF 2024 for GDP per Capita, and World Bank 2024 for Urbanizatio



Alongside this economic growth, significant improvements in health outcomes have been observed, with the average life expectancy rising from 67.9 years in 2000 to 71.9 years in 2021, and healthy life expectancy increasing from 59.7 years in 2000 to 63.2 years in 2021 (Figure 2). These health gains are primarily attributed to the reduction in child and maternal mortality and the decline in incidence and mortality from various infectious diseases [3]. In addition, the Universal Health Coverage (UHC) index in the SEA region has shown remarkable improvement, jumping from 37 in 2000 to 62 in 2021 (Table 1). This progress indicates better access to essential health services across the region.

Table 1: Key Indicators for Achieving SDG3 Objectives of Ensuring Healthy Lives and Promoting Well-Being for All Ages by SA states

	World Bank Group country classifications by income level, 2022*	Proportion of urban pop 2023*		UHC service coverage index = 100, 2000-2021**			Life expectancy at birth (years) 2021**			Healthy life expectancy at birth (years) 2021**		
		2019	2023	2000	2021	Change	Male	Female	Both sexes	Male	Female	Both sexes
Singapore	HIC	**100 %**	**100%**	64	**89**	25	82	86	**84**	72	75	**74**
Brunei	HIC	78%	79%	49	**78**	29	75	79	**77**	66	68	**67**
Malaysia	UMIC	77%	79%	52	**76**	24	71	75	**73**	63	65	**64**
Indonesia	UMIC	56%	59%	29	55	26	66	70	68	60	62	61
Thailand	UMIC	51%	54%	43	**82**	39	72	79	**75**	64	68	**66**
Philippines	LMIC	47%	48%	36	58	22	63	70	66	57	61	59
Viet Nam	LMIC	37%	39%	37	68	31	70	78	**74**	63	68	**65**
Lao PDR	LMIC	36%	38%	25	52	27	66	71	68	59	62	60
Myanmar	LMIC	31%	32%	25	52	27	65	71	68	58	62	60
Timor-Leste	LMIC	31%	32%	28	52	24	67	70	68	59	61	60
Cambodia	LMIC	24%	26%	24	58	34	66	72	69	59	62	61
South-East Asia		**51%**	**53%**	**37**	**62**	**25**	**67**	**70**	**68**	**59**	**60**	**59**

Source:

*World Bank (2023). World Bank Group country classifications by income level for FY24 (July 1, 2023- June 30, 2024). Available at https://blogs.worldbank.org/en/opendata/new-world-bank-group-country-classifications-income-level-fy24. [accessed on 10 July 2024]

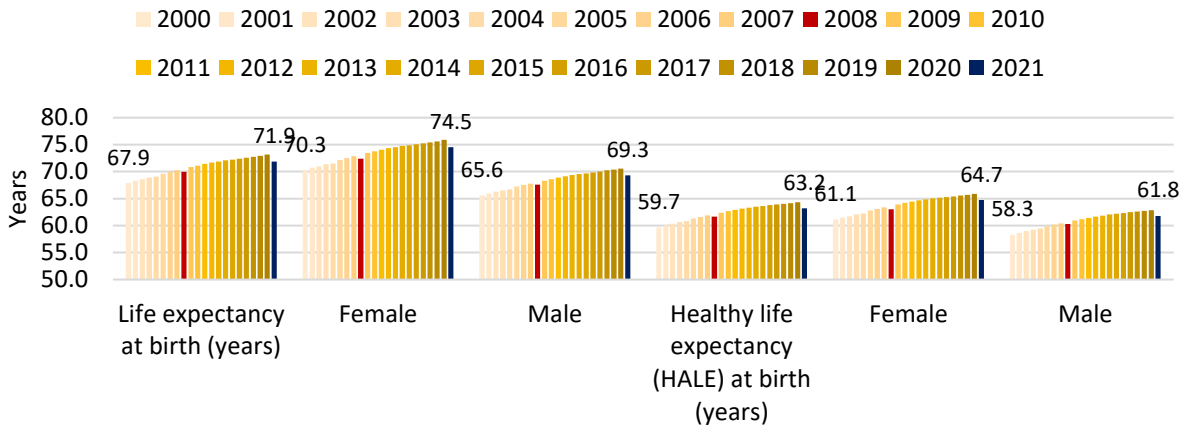
** WHO. (2024). World Health Statistics 2024. Available https://www.who.int/data/gho/whs-annex/. [Accessed on 24 July 2024]

Reduction in Mortality Rates and Contributing Factors

A notable reduction in the overall mortality rate per 100,000 people from both communicable and non-communicable diseases has been observed, as shown in Figure 1. Across the SEA region, the highest reduction in the proportion of age-standardized deaths from all causes was seen in Singapore, with a

decrease of 58%, followed by Laos with a 41% reduction, Myanmar with a 36% reduction, and Brunei with a 33% reduction (Annex 1). This reduction is attributed to several key factors, including advancements in primary and maternal healthcare, improved access to clean water, sanitation, and hygiene practices, reductions in poverty, and overall improvements in healthy living.

Figure 2: Life expectancy and Healthy life expectancy, 2000-2021



Enhancing Healthy Life Expectancy Across the Region

In 2021, Singapore, with 100% of its population living in urban areas, reported the highest healthy life expectancy at birth, reaching 84 years (Table 1). This was followed by Brunei, Thailand, Vietnam, Malaysia, and Cambodia, all of which reported life expectancies above the Southeast Asian average of 68 years. In contrast, the Philippines had a lower healthy life expectancy of 59 years. The other ten countries in the region also had healthy life expectancies above the regional average in 2021.

Leading the Way in Universal Health Coverage

Singapore has emerged as a leading country in expanding universal health coverage (UHC), with 89% of its population having access to essential health services without experiencing financial hardship in 2021 (Table 1). This high UHC index reflects the effectiveness and efficiency of Singapore's healthcare system. Following Singapore are Thailand (82), Brunei (78), Malaysia (76), and Vietnam (68). Other countries in the region have also shown impressive UHC improvements over the past two decades, but their index values remained below 62 in 2021 (Table 1).

Notable Health Outcomes and Gender Differences

Recent years have seen notable improvements in health outcomes in the Asia and Pacific region, particularly in sexual, reproductive, maternal, newborn, child, and adolescent health, as well as reductions in maternal and child mortality[4]. Data from Our World in Data (2024) confirm an impressive decline in age-standardized deaths from all causes per 100,000 people, except in Malaysia and the Philippines, over the last two decades. For example, the decline in deaths ranges from 102 deaths per 100,000 people in Indonesia to 643 deaths per 100,000 people in Myanmar between 2019 and 2021, while Malaysia and the

Philippines reported increases of 37 and 143 deaths per 100,000 people, respectively, during the same period (Table 2).

Interestingly, women generally achieve longer life expectancy and healthy life expectancy than men, largely due to a combination of biological, behavioral, and social factors. Women's biological advantages, such as the protective effects of estrogen on the cardiovascular system, and their tendency to engage in healthier behaviors, contribute to these differences[5,6,7].

Challenges and Future Initiatives

Despite progress in combating communicable diseases like HIV, TB, and malaria, challenges remain, particularly in addressing disparities in healthcare access, the prevalence of new HIV infections among youth, and the rising burden of non-communicable diseases (NCDs). However, the COVID-19 pandemic has had a silver lining, strengthening basic health systems and social protection mechanisms in the region, thus enhancing its capacity to respond to health shocks[8].

Recognizing the need to further ensure healthy lives in Cambodia and the region, the Cambodian Women Parliamentary Caucus (CWPC)is committed to promoting effective parliamentary efforts to address the leading causes of ill health and ensure that populations can actively benefit from regional and international growth. In this context, the Cambodian Women Politicians plan to organize a regional seminar on population dynamics and non-communicable diseases (NCDs) in December 2024. The event will bring together 200 participants from member parliaments of the ASEAN Inter-Parliamentary Assembly (AIPA) and relevant regional and international organizations to explore strategies and solutions for preventing the rise of NCDs.

