

Thai Health 2023



Institute for Population and Social Research (IPRS)
Mahidol University

Thai Health Promotion Foundation

THAILAND'S COMMITMENT IN COP (CONFERENCE OF PARTIES) & RESPONSES TO

CLIMATE CHANGE

- 12 Indicators: *Social Determinants of Health*
- 10 Outstanding Health Situations
- 4 Outstanding Accomplishments for Health

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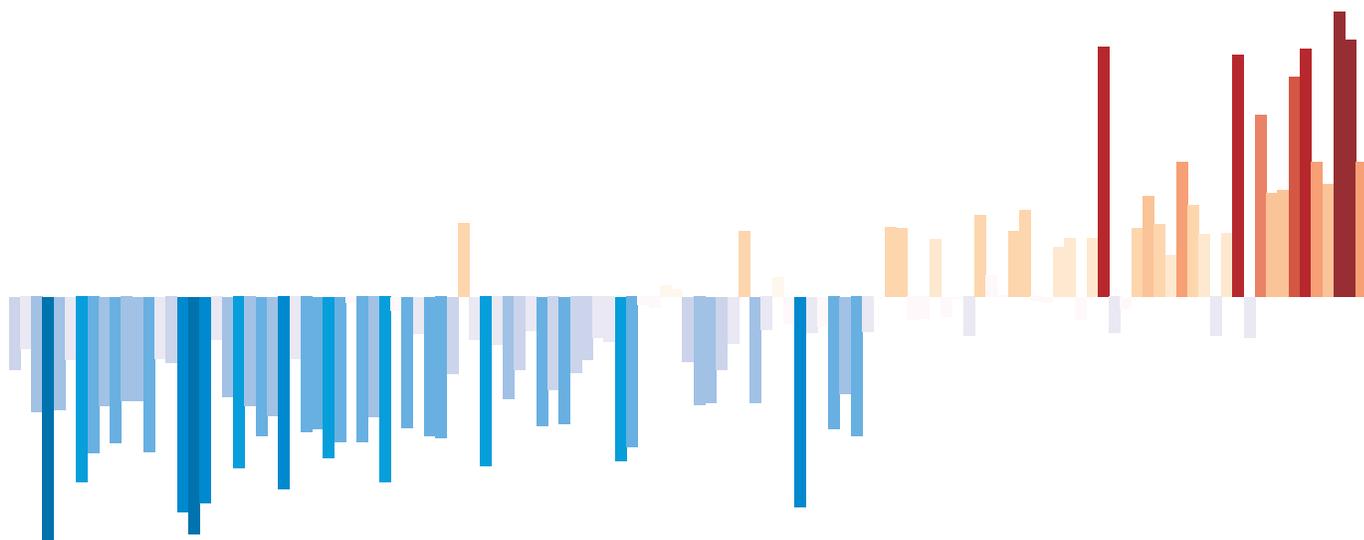
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Thai Health 2023



THAILAND'S COMMITMENT
IN **COP** (CONFERENCE OF PARTIES) & **RESPONSES** TO
CLIMATE CHANGE

Preface

The 2023 edition of the Thai Health Report features the special topic of the “Social Determinants of Health (SDH).” The report outlines the framework for presenting data from various directions and the seven target goals in the 10-Year Strategic Plan (2022–2031) of the Thai Health Promotion Foundation (ThaiHealth). These goals included tobacco and substance use, alcohol, nutrition, physical activity, road accidents, mental health, and the environment. Regarding the environmental aspect, the 2023 Report covers family, school, the workplace, and the home community.

Under the category of outstanding situations of the year, the report addressed social concerns, including: 1) Narcotics in the Community: What Is the Solution?; 2) E-Cigarettes Are Making Great Inroads in Thailand: Need to Speed up Control; 3) Safe Pedestrian Crosswalks and Pedestrians: Approaches Toward Improvement; 4) Amendment of Thai Liquor Law: From the Progressive Liquor Act to Unlocking Community Liquor; 5) Public Health Service System in Bangkok and Primary System Reform; 6) Thailand and Food Security; 7) Thai Society and Health Literacy; 8) Wising Up to the Call Center Gang; 9) Thailand and an Aged Society; and 10) Promotion of Thai Herbal Products: Past to Present.

As for the four outstanding achievements for Thai health in the year, the report highlights: 1) UNESCO Honored Phraya Srisundaravohara; 2) Siriraj Hospital Won the Highest Thailand Lean Award for 2022; 3) UNESCO Praised Her Royal Highness Princess Galyani Vadhana; and 4) WHO Presented the Prestigious World-Class Award to Two Thai Doctors: Dr. Prakit & Dr. Paisan.

The special feature of this edition focused on Thailand’s commitments at the Conference of Parties (COP) and dealing with the global climate crisis. Conference speakers discussed the issue of global warming and its impact on the world, as well as the roles of various countries, including Thailand, at COP26 in reducing greenhouse gas emissions. This is a matter that all countries must seriously address to solve the problem of global warming.

The working group for the 2023 Thai Health Report expresses gratitude to everyone who has followed and benefited from the report in terms of research, planning, policy-making, and fieldwork. Your support has been an important encouragement for the team to continually improve the Thai Health Report. Please continue to follow the latest information from Thai Health Report on the website www.thaihealthreport.com.