Focus of the Regional Seminar

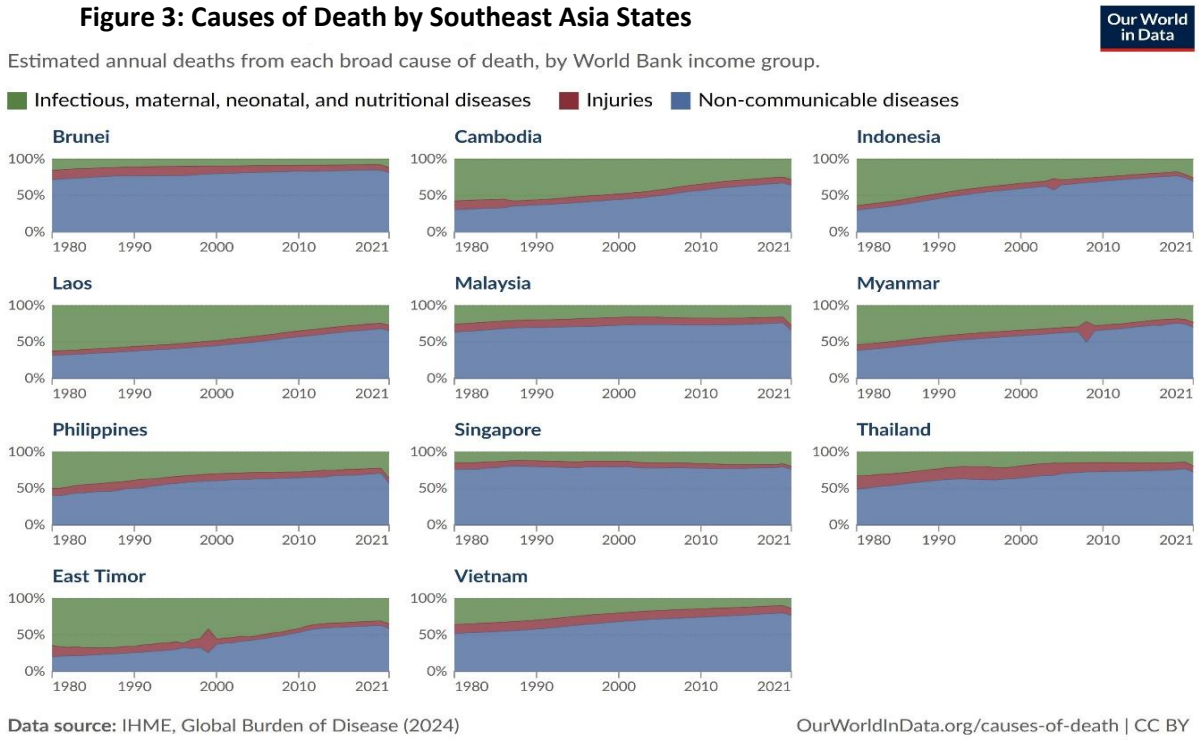
This report will provide background information on the profound socioeconomic impact of NCDs on welfare in Southeast Asia, affecting healthcare systems, economies, and social structures. To guide discussions at the upcoming regional seminar, the following research questions have been identified:

1. What is the socioeconomic impact of NCDs in the region?
2. What are the welfare implications of NCDs?
3. What are the existing strategic interventions to combat NCDs?

2. NCD Is the leader in fatalities in Southeast Asia

According to the World Health Organization, non-communicable diseases (NCDs) claim 41 million lives each year, accounting for 74% of all global deaths in 2023 and 77% of the total deaths are in low- and middle-income countries (LMICs) [9]. Of these, 17 million people die prematurely—before the age of 70—with 86% of such deaths occurring in LMICs[9]. Cardiovascular diseases are the global leading cause, taking the lives of 17.9 million annually, followed by cancers (9.3 million), chronic respiratory diseases (4.1 million), and diabetes (2.0 million, including kidney disease deaths caused by diabetes.

Figure 3: Causes of Death by Southeast Asia States

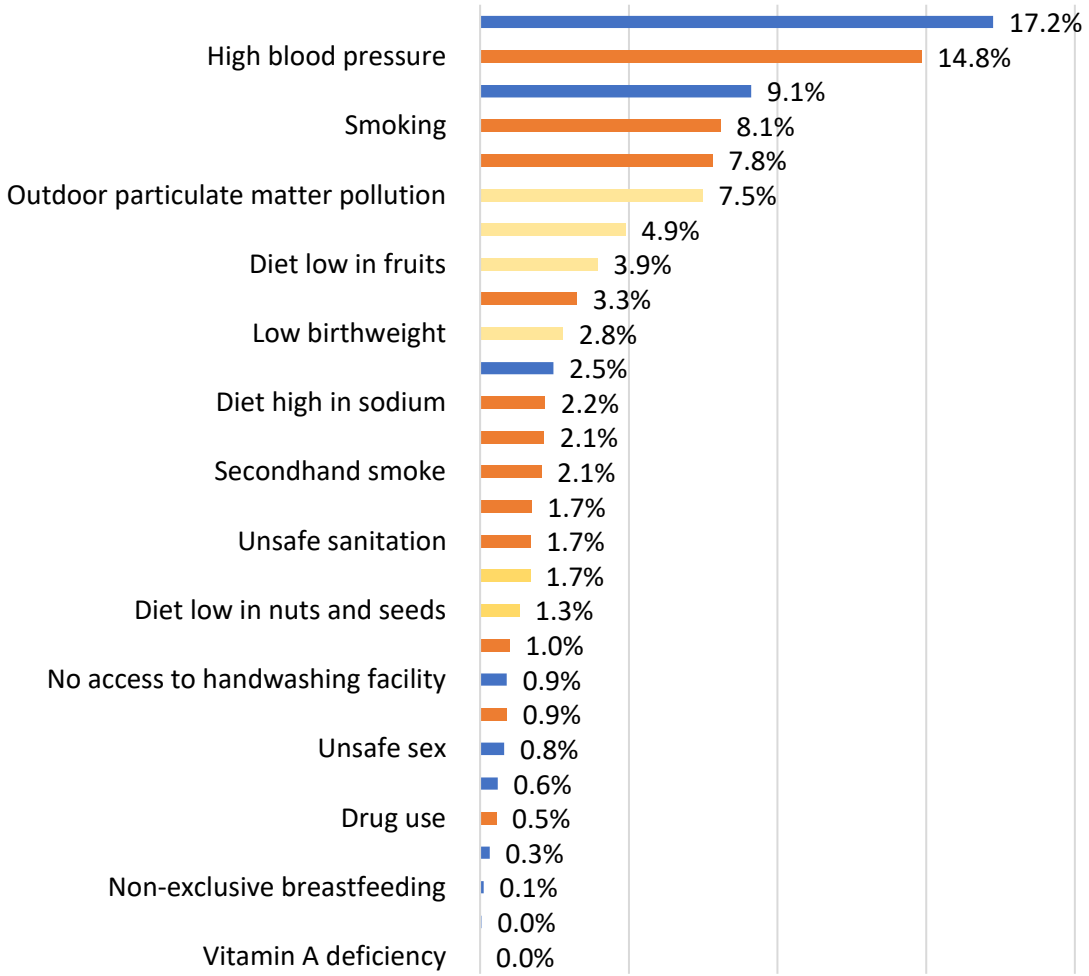


Southeast Asia shares similar concerns, experiencing a transition from communicable to non-communicable diseases across the region over the past two decades (Figure 3). The total deaths attributed to NCDs were estimated to be around 74% in 2021, an increase from 68% in 1990 (Figure 1). This increase has created a significant burden on the health system due to the shifting of leading causes of death from communicable diseases to NCDs. This rise presents a significant public health challenge, with about half of these deaths occurring in the 30-69 age group in 2021[10]. This revised trend could undermine ASEAN's potential to become the world's fourth-largest economy by 2030[10], particularly affecting the heath of the labor force.

Cardiovascular diseases, cancers, respiratory diseases, mental disorders, musculoskeletal disorders, diabetes, and kidney diseases are common burdens in this region, as noted in Table 2. However, SEA states appear to face different burdens from other types of NCDs. Singapore experienced the highest burden from musculoskeletal disorders (19.6%), followed by cancers (17.9%), cardiovascular diseases (17%), and mental disorders (11.9%) (Table 2).

Diabetes and kidney diseases rank as the third most significant burden in Brunei (14.1%), the Philippines and Thailand (10.8%), and the second in Myanmar (10.4%) among all NCDs. Musculoskeletal disorders, accounting for 13.3%, are the fourth most significant burden. In Malaysia, musculoskeletal disorders rank as the third most significant burden, and in Singapore, they are identified as the fourth. In Cambodia, digestive diseases, estimated at around 11.8%, represent the third most significant burden (Table 2).

Figure 4: Shared deaths by risk factors, Southeast Asia (WHO), 2021. (Note: A total of 16,521,466 deaths were estimated for 2021, attributed to each risk factor. These estimates come with wide uncertainties, especially for countries with poor vital registr



Data source: IHME, Global Burden of Disease (2024) – Learn more about this data
Note: Risk factors are not mutually exclusive. The sum of deaths attributed to each risk factor can exceed the total number of deaths.
OurWorldInData.org/causes-of-death

Table 2: Disease burden from non-communicable diseases, DALYs lost, 2021

Total disease burden from non-communicable diseases (NCDs), measured in DALYs (Disability-Adjusted Life Years) per year. DALYs are used to measure total burden of disease - both from years of life lost and years lived with a disability. One DALY equals one lost year of healthy life.

Country	South-East Asia (WHO)	Brunei	Cambodia	East Timor	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1. Cardiovascular diseases	**27.3%**	**18.1%**	**23.1%**	**29.6%**	**32.6%**	**28.8%**	**27.6%**	**27.7%**	**28.8%**	**17.0%**	**19.3%**	**29.5%**
2. Cancers	**10.0%**	**17.5%**	**12.6%**	8.8%	**11.3%**	**10.6%**	**14.7%**	9.9%	**11.9%**	**17.9%**	**20.0%**	**14.7%**
3. Respiratory diseases	**9.8%**	3.9%	4.4%	6.2%	5.5%	5.5%	4.0%	9.1%	5.5%	2.7%	4.1%	5.4%
4. Mental disorders	**9.3%**	**9.7%**	8.1%	**8.7%**	7.4%	8.4%	**10.3%**	6.5%	9.1%	**11.9%**	7.3%	7.3%
5. Musculoskeletal disorders	**9.1%**	**13.3%**	6.7%	6.5%	7.7%	6.7%	8.7%	6.0%	7.5%	**19.6%**	9.7%	8.5%
6. Other NCDs	**7.8%**	8.0%	**10.8%**	**13.5%**	6.6%	**12.7%**	7.3%	**10.1%**	9.3%	5.9%	6.2%	5.8%
7. Diabetes and kidney diseases	**7.5%**	**14.1%**	7.2%	7.4%	7.6%	9.0%	9.1%	**10.4%**	**10.8%**	9.0%	**11.7%**	9.0%
8. Digestive diseases	**6.4%**	3.5%	**11.8%**	6.4%	7.8%	6.2%	5.1%	7.1%	5.0%	2.7%	6.5%	5.5%
9. Neurological disorders	**5.5%**	5.8%	5.1%	5.7%	5.0%	5.1%	6.3%	4.9%	5.6%	7.9%	7.2%	6.3%
10. Liver disease	**3.7%**	1.3%	6.7%	2.6%	5.3%	3.2%	2.4%	3.8%	2.4%	0.5%	4.0%	3.7%
11. Skin diseases	**2.5%**	3.4%	2.7%	3.7%	2.7%	2.9%	3.7%	2.4%	3.3%	3.7%	2.8%	2.9%
12. Substance use disorders	**1.2%**	1.4%	0.9%	0.9%	0.5%	0.9%	0.8%	2.3%	0.9%	1.2%	1.3%	1.6%
All causes	**100%**	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Data source: IHME, Global Burden of Disease (2024) – Learn more about this data
OurWorldInData.org/burden-of-disease | CC BY

3. Death Risk Factors of Non-Communicable Diseases

The rising prevalence of NCDs in SEA is fueled by globalization, rapid urbanization, demographic shifts, and socio-economic health inequalities [11,12]. Southeast Asia reported a total of 16,521,466 deaths caused by various risk factors in 2021 (Figure 4), with 12 out of 28 risk factors directly associated with NCDs (Annex 2). Air pollution was estimated to cause the highest number of deaths in 2021.

Table 3: Risk factors by each Southeast Asia State

	Total alcohol per capita consumption (litres)	Current tobacco use, adults aged 15+	Mean population salt intake, adults aged 25+ (g/day) by SA state compared to the WHO-recommended maximum intake of less than 2 g/day sodium	Physical inactivity, adult aged 18+	Physical inactivity, adolescents aged 11-17	Hypertension, adults aged 30-79	Obesity, adolescents aged 18+	Obesity, adolescents aged 10-19	Raised fasting blood glucose, adults aged 18+	Mean total cholesterol, adults aged 18+ (mmol/l)
1. Brunei	0.4	16%	11	27%	87%	46%	32%	22%	9%	5
2. Cambodia	**8.5**	17%	10	11%	92%	26%	4%	5%	7%	4.4
3. Indonesia	0.1	38%	10	23%	86%	40%	11%	8%	8%	4.8
4. Laos	**11.5**	27%	10	16%	84%	29%	8%	5%	8%	4.4
5. Malaysia	0.8	22%	10	39%	86%	41%	22%	16%	11%	5.2
6. Myanmar	2.1	**44%**	10	11%	87%	38%	7%	6%	7%	4.8
7. Philippines	**6.2**	20%	10	40%	93%	34%	9%	5%	7%	5
8. Singapore	1.9	16%	**11**	37%	76%	32%	14%	15%	8%	5.1
9. Thailand	**7.9**	19%	**11**	25%	77%	29%	15%	11%	9%	5
10. Vietnam	**9.3**	23%	10	25%	86%	30%	2%	4%	5%	4.6
11. Timor-Leste	0.4	36%	10	18%	89%	35%	2%	1%	6%	4.3
All 11 SA countries	4.5	25%	10	25%	86%	35%	11%	9%	8%	4.8

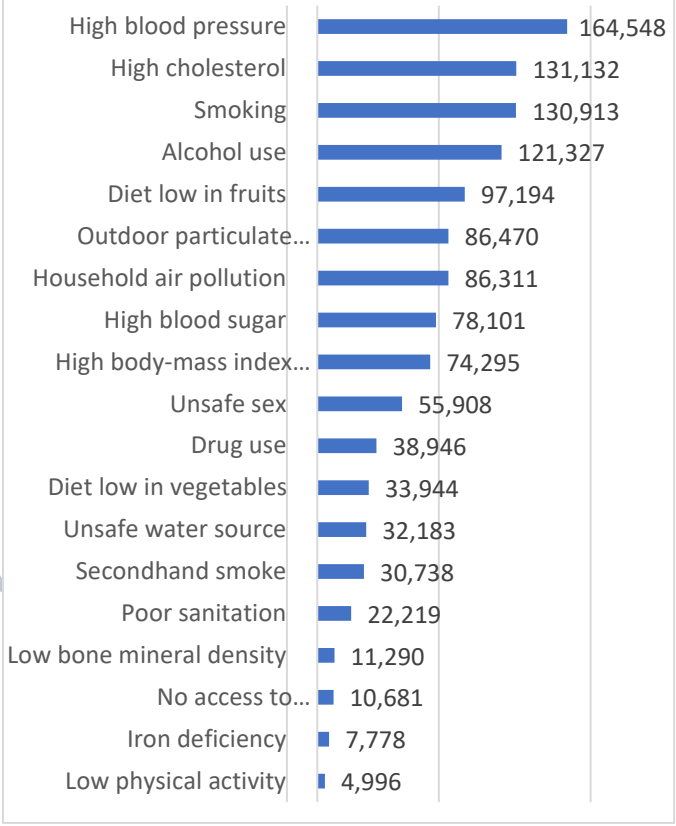
Source: World Health Organization, (2024), CND Data Portal, available at https://ncdportal.org/

The contributing factors to NCDs include metabolic risks (Table 5) like high blood pressure, obesity, high blood glucose, and elevated blood fat levels; and behavioral risks such as unhealthy diets, harmful alcohol use, tobacco consumption, physical inactivity, which are common for most SEA states. The concern focuses on the factors influencing the adoption of risky behaviors among children and adolescences. For example, current commercial activities promoting products like tobacco and alcohol targeting this group[13], further compound health risks. Additionally, the increasing availability of unhealthy foods,

combined with limited awareness of their harmful effects or the high cost of accessing safe food, exacerbates the situation in many Southeast Asian countries. Historical records from Our World in Data (2024) indicate an increasing trend in deaths due to high blood pressure among children aged 5-15 years between 2000 and 2021. Only three countries—Brunei, the Philippines, and Singapore—have experienced a reversal of this trend. Figure 5 presents the common risk factors among youth that contribute to deaths in adults aged 15-49 years in 2021, reaffirming the negative effects of commercial activities promoting unhealthy foods and behaviors on adolescents and adults alike.

Figure 5: Deaths by risk factor for ages 15-49, 2021

(The estimated 1,218,974 deaths attributed to each risk factor among people aged 15–49 years old in 2021. Estimates come with wide uncertainties especially for countries with poor vital registration).



The average mean salt intake averaging 10g per day is double the WHO-recommended maximum intake for adults of less than 2000 mg/day sodium, equivalent to < 5 g/day salt (Table 3). The primary NCD risks associated with high salt intake include hypertension**;** increasing conditions causing heart disease, stroke, and heart failure due to its impact on blood pressure and overall heart health; kidney disease, osteoporosis**,** increasing risks of stomach cancer and are often associated with processed and high-calorie foods, contributing to weight gain and obesity, which are risk factors for various NCDs[14].

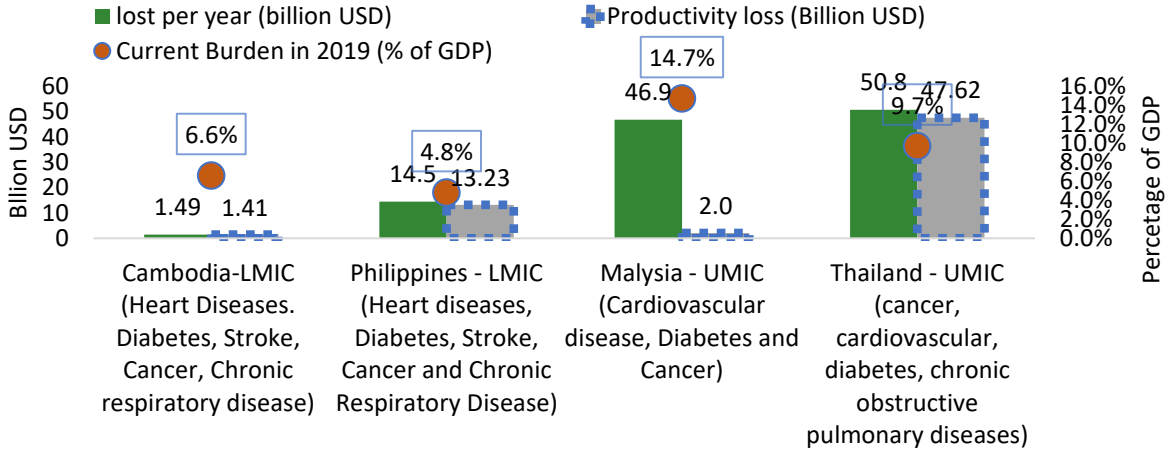
4. The socioeconomic impact of NCDs[i]