Thai Health Report Team



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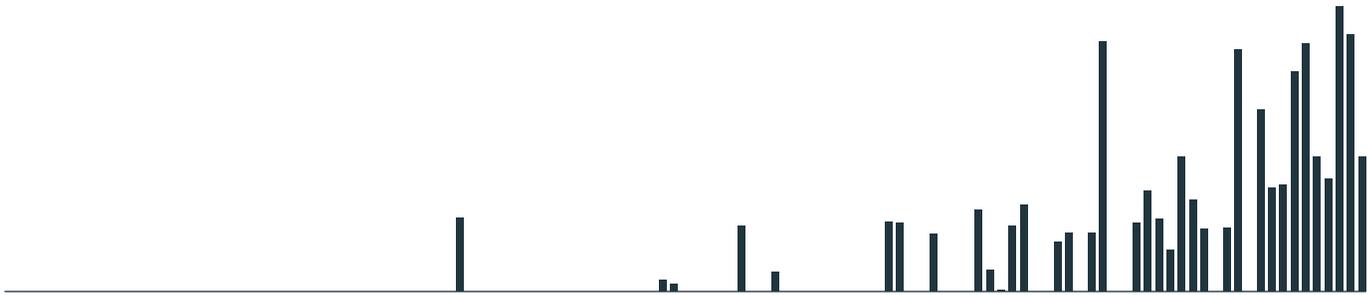
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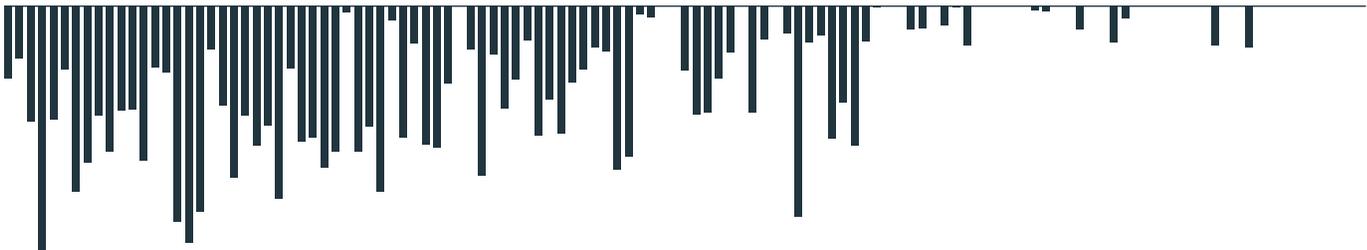
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12 Indicators

“Social Determinants of Health”





12 Indicators: *Social Determinants of Health*

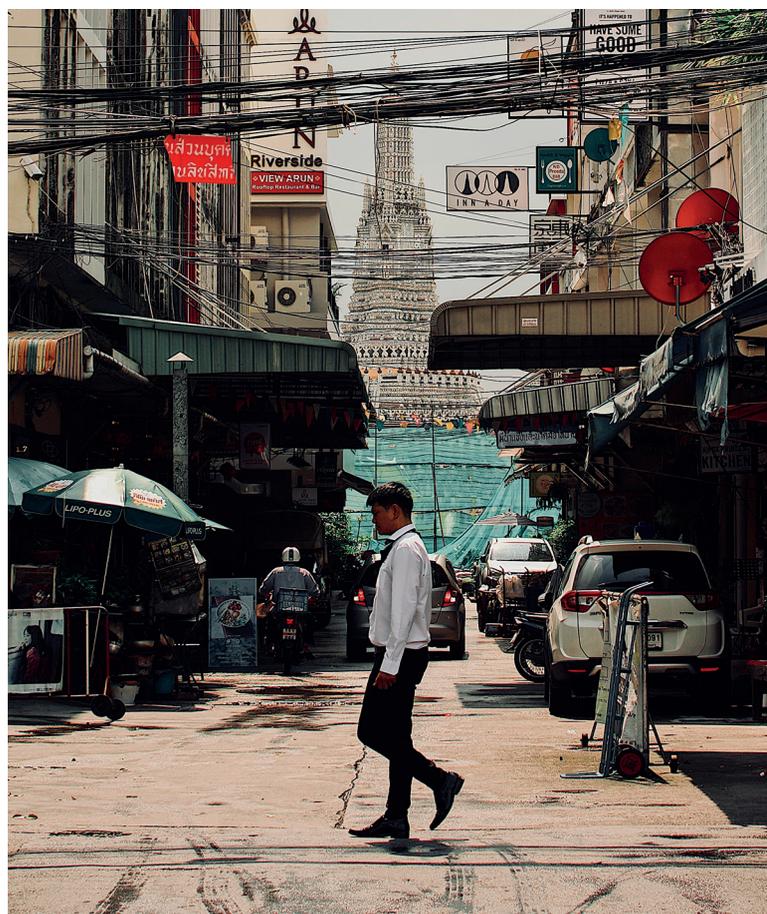
“ Incidence of disease, illness, and health risks is not only caused by personal factors. Indeed, the environment in which a person is born, raised, works and lives, as well as the economic and social structure, all play critical roles as social determinants of an individual’s health. ”

This 2023 edition of Thai Health reviews indicators of “Social Determinants of Health” to provide a perspective on health promotion of the Thai population that goes beyond individual factors. For people to enjoy good health, there must also be a supportive economic and social environment and structure.

This section of the report presents the diversity and disparity of health risk factors as determinants of health that are relevant to the strategic goals under the 10-year vision (2022–2031) of the Thai Health Promotion Foundation (ThaiHealth). The focus is on the following dimensions of risk:

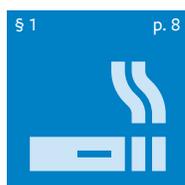
- 1 Consumption of tobacco;
- 2 Consumption of alcohol and drugs;
- 3 Food consumption;
- 4 Physical activity;
- 5 Road accidents;
- 6 Mental health; and
- 7 Environmental pollution.

They are the first seven sections in this report.



Source: unsplash.com/photos/OJNKKCK7po

In addition to a discussion of the above seven dimensions of health risk, this report will highlight the influence of the environment, the local context, and the social group as determinants of health risk. The environment is considered in four contexts: family, school, work, and community. These four contexts comprise health indicators in sections 8–11, before ending with the last section, which is policy environment.