Over the past three decades, Southeast Asia has experienced a significant epidemiological transition from infectious diseases to non-communicable diseases (NCDs) as the primary cause of morbidity and mortality. This shift is driven by factors such as increased urbanization, changing dietary patterns, and an aging population. The impact of NCDs is profound, affecting individuals, communities, and entire societies. They contribute to higher healthcare costs, reduced productivity, deepened poverty, and increased inequality, leading to long-term disabilities and stunted economic growth[15]. In countries with limited healthcare access, such as certain regions in Asia, NCDs can impose severe financial burdens on families, often depleting their savings before the death of a loved one. The microeconomic impact includes both direct

[i] This review highlights critical gaps in data and methodologies for assessing the costs of NCDs to households in low- and middle-income countries. There is a need for more empirical data and standardized approaches to accurately evaluate the economic burden in Southeast Asian countries. However, existing evidence from some countries in the region already reveals a significant financial strain, emphasizing the urgent need for effective social protection systems and Universal Health Coverage to alleviate this burden.

productivity losses and indirect costs, such as out-of-pocket medical expenses and caregiver responsibilities.

Figure 6: Economic burden as a percentage of GDP, loss of monetary and productivity (billion USD) by four selected countries, 2019



Macroeconomic Loss

At the macroeconomic level, the cost of inaction on NCDs in low- and middle-income countries (LMICs) is projected to reach USD 7 trillion, at around USD 500 billion per year from 2011 to 2025 or with an average annual loss of about 4% of these countries' GDP [16,17]. Available estimates of specific types of the NCDs and countries are searchable for this review. For example, mental disorders alone could lead to USD 16 trillion in lost economic output globally by 2030 [18]. These financial strains are particularly severe in countries like Myanmar, Indonesia, and the Philippines.

The estimates of economic burden are available for only four SEA countries. The economic impact ranges widely, from 4.8% of GDP in the Philippines, a low-middle-income country, to 14.7% of GDP in Malaysia, an upper-middle-income country, in 2019 (Figure 6). In 2018, the average annual costs per patient/household for Chronic Obstructive Pulmonary Disease (COPD), cardiovascular disease (CVD), cancers, and diabetes were USD 7,387, USD 6,056, USD 3,304, and USD 1,017, respectively (Figure 7)[19]. These costs encompass expenses for medications, diagnostics, and travel, which accumulate significantly over time. For instance, in Southeast Asia, the average per capita expenditure for diabetes was USD 7,279 in 2021, projected to rise to USD 8,258 by 2030 and USD 8,800 by 2045 (Table 4).

NCDs have enduring effects on individual health and place a significant burden on healthcare systems due to the need for medical treatment, hospitalization, medication, and long-term care[20, 21]. Treatment costs are often the highest expense for individuals with NCDs, especially for the poor, frequently resulting in catastrophic expenditures—defined as health spending exceeding 40% of income[22].

Table 4: Diabetes-related health expenditure in Southeast Asia, average of 11 countries

	2021	2030	2045
• Total diabetes-related health expenditure, USD million	21,130	24,259	27,103

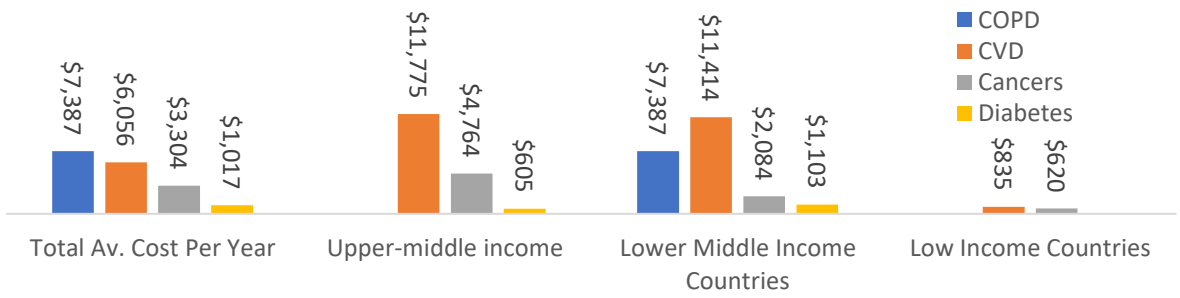
• Diabetes-related health expenditure per person, USD	7,279	8,258	8,800

Source: International Diabetes Federation (2024) IDF Diabetes Atlas. Available at https://diabetesatlas.org/data/en/country/217/vn.html. {Accessed on 4 August 2024

Loss of Productivity

NCDs hinder economic productivity due to absenteeism (missing work due to illness) and presenteeism (working while ill but at reduced productivity). For example, in Thailand, NCDs cost the economy THB 1.6 trillion (USD 52.12 billion) annually, equivalent to 9.7% of its 2019 GDP[23]. These costs include THB 139 billion (USD 4.53 billion) for treating NCDs (9%) and THB 1.5 trillion (USD 48.86 billion or 91%) in lost productive capacity due to absenteeism, presenteeism, or early withdrawal from the labor force due to premature death or disability. Thus, NCDs negatively impact socioeconomic development and the long-term fiscal sustainability of government and public services.

Figure 7: Average total cost per year to a patient and/or household by country income group (2018 US dollars)
(Source: Kazibwe J, Tran PB, Annerstedt KS. (2021). The household financial burden of non-communicable diseases in low- and middle-income countrie



The rising prevalence of non-communicable diseases (NCDs) poses a significant threat to achieving the 2030 Agenda for Sustainable Development Goals (SDGs), particularly Goal 3, which focuses on ensuring healthy lives and promoting well-being for all [24]. A key target of this goal is to reduce premature mortality from NCDs by one-third by 2030 through prevention and treatment efforts. However, WHO has a less optimistic outlook, projecting a 90% increase in the number of NCD cases by 2050 compared to 2019 levels. Additionally, this surge in NCDs among youth and adolescents could undermine South Asia's potential to become the world's fourth-largest economy by 2030.

Impact of NCDs on Households

The rising prevalence of NCDs undermines poverty reduction efforts in low-income countries by increasing household healthcare expenditures[9]. Individuals of lower socioeconomic status are disproportionately affected, experiencing higher rates of illness and premature death due to greater exposure to harmful factors like tobacco and unhealthy diets, combined with limited access to health services. A positive sign for all SEA countries is on placing a priority on health (Table 7b).

In low-resource situations, the financial burden of NCDs quickly depletes household resources. The high costs of NCD treatment, often prolonged and expensive, combined with loss of income, push millions into

poverty each year, hindering development. Families bear the brunt of these costs, but the economic repercussions extend to entire economies, exacerbating financial instability and stalling progress.

NCDs not only place an immense burden on healthcare systems but also have serious economic repercussions. Lost productivity due to illness or premature death, high treatment costs, and the long-term care required for chronic conditions have impeded economic growth and poverty alleviation efforts, particularly in lower-income countries like Laos and Cambodia.

Vulnerable populations, particularly those in rural areas, women, and the elderly, are disproportionately affected by NCDs due to limited access to healthcare services. This has exacerbated health disparities between urban and rural populations, with rural areas bearing a disproportionate share of NCD-related deaths due to late diagnosis and treatment.

Table 7: Health expenditure and percentage change 2010 and 2021

Table 7a: Health expenditure and GDP per capita, in 2021	Brunei (HIC)	Cambodia (LMC)	Indonesia (UMIC)	Laos (LMIC)	Malaysia (UMIC)	Myanmar (LMIC)	Philippines (LMIIC)	Singapore (HIC)	Thailand (UMIC)	Timor-Leste (LMIIC)	Vietnam (LMIIC)
Health Spending USD Per Capita (CHE)What is CHE?	693	122	161	69	487	65	203	3970	364	135	173
Government health spending % Health spending (GGHE-D%CHE)	**93.3%**	26.6%	59.40 %	26.2%	56.2%	18.8%	39.3%	**63.0%**	**70.4%**	63.4 %	42.7%
Out-of-pocket spending % Health spending (OOPS%CHE)	6.7%	**54.9 %**	27.50 %	30.9%	32.1%	**70.3%**	**44.6%**	22.5%	9.0%	5.9%	**40.0%**
Priority to health (GGHE-D%GGE)	7.1%	7.0%	**12.10 %**	4.4%	**10.1 %**	4.4%	8.5%	**20.8**%	**13.5%**	7.00 %	9.0%
Table 7b: Percentage Change between 2010 and 2021											
Health Spending USD Per Capita (CHE)	-12%	126%	87%	97%	71%	225%	123%	167%	115%	160 %	104%
Government health spending % Health spending (GGHE-D%CHE)	1.6%	6.9%	35.7%	5.5%	3.1%	9.0%	7.4%	27.1%	-3.4%	12.6 %	2.4%
Out-of-pocket spending % Health spending (OOPS%CHE)	-1.6%	**2.9%**	-33.1%	-5.1%	-2.0%	-10.4%	-10.2%	-19.0%	-5.5%	-5.7%	**5.3%**
Priority to health(GGHE-D%GGE)	1.3%	0.5%	8.2%	1.7%	3.8%	3.0%	1.3%	9.9%	1.9%	4.3%	0.4%

Source: WHO (2024) Health Expenditure Profile_https://apps.who.int/nha/database/country_profile/Index/en

Globally, out-of-pocket (OOP) spending for NCDs is estimated to be twice as high per health facility visit compared to infectious diseases. In LMICs, OOP costs are substantial, often leading to deferred or forgone care due to financial constraints. In high-income countries (HICs) such as Brunei and Singapore, 6.7% and 22.5% of health spending comes from OOP payments respectively, whereas in low-income countries (LICs), this figure rises to 70.4% of health expenditure in Myanmar. Among SEA states, Cambodia reports the second highest OOP of around 54.9% of health expenditures **(Table 7a).** Higher OOP reflects lower government health expenditure. Among the 11 E states, only Cambodia and Vietnam report increases in OOP while other countries show a positive view on reducing the OOP between 2000 and 2021.

People living with NCDs in low- and middle-income countries (LMICs) are especially vulnerable to catastrophic health expenditures. In some LMICs, over 60% of individuals with conditions such as cancer, cardiovascular disease, and stroke face catastrophic spending on healthcare. Prior to the COVID-19 pandemic, the World Health Organization (WHO) and the World Bank estimated that half a billion people were being pushed into extreme poverty due to catastrophic out-of-pocket health expenditures in 2019. The pandemic has exacerbated this issue by reducing adherence to long-term treatments and impairing overall quality of life.

5. Progress and Challenges in Prevention and Control of NCDs in Southeast Asia

Since 2013, Southeast Asian nations have demonstrated a commendable commitment to preventing and controlling non-communicable diseases (NCDs) through regional initiatives, such as the WHO Regional Action Plan for NCDs (2013-2020). This effort is in line with the 2011 global commitment to NCD prevention, reflecting a regional dedication to enhancing public health outcomes by addressing cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases. Key NCD risk factors, such as air pollution, tobacco use, harmful alcohol consumption, unhealthy diets, and physical inactivity, continue to pose significant challenges, with progress remaining uneven across the region.

Between 2000 and 2021, all Southeast Asian countries have advanced their focus on health prevention and control, setting ambitious, time-bound national targets and developing operational multisectoral strategies. However, the implementation of these plans has been varied. As of 2022, Cambodia Laos, and Myanmar have partially implemented their national plans (Table 8), while other nations have fully operationalized theirs. Seven countries have fully achieved their integrated NCD policies, with Cambodia and Laos are progressing and Indonesia yet to meet their targets. Key NCD risk factors, such as air pollution, tobacco use, harmful alcohol consumption, unhealthy diets, and physical inactivity, continue to pose significant challenges, with progress being uneven.

Efforts to control tobacco use have seen varying success; nine countries have introduced standardized packaging and health warnings, and ten countries face difficulties enforcing advertising bans. While Malaysia has yet to implement tobacco control measures, other nations have initiated reduction efforts, with some progress toward smoke-free environments. A comprehensive legal analysis of each country's legislation is still required to ensure accurate and complete data, particularly in nations where governments significantly influence tobacco control measures. Closing policy gaps and aligning current measures with best practices remain critical for achieving the 2030 NCD targets for many countries in the region.

Table 8: Progress on prevention and control of NCDs in Southeast Asia, 2022

Indicators	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Timor-Leste	Vietnam	Fully achieved	Partially achieved	No achieved
Percentage of all deaths due to NCDs in 2019 (%)	85	68	76	65	73	71	70	75	77	53	81			
Probability of premature mortality from NCDs in 2019 (%)	19	23	25	27	18	25	25	9	14	20	21			
Percentage of NCD death occurred before 70 years in 2019 (%)	54	60	53	60	48	57	52	46	42	49	42			
NCD aged standardized death rate per 100,000 population in 2019	624	652	661	700	501	674	**714**	235	363	570	569			
1. National NCD targets	**f**	P	n	p	f	f	f	f	f	f	f	**8**	2	1
2. Mortality data	**f**	n	n	n	p	n	f	f	p	n	n	**3**	2	6
3. Risk survey	**p**	**f**	p	p	f	p	f	p	p	p	f	**4**	7	0
4. National integrated NCD policy/strategy/action plan	**f**	p	n	f	p	f	f	n	f	f	f	**7**	2	2
5. Tobacco demand-reduction measures														
5.1. Increasing excise taxes and prices	n/a	n	p	n	p	n	p	p	f	n	n	**1**	4	5
5.2. Smoke-free policies	f	f	p	f	n	p	p	p	f	p	p	**4**	6	1
5.3. Large graphic health warnings/plain packaging	f	f	p	f	f	p	f	f	f	f	f	**9**	2	0
5.4. Bans on advertising, promotion and sponsorship	p	p	n	p	p	p	p	p	p	p	p	**0**	10	1
5.5. Mass media campaigns	p	p	f	n	f	f	p	p	f	f	f	**6**	4	1
6. Harmful use of alcohol reduction measures														
6.1. Restrictions on physical availability	f	NR	p	n	p	p	p	p	f	p	p	**2**	7	1
6.2. Advertising bans or comprehensive restrictions	f	n	f	n	n	NR	n	n	f	n	p	**3**	1	6
6.3. Increased excise taxes	f	NR	f	n	p	NR	f	p	p	p	p	**2**	5	1

7. Unhealthy diet reduction measures														
7.1. Salt/sodium policies	f	p	p	n	f	n	n	f	f	n	p	**4**	3	4
7.2. Saturated fatty acids and trans-fats policies	p	n	n	n	n	n	p	f	p	n	n	**1**	3	7
7.3. Marketing to children restrictions	f	n	n	n	f	n	f	f	f	n	n	**5**	0	6
7.4. Marketing of breast-milk substitutes restrictions	n	p	p	p	n	p	f	n	p	n	p	**1**	6	4
8. Public education and awareness campaign on physical activity	n	n	n	n	f	n	n	f	f	n	n	**3**	0	8
9. Guidelines for management of cancer, CVDS, diabetes and CRDS	f	p	f	p	f	p	n	f	f	f	f	**7**	3	1
10. Drug therapy/counselling to prevent heart attacks and strokes	f	n	n	n	f	n	n	f	f	n	n	**4**	0	7
Fully achieved	**12**	**3**	**4**	**3**	**9**	**3**	**8**	**9**	**13**	**5**	**6**			
Partially achieved	4	7	7	5	6	6	6	7	6	5	7			
No achieved	2	7	8	**11**	4	7	5	3	0	9	6			

Source: WHO (2024), NCD Data Portal. Available at https://ncdportal.org

Note:

f	fully achieved
p	Partially achieved
n	Not achieved
n/a	Not applicable
NR	Not response

Thailand*: A Leader in Tobacco Control*: Thailand has made significant progress in reducing non-communicable diseases (NCDs), particularly through effective tobacco control measures like high taxes, advertising bans, and smoke-free zones, which have helped decrease smoking-related diseases[25]. This success is largely attributed to strong political will and public health leadership. However, challenges remain, including low public awareness of NCD risk factors, limited healthcare access in rural areas, and inadequate political commitment. Priorities moving forward should include raising public awareness, expanding healthcare access, and ensuring well-resourced NCD programs. Implementing these actions can greatly enhance NCD prevention and reduce the overall health burden in Thailand.

Brunei has made significant progress in preventing and controlling NCDs, the leading cause of death in the country, through initiatives like the National Health Promotion Policy, Plan of Action, and the National Non-Communicable Disease Strategic Plan (2016-2020)[26]. These efforts have focused on reducing key risk factors, including tobacco use, unhealthy diets, and physical inactivity, as well as improving awareness,

screening, and healthcare access. Despite successes in tobacco control and health campaigns, challenges such as limited healthcare resources, lack of data, and prevalent unhealthy behaviors persist. Strengthening the healthcare system, enhancing health education, and improving access to quality services are essential. Influential figures like Her Royal Highness Princess Hajah Masna have played a key role in NCD advocacy. A comprehensive, evidence-based approach is needed to further reduce the NCD burden in Brunei.

Malaysia Promotes Healthy Lifestyles: Malaysia's National Strategic Plan for NCDs has focused on promoting healthier lifestyles through public awareness campaigns and improving healthcare delivery. Though Malaysia has made moderate progress, challenges remain in terms of public compliance and long-term healthcare sustainability. Major issues include low public awareness of NCD risk factors, limited access to preventive healthcare, particularly in rural areas, and rising prevalence of unhealthy behaviors such as poor diet, inactivity, smoking, and alcohol use. These challenges could be addressed through investing in public health campaigns, improving healthcare access, and strengthening regulations on tobacco, unhealthy food marketing, and alcohol consumption. A multi-sectoral approach is essential to reduce NCDs and improve public health outcomes in Malaysia.