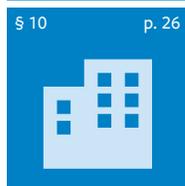
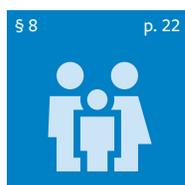
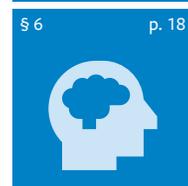


Information presented in the health indicators section demonstrate the importance of health determinants in promoting public health. Region of residence is one of the important social determinants of health. For example, the data show that people living in the southern region of Thailand had the highest prevalence of smoking cigarettes, while people in Bangkok had the highest prevalence of consumption of e-cigarettes (**Section 1**). Region of residence can also influence alcohol consumption via the influence of advertisement visibility and marketing activities. Promotion of alcoholic beverages may affect the appetite for consumption. There is also the issue of marijuana being removed from the list of narcotics, and that could lead to an increase in the abuse of marijuana (**Section 2**).

Socio-economic structure is an important factor that determines the environment and way of life that can affect food consumption behavior. Consumption of sweetened beverages and high-fat foods tends to be a problem for higher-income people, while eating processed meats and cooked retail foods are more likely to be a problem for lower-income people (**Section 3**).

While age and sex are important determinants of health, children and youth and women, as a group, still lack adequate physical activity (**Section 4**). That said, male adolescents had the most deaths from road accidents (**Section 5**), while women had a slightly higher proportion of mental health problems than men. Still, the suicide rate for men was many times higher than for women (**Section 6**).

The final health risk factor in this set is **Section 7: Environmental Pollution**. There are differences by area, province, and region in the health risks from air, solid waste, and industrial pollution.



Sections 8–11 are presented to illustrate the influence of environmental factors in various social contexts, including family, school, work, and community, on health risk. In these dimensions, the emphasis is on the issue of consumption of tobacco and alcoholic beverages, food consumption, and physical activity. The data presented will show how diverse aspects of family, school, work, and the home community determine the health of the population. For example, Thais who live alone have a greater tendency to drink alcohol, smoke, and gamble (**Section 8**). Smaller schools are less likely to have personnel with training in basic childhood nutrition to manage the student lunch program (**Section 9**). The nature of work in the manufacturing sector is associated with a greater smoking risk than other sectors (**Section 10**), and communities that care about designing the environment to promote daily physical activity have a positive effect on the level of adequate physical activity among the community residents (**Section 11**).

Section 12 (Policy Environment) is the final health indicator in this report. This indicator highlights the role of policy as a key determinant of health of the Thai population. Policies or legislation, such as the Tobacco Products Control Act of 1992 and the Alcoholic Beverage Control Act of 2008, can play an important role in determining health risk factors at the structural level. The effect of these policies should help reduce inequality and create health equity for the population.



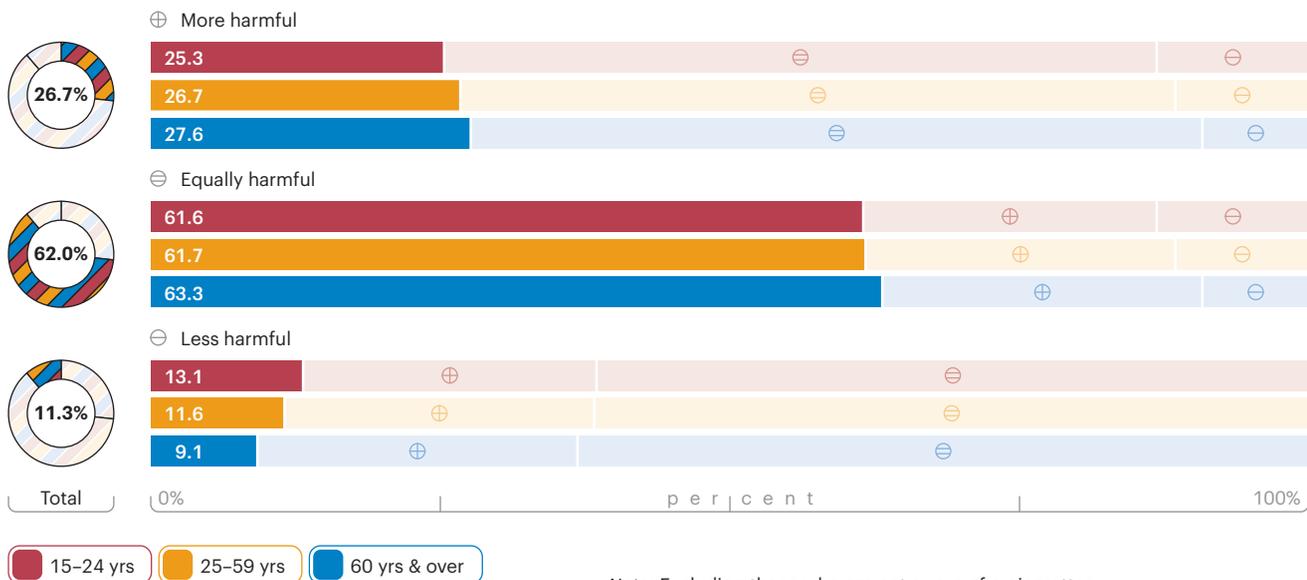
Consumption of Tobacco

“ 13.1% of Thais aged 15–24 years believe that e-cigarettes are less harmful than conventional cigarettes, and that perception could be a motivating factor to try e-cigarettes. ”

A strategy to reduce the harm of smoking should focus on preventing new users, followed by helping smokers to quit, creating an environment which discourages smoking, and implementing measures and mechanisms to control the tobacco products.

Smoking and exposure to secondhand smoke is a serious health risk. In terms of smoking behavior, the trend of smoking prevalence throughout the country has decreased over the past decade, but there are large differences between regions. In 2021, the highest smoking prevalence was found in the southern region at 22.4% compared to the national average of 17.4%. Bangkok had the highest prevalence of e-cigarette use (1.2%), compared to the national prevalence of 0.8%. It is important for programs and campaigns to focus on youth since they tend to believe that e-cigarettes are less harmful than conventional cigarettes, and that belief is higher in youth than other age groups.