Singapore: Data-Driven NCD Prevention: Non-communicable diseases (NCDs) account for 75% of deaths in Singapore, predominantly from cardiovascular diseases. This rise in NCDs is attributed to an aging population, lifestyle changes, and poor dietary habits. Singapore's Health Promotion Board (HPB) employs a data-driven strategy for NCD control, emphasizing diet, physical activity, and early detection. These efforts have successfully reduced obesity rates and lowered NCD-related mortality. Despite initiatives like the HPB's campaigns and the War on Diabetes, challenges persist, including limited public awareness, high healthcare costs, and restricted access for low-income individuals[27]. A comprehensive strategy, involving prevention, early detection, and affordable healthcare access, is crucial. A multi-sectoral approach with diverse stakeholders is essential for effectively reducing NCD prevalence and improving public health in Singapore.

ASEAN's Role in Regional Coordination: Regional initiatives by ASEAN, with support from WHO and UNDP, have promoted cooperation in NCD prevention, knowledge-sharing, and policy development. However, the progress of these efforts varies significantly across the region.

Challenges in NCD Policy Implementation

Over the past decades, Southeast Asian countries have implemented various policies to combat NCDs, facing numerous challenges along the way.

Laos: Insufficient Infrastructure and Political Commitment: NCDs now account for 65% of deaths in Lao PDR, with cardiovascular diseases being the most prevalent. Although the National Strategic and Action Plan for NCDs (2014-2020) and initiatives such as tobacco control and enhanced medicine access have been introduced, progress remains hindered by resource limitations, insufficient healthcare infrastructure, and low public awareness[28]. The rural population, in particular, suffers from minimal access to diagnostic and treatment services. Overcoming these obstacles requires increased investment in healthcare, improved training for professionals, and better data for evidence-based policymaking. A comprehensive strategy and multi-sectoral collaboration are crucial for effectively reducing NCDs and enhancing health outcomes in Laos.

Myanmar's Political Instability: Myanmar's efforts to tackle non-communicable diseases (NCDs) have been hindered by political instability, high tobacco consumption, underfunded healthcare systems, and inconsistent public health leadership. NCDs now account for 71% of deaths, with cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases being the most prevalent. Despite some ogress noted in Table 8 through national strategies and campaigns, challenges remain, including inadequate healthcare infrastructure, limited resources, and a shortage of trained professionals[29]. Addressing these issues after political stabilization requires strengthening primary healthcare, investing in infrastructure, and enhancing public awareness. A multi-sectoral approach is crucial for effective NCD prevention and management.

Cambodia: Socioeconomic Barriers: NCDs such as cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases account for over 68% of deaths in Cambodia. Despite national efforts, gaps remain in healthcare infrastructure, policy implementation, and public awareness. Progress includes a National Multisectoral Action Plan, partial tobacco control, and regional engagement with ASEAN. Challenges include limited healthcare infrastructure, socioeconomic barriers, weak policy enforcement, low public awareness, and inequitable access to care[30]. Strengthening healthcare infrastructure, enhancing policy implementation, increasing public awareness, improving financial protection, and leveraging technology can be effective strategies for NCD control. A multi-faceted approach is essential for reducing the NCD burden and improving public health.

6. Conclusion

The socioeconomic impact of non-communicable diseases (NCDs) in Southeast Asia presents significant challenges that strain both healthcare systems and economies. NCDs, including cardiovascular diseases, cancer, diabetes, and respiratory illnesses, are responsible for 74% of all deaths in the region. Their prevalence is driven by factors such as urbanization, lifestyle changes, and aging populations. These diseases not only increase healthcare costs but also reduce productivity, deepen poverty, and exacerbate inequalities, particularly in low- and middle-income countries (LMICs). In countries like Myanmar and Cambodia, limited access to healthcare exacerbates these impacts, with many households facing financial hardships due to high treatment costs.

Efforts to address NCDs vary across the region. Countries like Singapore and Thailand have made notable progress through robust public health initiatives and policy enforcement. However, other nations face ongoing challenges related to weak policy implementation, limited resources, and public awareness. Addressing NCDs requires strengthening healthcare infrastructure, improving public education on NCD risks, and fostering multisectoral collaboration. Sustainable funding mechanisms, such as "sin taxes," and leveraging technology can further support the prevention and management of NCDs, contributing to better health and economic outcomes across Southeast Asia.

In response to this growing challenge, AIPA Member Parliaments have a pivotal role in supporting and advancing comprehensive, evidence-based policies. Firstly, they can advocate for public awareness campaigns to educate populations on NCD risk factors such as poor diet, tobacco use, and physical inactivity. Through legislative action, governments can promote healthy lifestyles via school curricula, community outreach, and media campaigns, focusing on youth and vulnerable populations.

Strengthening healthcare infrastructure is another critical area where AIPA Members can lead. By prioritizing access to early detection, diagnosis, and treatment services, particularly in rural and underserved areas, AIPA Parliaments can help ensure that investments in healthcare professionals and services improve NCD outcomes across the region.

AIPA Members can also champion the enforcement of key policy measures, such as tobacco control, alcohol regulation, and restrictions on unhealthy food marketing. Successful examples from countries like Thailand and Singapore, which have imposed higher tobacco taxes and promoted healthy diets, offer valuable lessons for others to adapt and implement in their own contexts.

Finally, AIPA Member Parliaments can foster multisectoral collaboration, bringing together governments, private sectors, international organizations, and civil society to address the broader social determinants of health. By leveraging technology such as telemedicine and mobile health apps, and supporting sustainable funding mechanisms like public-private partnerships and sin taxes, AIPA Parliaments can play a crucial role in ensuring the long-term success of NCD prevention and control strategies across Southeast Asia.

Annex 1: Estimated Annual rate from all causes, non-communicable diseases and communicable diseases, per 100,000 people

Country/area	Non-communicable diseases				Infections, maternal, neonatal and nutritional diseases				Estimated Annual death rate from all causes, 1990 to 2021, age-standardized deaths from all causes			
	1990	2021	Absolute Change	Relative Change	1990	2021	Absolute Change	Relative Change	1990	2021	Absolute Change	Relative Change
Singapore	562.1	214.1	-348	-62%	94.3	56.3	-38	**-40%**	694.7	292.4	-402.3	-58%
Brunei	850.3	549.4	-301	-35%	91	83.6	-7.4	**-8%**	1003.9	670.2	-333.7	-33%
Laos	1,117.90	777.2	-340.7	-30%	730.1	254.7	-475.4	-65%	1954.8	1146.3	-808.5	-41%
Myanmar	1,118.80	784.8	-334.1	-30%	575	244.2	-330.8	-58%	1798.9	1156.4	-642.5	-36%
Thailand	588.6	411.1	-177.6	-30%	177.6	119.4	-58.3	**-33%**	858.0	621.0	-237.0	-28%
Cambodia	902.4	739.8	-162.6	-18%	652.1	298.3	-353.9	-54%	1650.4	1172.5	-477.9	-29%
Malaysia	651.7	561.8	-89.9	-14%	128.2	235.5	107.3	84%	842.1	878.6	36.6	**4%**
Philippines	689.2	624.9	-64.3	**-9%**	255.4	384.8	129.5	51%	1014.8	1158.2	143.3	**14%**
Vietnam	667.9	606.7	-61.3	**-9%**	215.7	108.9	-106.8	-50%	978.8	801.1	-177.7	**-18%**
East Timor	702	680.1	-22	**-3%**	611.3	318.6	-292.7	-48%	1401.3	1118.9	-282.4	**-20%**
Indonesia	683.8	738.5	54.8	**8%**	478.4	272.1	-206.3	**-43%**	1221.2	1118.8	-102.4	**-8%**
South-East Asia (WHO)	**694.7**	**606**	**-88.8**	**-13%**	**563.8**	**302**	**-261.8**	**-46%**	**1352.8**	1028.8	**-324.0**	**-24%**

Data source: IHME, Global Burden of Disease (2024) – Learn more about this data

Note: To allow for comparisons between countries and over time, this metric is age-standardized.

Source: WHO 2024

Annex 2: Change in Number of Deaths by Each Risk Factors

The estimated annual number of deaths attributed to each risk factor. Estimates come with wide uncertainties, especially for countries with poor vital registration.