Opinion of e-cigarettes versus conventional cigarettes by age group

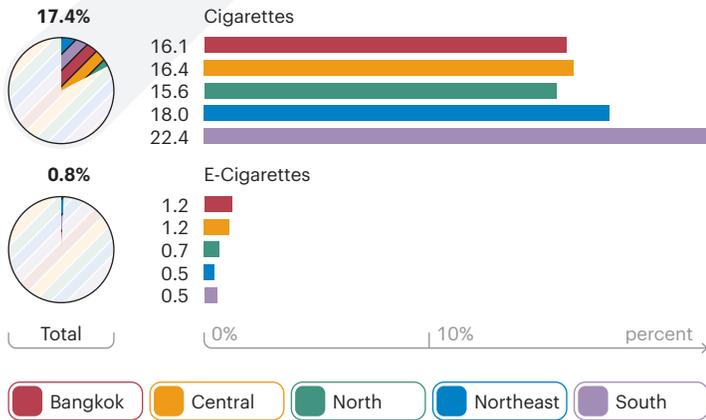


Trends in smoking prevalence in 2011–2021



Source: Survey of Smoking and Drinking Behaviors of the Population in 2011, 2014 and 2017, National Statistical Office; Health Behavior of Population Survey, 2021, National Statistical Office

Prevalence of smoking conventional and e-cigarettes by region

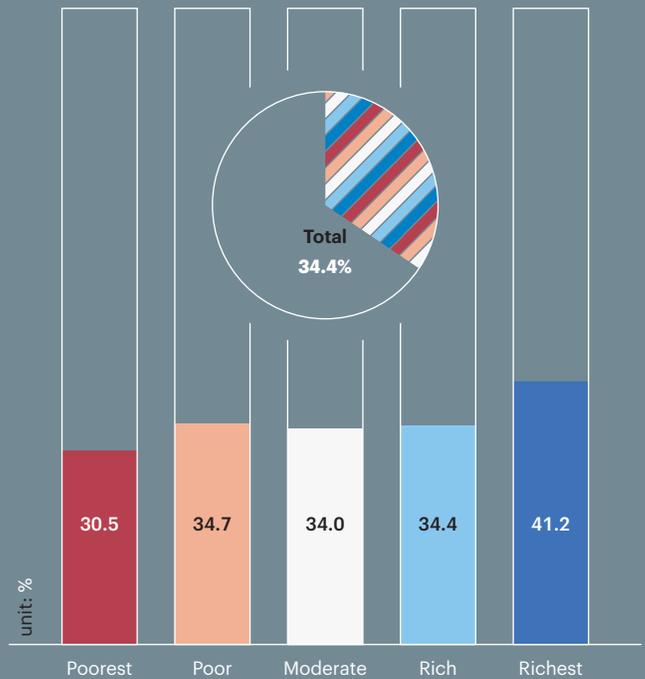


Note: Including smokers who smoke daily or less frequently
Source: Health Behavior of Population Survey, 2021, National Statistical Office

With respect to smoking cessation, success in quitting differs by economic status. Of the wealthiest Thais, 41.2% of smokers or ex-smokers had attempted to quit smoking. By contrast, among those in the lowest wealth quintile, only 30.5% had attempted to quit smoking.

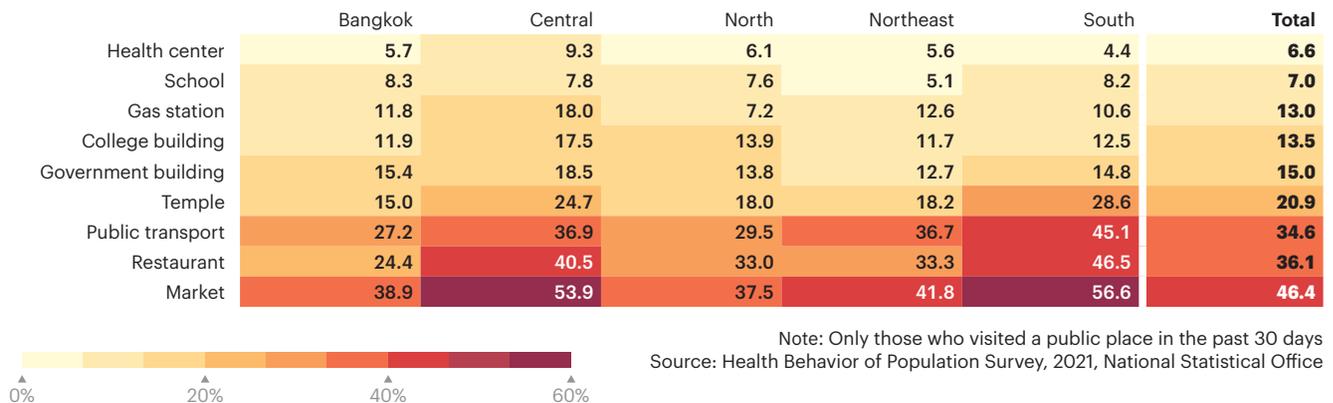
Placing or displaying tobacco products and sightings of smoking in public places reflects the enforcement of laws and social norms regarding consumption of tobacco that will influence smoking behaviors and exposure to second-hand smoke. In regard to setting up cigarette pack displays, it was found that the youth aged 15–24 had the highest prevalence of seeing cigarette pack displays at a retail outlet (9.8%), compared to 8.6% of the working-age group, and 5.7% of the older population. Sightings of people smoking in public places were found in and around public transportation, restaurants, and fresh markets/flea markets. Among those who go to markets on a regular basis, almost half (46.4%) observed smoking behavior in public places, especially in the southern and central regions where the percentages were the highest at 56.6% and 53.9%, respectively.

Current/ever smokers who had tried to quit by economic status

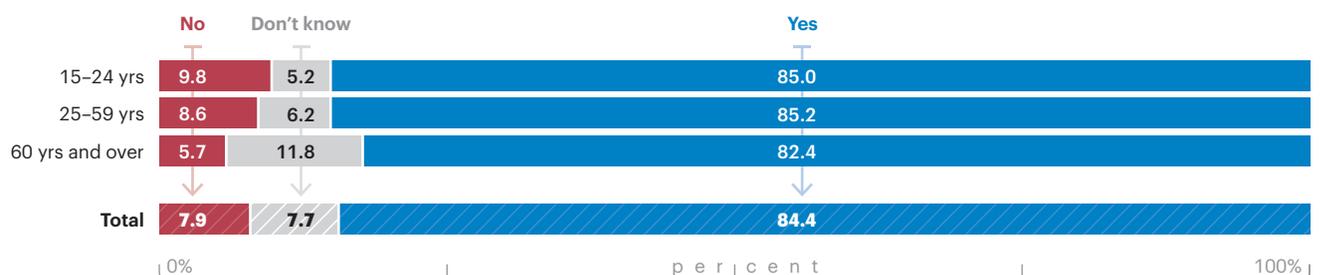


Source: Health Behavior of Population Survey 2021, National Statistical Office

Ever seen smoking behavior in a public place in the past 30 days by location and region



Ever seen displays of cigarette packs for sale in retail outlets by age group



Source: Health Behavior of Population Survey, 2021, National Statistical Office

Consumption of Alcoholic Beverages and Narcotic Drugs

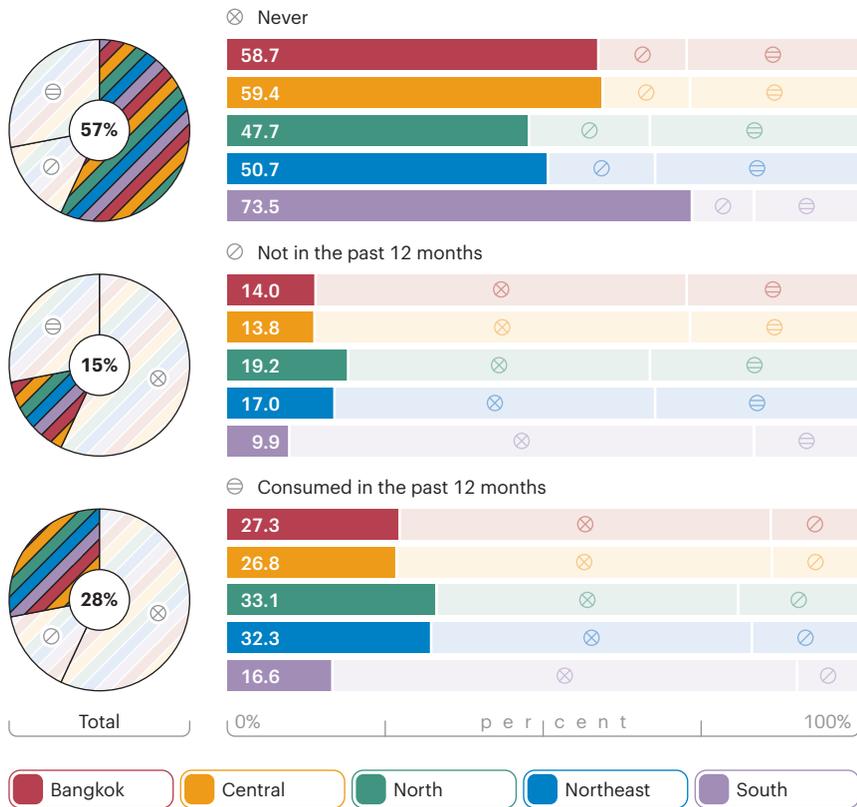
“ About 1 in 5 Thais have seen an advertisement, marketing activities, or other form of promotion of alcoholic beverages. The youth group aged 15–24 years has the highest exposure to these activities, with 1 in 3 seeing them. ”

Alcohol beverage consumption behavior differs according to culture and environment, and efficiency of alcohol beverage control mechanisms.

Alcohol beverage consumption behavior of Thais differs by region. Residents of the north and northeast had the highest alcohol consumption rates at 33.1% and 32.3%, respectively, which is significantly higher than the national average of 28% and about twice the alcohol consumption rate in the southern region.

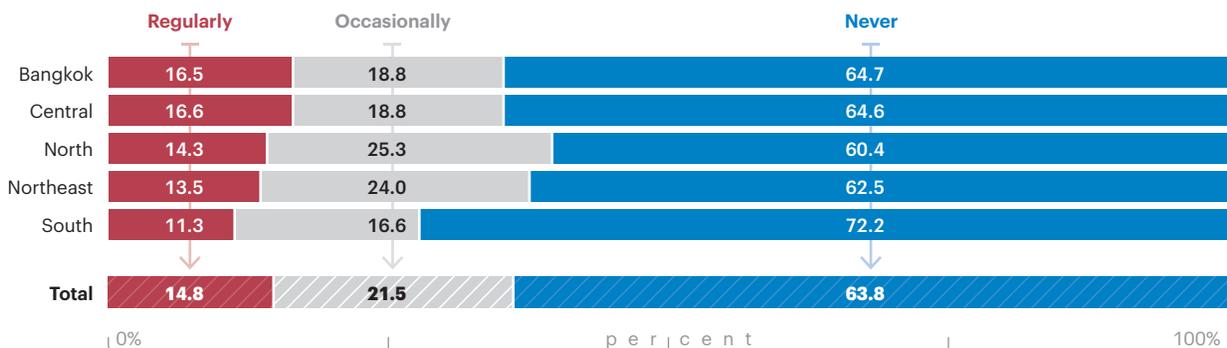
Among drinkers, people in the central region and Bangkok had the highest prevalence of regular heavy drinking, at 16.6% and 16.5%, respectively. Drinkers in the south, in addition to being the smallest proportion among regions, also had the lowest heavy drinking behavior.