Country or region	South-East Asia (WHO)	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	East Timor	Vietnam
Death by all risks in 2000	13,683,405	860	122,078	1,579,293	73,687	105,529	615,406	483,508	13,913	367,751	7,627	509,702
Death by all risks in 2001	16,521,466	1,439	129,412	2,082,552	56,814	187,824	561,896	738,855	15,640	487,220	9,828	761,070
Proportion of changes in annual deaths from all and by each risk factors between 2000 and 2021.	**20.7%**	**67.3 %**	**6.0%**	**31.9%**	**-22.9%**	**78.0%**	**-8.7%**	**52.8%**	**12.4%**	**32.5%**	**28.9 %**	**49.3%**
1. High blood pressure	5.6%	**-1.7%**	5.5%	7.6%	7.1%	4.7%	4.1%	3.5%	**-2.8%**	3.5%	9.8%	5.7%
2. Outdoor particulate matter pollution	4.1%	0.3%	1.2%	2.3%	2.5%	**-1.5%**	3.4%	1.0%	-0.3%	1.7%	2.1%	3.8%
3. High blood sugar	3.7%	0.5%	3.3%	3.2%	3.5%	1.9%	3.3%	3.2%	1.8%	4.9%	3.4%	2.5%
4. Obesity	1.9%	3.2%	1.5%	2.2%	2.1%	1.5%	1.4%	2.7%	3.3%	3.1%	1.0%	1.4%
5. High cholesterol	1.8%	0.1%	1.7%	2.0%	2.2%	0.8%	1.2%	1.4%	**-1.4%**	0.2%	2.2%	1.6%
6. Air pollution (outdoor & indoor)	1.5%	0.3%	0.3%	**-3.2%**	0.5%	-1.5%	0.3%	**-1.8%**	**-0.2%**	**-1.7%**	0.8%	**-5.6%**
7. Smoking	1.3%	-2.1%	2.7%	2.4%	3.4%	**-1.9%**	**-0.9%**	**-0.7%**	**-0.9%**	**-0.5%**	**3.2%**	0.2%
8. Diet low in fruits	1.2%	0.5%	1.6%	0.2%	0.4%	**-0.7%**	0.2%	0.3%	0.2%	**-0.2%**	2.0%	**-0.1%**
9. Diet low in whole grains	0.6%	0.3%	0.3%	0.5%	0.4%	0.2%	0.3%	0.2%	0.4%	0.2%	0.6%	0.3%
10. Diet high in sodium	0.6%	**-0.6%**	1.1%	0.8%	1.1%	-0.5%	0.3%	0.5%	0.1%	0.2%	1.6%	0.2%

11. Alcohol use	0.5%	0.1%	2.8%	0.0%	1.7%	-0.5%	1.7%	0.3%	**-0.2%**	**-0.1%**	0.8%	3.7%
12. Low physical activity	0.4%	0.0%	0.1%	0.7%	0.1%	0.2%	0.1%	0.2%	0.1%	0.4%	0.1%	0.2%
13. Diet low in vegetables	0.4%	0.2%	1.2%	0.2%	0.3%	-0.3%	**-0.1%**	0.6%	0.4%	0.3%	1.3%	0.0%
14. Diet low in nuts and seeds	0.4%	0.1%	**-0.1%**	**-0.1%**	**-0.2%**	0.0%	**-0.1%**	0.1%	**-0.3%**	0.0%	0.3%	-0.2%
15. Low bone mineral density	0.4%	**-0.1%**	0.4%	0.0%	0.2%	0.0%	0.2%	0.1%	0.2%	0.0%	0.2%	0.2%
16. Drug use	**0.1%**	**0.2%**	**0.1%**	**0.1%**	**0.3%**	**-0.5%**	**0.1%**	**0.2%**	**0.1%**	**-0.9%**	**0.1%**	**0.2%**
17. Secondhand smoke	0.0%	**-0.6%**	**-0.5%**	0.3%	**-0.1%**	**-0.3%**	**-0.5%**	**-0.3%**	**-0.1%**	0.0%	-0.3%	-0.3%
18. Iron deficiency	**-0.1%**	0.0%	**-0.1%**	**-0.1%**	**-0.1%**	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%
19. Vitamin A deficiency	**-0.3%**	0.0%	**-0.1%**	**-0.2%**	**-0.5%**	0.0%	**-0.2%**	**-0.1%**	0.0%	0.0%	-0.3%	0.0%
20. Unsafe sex	**-0.3%**	0.2%	**-1.0%**	0.1%	0.5%	0.0%	**-0.4%**	0.5%	0.0%	**-5.2%**	0.1%	-0.1%
21. Non-exclusive breastfeeding	**-0.6%**	0.0%	**-1.6%**	**-0.7%**	**-2.0%**	**-0.1%**	**-0.9%**	**-0.4%**	0.0%	**-0.1%**	**-1.4%**	**-0.2%**
22. No access to handwashing facility	**-1.9%**	0.0%	**-1.9%**	**-0.7%**	**-2.0%**	0.0%	**-0.8%**	**-0.4%**	0.0%	0.1%	**-1.6%**	**-0.2%**
23. Child stunting	**-2.4%**	0.0%	**-4.3%**	**-1.6%**	-4.7%	-0.2%	-2.4%	-1.4%	0.0%	-0.2%	**-5.5%**	**-0.6%**
24. Indoor air pollution	**-3.1%**	0.0%	**-0.9%**	**-5.7%**	-2.1%	-0.1%	-3.3%	-2.7%	0.0%	-3.7%	**-1.3%**	**-9.5%**
25. Unsafe sanitation	**-3.7%**	0.0%	**-2.2%**	**-2.7%**	-3.2%	-0.1%	-1.5%	-1.1%	0.0%	-0.4%	**-3.4%**	**-0.3%**
26. Unsafe water source	**-3.9%**	0.0%	**-2.3%**	**-2.9%**	-3.5%	-0.1%	-1.6%	-1.4%	0.0%	-0.3%	**-3.7%**	**-0.3%**
27. Child wasting	**-3.9%**	0.0%	**-5.1%**	**-2.2%**	-5.1%	-0.3%	-2.4%	-1.6%	0.0%	-0.3%	**-7.4%**	**-0.5%**
28. Low birthweight	**-4.5%**	**-0.9%**	**-3.4%**	**-2.4%**	-3.0%	-0.9%	-1.5%	-2.7%	-0.2%	-1.0%	**-4.3%**	**-2.0%**

Data source: IHME, Global Burden of Disease (2024) – Learn more about this data

Note: Risk factors are not mutually exclusive. The sum of deaths attributed to each risk factor can exceed the total number of deaths.

OurWorldInData.org/causes-of-death | CC BY

Annex 3: Deaths by risk factor for ages 15-49, 2021

The estimated annual number of deaths attributed to each risk factor among people aged 15–49 years old. Estimates come with wide uncertainties especially for countries with poor vital registration.

	South-East Asia (WHO)	Brunei	Cambodia	East Timor	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1. High blood pressure	13%	15%	8%	16%	22%	15%	19%	14%	14%	14%	9%	16%
2. High cholesterol	11%	13%	6%	7%	10%	9%	14%	7%	11%	19%	6%	6%
3. Smoking	11%	15%	14%	13%	**17%**	**13%**	15%	9%	**15%**	16%	12%	16%
4. Alcohol use	10%	2%	21%	7%	3%	**13%**	4%	18%	**11%**	5%	18%	19%
5. Diet low in fruits	8%	7%	6%	8%	7%	5%	4%	6%	5%	5%	2%	5%
6. Outdoor particulate matter pollution	7%	2%	2%	3%	6%	4%	7%	5%	6%	8%	8%	4%
7. Household air pollution	7%	0%	11%	10%	4%	11%	0%	10%	7%	0%	0%	6%
8. High blood sugar	6%	14%	5%	4%	6%	5%	8%	8%	6%	7%	6%	5%

9. High body-mass index (obesity)	6%	16%	4%	3%	8%	6%	9%	6%	10%	**13%**	7%	4%
10. Unsafe sex	5%	3%	7%	**12%**	3%	5%	5%	5%	5%	4%	**17%**	6%
11. Drug use	3%	3%	5%	4%	2%	2%	7%	5%	2%	2%	7%	9%
12. Diet low in vegetables	3%	3%	4%	5%	4%	3%	2%	2%	4%	3%	2%	1%
13. Unsafe water source	3%	0%	1%	1%	2%	1%	0%	1%	1%	0%	1%	0%
14. Secondhand smoke	3%	3%	3%	3%	4%	3%	4%	2%	3%	3%	2%	3%
15. Poor sanitation	2%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%
16. Low bone mineral density	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	2%	2%
17. No access to handwashing facility	1%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%
18. Iron deficiency	1%	0%	1%	2%	1%	1%	0%	1%	0%	0%	0%	0%
19. Low physical activity	0%	1%	0%	0%	1%	0%	1%	0%	0%	1%	0%	0%

20. Estimated annual number of deaths in 2021	1,218,974	207	10,637	726	189,804	5,689	16,065	44,209	84,366	664	43,214	51,237

Data source: IHME, Global Burden of Disease (2024) –
Learn more about this data
Note: Risk factors are not mutually exclusive. The sum of deaths attributed to each risk factor can exceed the total number of deaths.
OurWorldInData.org/causes-of-death | CC BY

1 ASEAN Studies Centre, ISEAS – Yusof Ishak Institute, 2024. *The State of Southeast Asia 2024 Survey Report*. Available at: https://www.iseas.edu.sg/wp-content/uploads/2024/03/The-State-of-SEA-2024.pdf [Accessed 21 August 2024].

2 Rogers, J., 2023. ASEAN is poised to become world's fourth largest economy by 2030. But getting there *will require an unprecedented group effort. Global Finance: Economics, Policy & Regulation. Available at: https://gfmag.com/economics-policy-regulation/the-tiger-uncrouches/ [Accessed 22 August 2024].*

3 WHO, 2024. World Health Statistics 2023: Monitoring health for the sustainable development goal. Available at: https://cdn.who.int/media/docs/default-source/gho-documents/world-health-statistic-reports/2023/world-health-statistics-2023_20230519_.pdf [Accessed 21 August 2024].