Consumption of alcoholic beverages by behavior and region



Source: Health Behavior of Population Survey, 2021, National Statistical Office

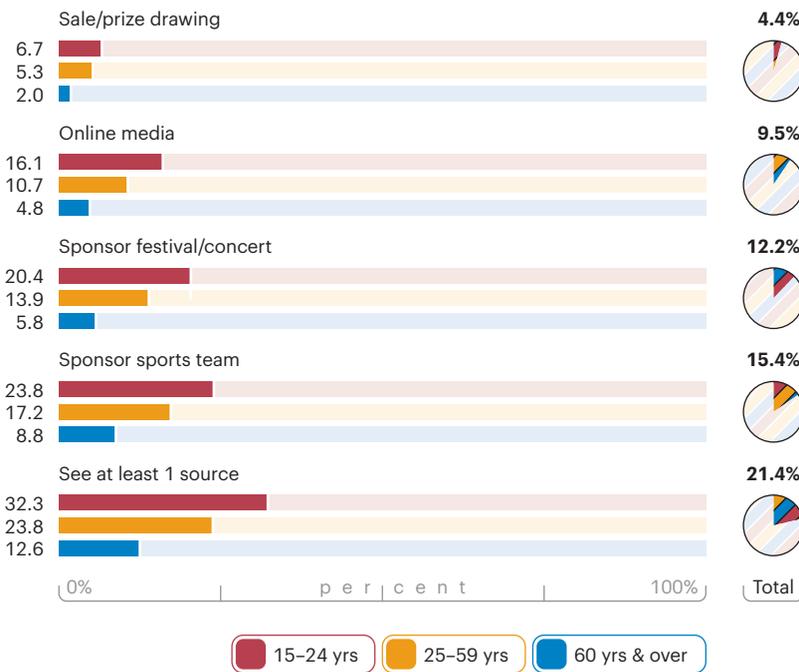
Heavy drinking at one sitting in the past 12 months



<p>Criteria for defining drinking as “heavy drinking regularly”</p> <p>Heavy drinking session at least every month in the past 12 months</p>	<p>Criteria for defining drinking as “heavy drinking occasionally”</p> <p>< 8–11 days per year</p>	<p>Criteria for defining drinking as “heavy” or “excessive”</p> <table border="0"> <tr> <td>Hard alcohol</td> <td>375 ml of low-grade local, distilled beverage (approx. 40% alc.)</td> </tr> <tr> <td>Mixed drinks</td> <td>8 standard drinks</td> </tr> <tr> <td>Beer</td> <td>4 cans or 2 big bottles</td> </tr> <tr> <td>Wine/champagne</td> <td>1 bottle (750 ml) or 4 standard servings</td> </tr> <tr> <td>Breezer</td> <td>4.5 bottles/cans</td> </tr> <tr> <td>Fermented wine (rice wine)</td> <td>1 big bottle; 2.5 standard drinks</td> </tr> </table>	Hard alcohol	375 ml of low-grade local, distilled beverage (approx. 40% alc.)	Mixed drinks	8 standard drinks	Beer	4 cans or 2 big bottles	Wine/champagne	1 bottle (750 ml) or 4 standard servings	Breezer	4.5 bottles/cans	Fermented wine (rice wine)	1 big bottle; 2.5 standard drinks
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Source: Health Behavior of Population Survey, 2021, National Statistical Office

Ever seen advertisements/marketing/promotions of alcoholic beverages or a business with a logo similar to that of an alcoholic beverage by age group



Source: Health Behavior of Population Survey, 2021, National Statistical Office

Advertising of the alcoholic beverage business or businesses that have a logo similar to an alcoholic beverage logo is an issue that must be closely monitored and controlled. Currently, youth aged 15–24 is the group most reported seeing advertising, marketing activities, and the promotion of alcoholic beverages, especially in the form of sponsoring sports teams or sports competitions (33.8%), followed by forms of sponsoring various festivals at 20.4% and through social media or online at 16.1%.

Market regulation must go hand-in-hand with law enforcement. That was the case in the northeast region where the proportion of sales of alcoholic beverages to Thais under the age of 20 years was highest at 23.9%, and much higher than the national average of 13.1%

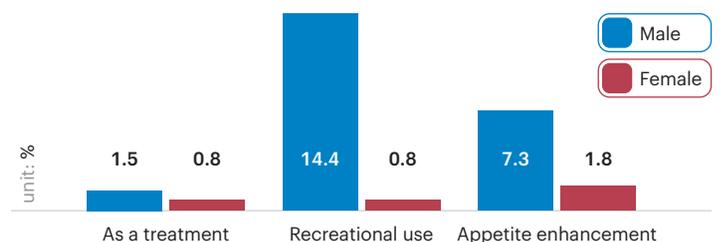
Ever seen sales of alcohol to Thai youth under 20 years by region



Source: Health Behavior of Population Survey, 2021, National Statistical Office

In terms of narcotic drugs, marijuana (Cannabis) use behavior is an issue that needs to be monitored. There was a clear difference between gender and purpose of use. Surveys in 2020 found that 14.4% of men used recreational marijuana in their lifetime, and that was about 18 times higher than that of women. Marijuana was removed from the list of narcotics Class 5 in 2022 and, thus, it will be important for Thailand to monitor use and track health effects.

Use of marijuana among Thais aged 15 years and over by purpose and sex



Source: A survey of knowledge, understanding and opinions of the public on medical marijuana and recreational use, 2020, Centre for Addiction Studies

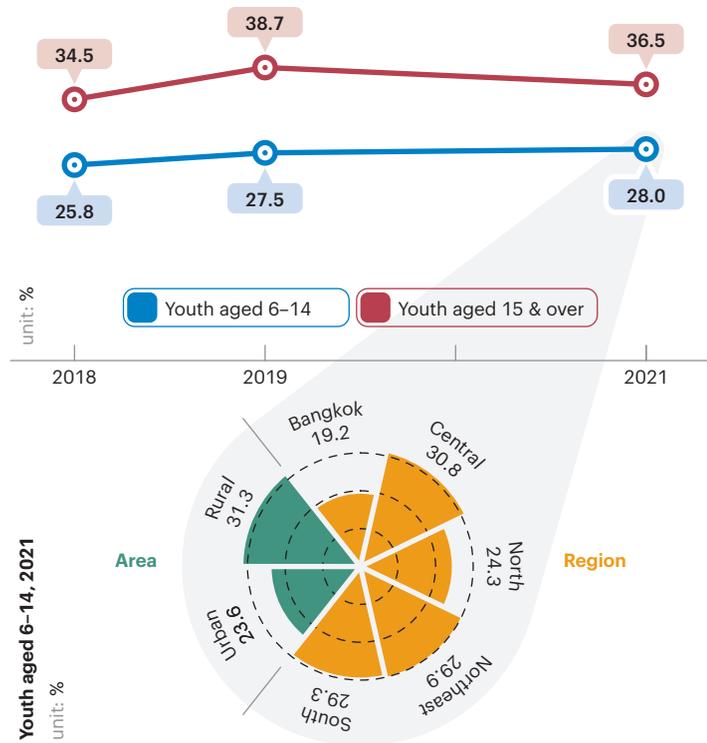
“ 1 in 10 Thais have severe food insecurity, members of vulnerable households are those who need close care. ”

One of the key conditions for health equality of populations is the socio-economic factors that determine the environment and the way of life conducive to having nutritionally balanced dietary habits. Quality food is available and can be accessed according to the needs of members of each age group.

Many Thais’ food habits are still worrisome, particularly consumption of unhealthy foods, sweetened beverages, and inadequate intake of fruits and vegetables. These unhealthy behaviors differ among populations according to socioeconomic status. Eating high-fat foods and sugary drinks is more of a problem among higher-income people. By contrast, the health risks from food consumption among the lower-income concerns eating processed meat and cooked retail products.

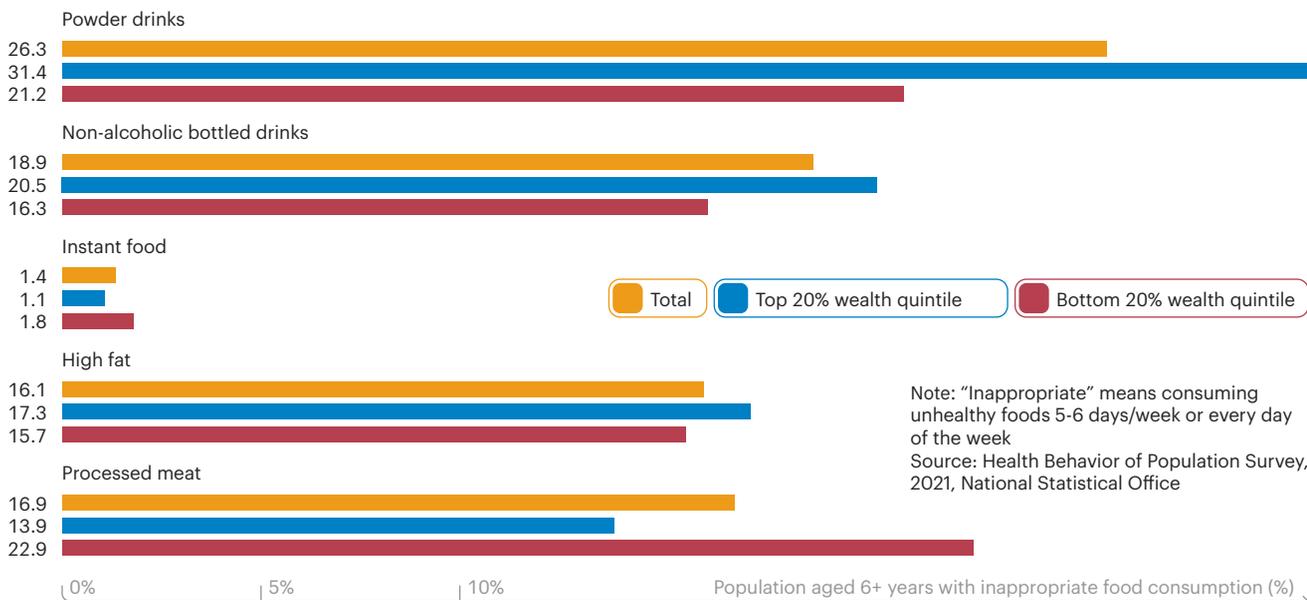
Overall, Thais still have a relatively low intake of fruits and vegetables, especially children aged 6–14. In particular, the more vulnerable group is children in Bangkok where, in 2021, it was found that less than a one in four children were consuming the recommended amount of fruits and vegetables.

Adequate daily consumption of fruits and vegetables



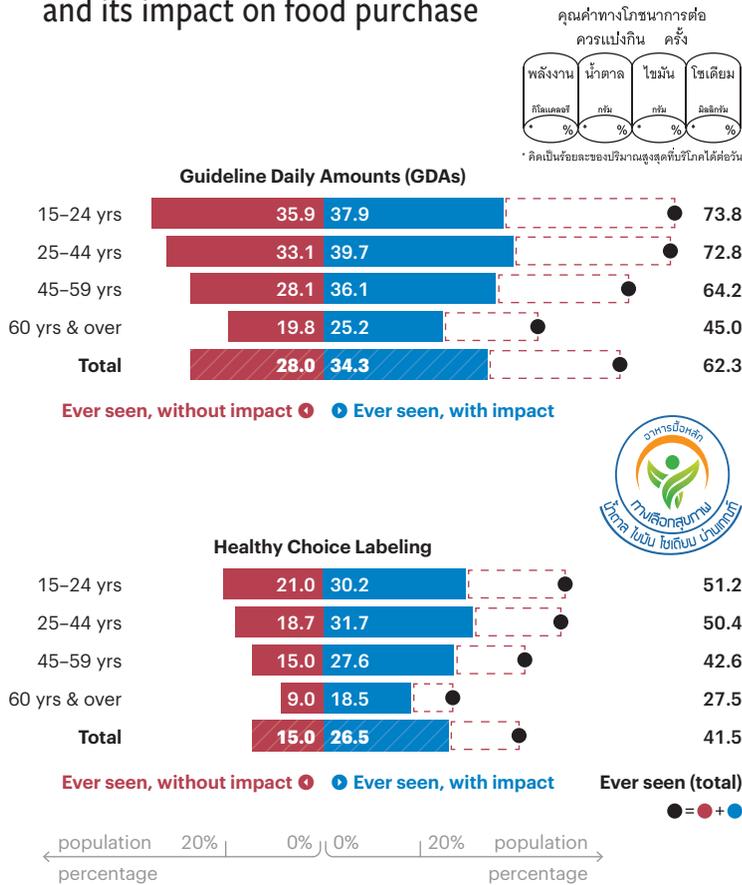
Source: Fruit and Vegetable Consumption Situation among Thai People: 2018, 2019 and 2021 by ThaiHealth in collaboration with the Institute for Population and Social Research, Mahidol University