4 UN ESCAP, 2021. Good Health and Wellbeing: Ensure Healthy Lives and Promote Well-being for All Ages. Available at: https://www.unescap.org/sites/default/d8files/event-documents/SDG%203%20Goal%20Profile_Final%20Web_EDIT%20v4.pdf. [Accessed 10 July 2024].

5 Ryczkowska, K., Adach, W., Janikowski, K., Banach, M. and Bielecka-Dabrowa, A., 2023. Menopause and women's cardiovascular health: is it really an obvious relationship?. Archives of Medical Science, 19(2), pp.458-466. Available at: https://doi.org/10.5114/aoms/157308*. [Accessed 22 August 2024].*

6 Xiang, D., Liu, Y., Zhou, S., Zhou, E. and Wang, Y., 2021. Protective Effects of Estrogen on Cardiovascular Disease Mediated by Oxidative Stress. Oxidative Medicine and Cellular Longevity, 2021, Article ID 5523516. Available at: https://doi.org/10.1155/2021/5523516. [Accessed 22 August 2024].

7 Mitchell, E., Graham, A.L., Úbeda, F. and Wild, G., 2022. On maternity and the stronger immune response in women. *Nature Communications*, 13(1), p.4858. Available at: https://doi.org/10.1038/s41467-022-32569-6. [Accessed 22 August 2024].

8. So, N. and Nhiep, S., 2021. ASEAN Recovery and Nexus for A Green Economy in Climate Change Mitigation. Available at: https://pcasia.org/wp-content/uploads/2024/03/20211011-ASEANs-Covid19-Recovery-and-the-Nexus-for-a-Green-Economy-in-Climate-Change-Mitigation.pdf. [Accessed on 9 August 2024]

9 WHO, 2023. *Non-Communicable Diseases*. Available at: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases [Accessed 10 August 2024].

10 WHO South-East Asia, 2022. *WHO South-East Asia Region to accelerate progress for NCD prevention and control*. Available at: https://www.who.int/southeastasia/news/detail/07-09-2022-who-south-east-asia-region-to-accelerate-progress-for-ncd-prevention-and-control [Accessed 10 July 2024]

11 WHO and UNDP, 2015. *Guidance note on the integration of non-communicable diseases into the United Nations Development Assistance Framework*. Available at: https://www.undp.org/sites/g/files/zskgke326/files/publications/Guidance%20Note%20on%20the%20Integration%20of%20NCDs%20into%20UNDAFs%20WEB%20VERSION.pdf [Accessed 16 July 2024]

12 Peng, W., Zhang, L., Wen, F., Tang, X., Zeng, L., Chen, J., Galea, G., Wen, D. and Wang, Y., 2023. Trends and disparities in non-communicable diseases in the Western Pacific region. *Lancet Regional Health – Western Pacific*, 43, p.100938. Available at: https://doi.org/10.1016/j.lanwpc.2023.100938.

13 Glantz, S.A., 2021. Understanding how unhealthy food companies influence advertising restrictions. *PLOS Medicine*, 18(9), e1003742. Available at: https://doi.org/10.1371/journal.pmed.1003742 [Accessed 22 August 2024].

14 WHO, 2023. *Sodium Reduction Fact Sheet*. Available at: https://www.who.int/news-room/fact-sheets/detail/salt-reduction [Accessed 10 August 2024].

15 Owusu, M.F., Adu, J., Gyamfi, S., Martin-Yeboah, E. and Dortey, B.A., 2024. Tackling the non-communicable disease epidemic: A framework for policy action in low- and middle-income countries. *Pan African Medical Journal*, 47, p.82. Available at: https://doi.org/10.11604/pamj.2024.47.82.41089. [Accessed 11 September 2024].
16 Dans, A., Ng, N., Varghese, C., Tai, E.S., Firestone, R. and Bonita, R., 2011. The rise of chronic non-communicable diseases in Southeast Asia: Time for action. *The Lancet*, 377(9766), pp.680-689. Available at: https://doi.org/10.1016/S0140-6736(10)61506-1.
17 World Economic Forum and Harvard School of Public Health, 2011. *The Global Economic Burden of Non-Communicable Diseases*. Available at: http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenN. [Accessed 8 September 2024]
18 Chisholm, D., Lee, Y.Y., Baral, P.P., Bhagwat, S., Dombrovskiy, V., Grafton, D., Kontsevaya, A., Huque, R., Kalani Okware, K., Kulikov, A. and Marahatta, K., 2023. Cross-country analysis of national mental health investment case studies in sub-Saharan Africa and Central, South and South-East Asia. *Frontiers in Health Services*, 3, p.1214885. Available at: https://doi.org/10.3389/frhs.2023.1214885 [Accessed 22 August 2024].
19 Kazibwe, J., Tran, P.B. and Annerstedt, K.S., 2021. The household financial burden of non-communicable diseases in low- and middle-income countries: A systematic review. *Health Research Policy and Systems*, 19(96). Available at: https://doi.org/10.1186/s12961-021-00732-y [Accessed 6 August 2024]
20 Rijal, A., Adhikari, T.B., Khan, J.A.M. and Berg-Beckhoff, G., 2018. The economic impact of non-communicable diseases among households in South Asia and their coping strategy: A systematic review. *PLoS One*, 13(11), e0205745. Available at: https://doi.org/10.1371/journal.pone.0205745 [Accessed 6 August 2024].
21 Nguyen, T.P.L., Rokhman, M.R., Stiensma, I., Hanifa, R.S., Ong, T.D., Postma, M.J. and van der Schans, J., 2023. Cost-effectiveness of non-communicable disease prevention in Southeast Asia: A scoping review. *Frontiers in Public Health*, 11, p.1206213. Available at: https://doi.org/10.3389/fpubh.2023.1206213 [Accessed 5 August 2024].
22 Murphy, A., Palafox, B., Walli-Attaei, M., Powell-Jackson, T., Rangarajan, S., Alhabib, K.F., Avezum, A.J., Calik, K.B.T., Chifamba, J., Choudhury, T., Dagenais, G., Dans, A.L., Gupta, R., Iqbal, R., Kaur, M., Kelishadi, R., Khatib, R., Kruger, I.M., Kutty, V.R., Lear, S.A., Li, W., Lopez-Jaramillo, P., Mohan, V., Mony, P.K., Orlandini, A., Rosengren, A., Rosnah, I., Seron, P., Teo, K., Tse, L.A., Tsolekile, L., Wang, Y., Wielgosz, A., Yan, R., Yeates, K.E., Yusoff, K., Zatonska, K., Hanson, K., Yusuf, S. and McKee, M., 2020. The household economic burden of non-communicable diseases in 18 countries. *BMJ Global Health*, 5(2), e002040. Available at: https://doi.org/10.1136/bmjgh-2019-002040 [Accessed 6 August 2024]
23 United Nations Thailand, 2021. *Prevention and Control of Noncommunicable Diseases in Thailand – The Case for Investment*. Available at: https://thailand.un.org/sites/default/files/2021-11/%E6%9C%80%E6%96%B0%EF%BC%BFTHAILAND_NCD%20IC%20REPORT_v06_231121.pdf [Accessed 6 August 2024].
24 WHO, 2024. *Target Sustainable Development Goal 3*. Available at: https://www.who.int/europe/about-us/our-work/sustainable-development-goals/targets-of-sustainable-development-goal-3. [Accessed 6 August 2024].
25 Ministry of Public Health, Thailand, 2019. *National Strategic Plan for Non-communicable Disease Prevention and Control 2017-2021*. Available at: https://www.thaincd.com/main/index.php/whatwe-do/ncd-plan/94-ncd-plan/291-ncd-plan2017-2021. [Accessed on 26 September 2024]
26 WHO, 2021. *Global Health Observatory Data Repository: Noncommunicable Diseases (NCD) Country Profiles: Brunei Darussalam*. Available at: https://ncdportal.org. [Accessed on 15 August 2024]

27 Ow Yong, L. and Koe, L.W.P., 2021. War on Diabetes in Singapore: A Policy Analysis. *Health Research Policy and Systems*, 19(15). Available at: https://doi.org/10.1186/s12961-021-00678-1.

28 Ministry of Health, Lao PDR, 2019. *National Strategic Plan for Prevention and Control of NCDs 2019-2023*. Available at: http://nhp.gov.la/doc/National%20Strategic%20Plan%20For%20Non%20Communicable%20Diseases%202019-%202023.pdf. [Accessed on 25 August 2024]

29 Mosca G, Cappi V, D'Apice C, Rossi S, Artioli G, Sarli L. Myanmar health professionals' educational needs: a pilot study. Acta Biomed. 2020 Mar 13;91(2-S):35-44. doi: 10.23750/abm.v91i2-S.9344. PMID: 32168311; PMCID: PMC7944656. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7944656/pdf/ACTA-91-35.pdf [Accessed on 29 August 2024]

30 . WHO, 2020. *Noncommunicable Diseases Country Profiles 2020: Cambodia*. Available at: https://www.who.int/publications/m/item/noncommunicable-diseases-country-profiles-2020--cambodia. [08 September 2024]