Thai Food Consumption Risk Behavior



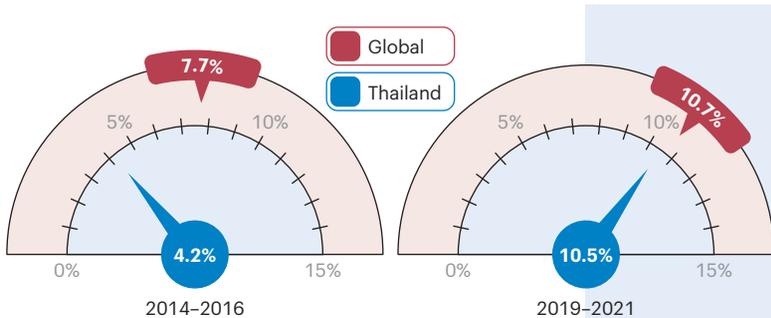
Note: “Inappropriate” means consuming unhealthy foods 5-6 days/week or every day of the week
Source: Health Behavior of Population Survey, 2021, National Statistical Office

Knowledge of the nutrition label and its impact on food purchase



Source: Health Behavior of Population Survey, 2021, National Statistical Office

Severe food insecurity

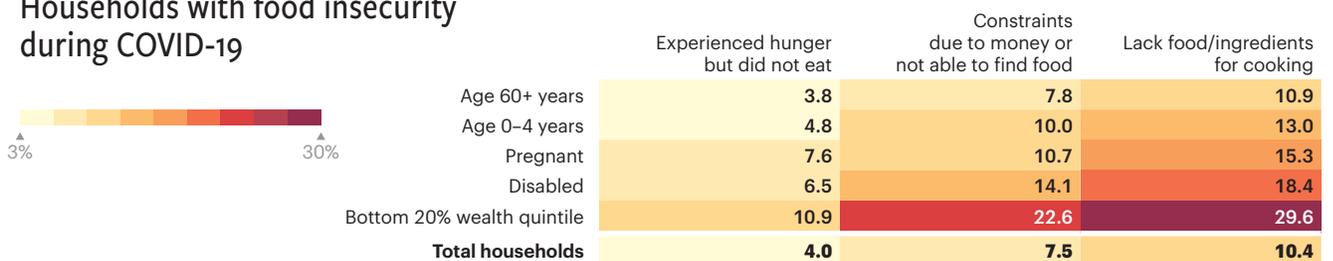


Source: The State of Food Security and Nutrition in the World 2022, FAO

A 2021 survey in Thailand of people aged 13 or over found a lower percentage of people with severe food insecurity at 2.9%, with women (3.2%); youth aged 13-14 years (4.2%) and the older people (3.6%) at more risk.

Source: Fruit and Vegetable Consumption Situation among Thai People, 3rd Round (2021), Institute for Population and Social Research, Mahidol University

Households with food insecurity during COVID-19



Source: Survey on the impact of the COVID-19 situation per household in Thailand 2022, National Statistical Office

Building knowledge about food health behavior is something that needs to be promoted. Thais also have relatively low awareness of nutrition labels on food products. Less than two-thirds pay attention to the GDA nutrition labels showing energy, sugar, fat, and sodium values in food products. Younger Thais have a higher proportion of people who have seen the nutrition labels, but that still does not affect the decision-making behavior to buy food.

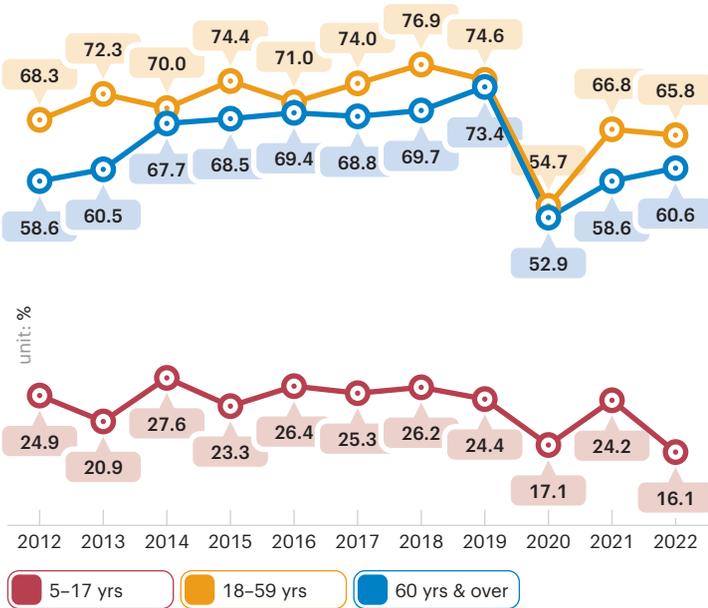
During the COVID-19 pandemic, the proportion of Thais experiencing severe food insecurity was estimated to be more than twice as high as in the pre-COVID era. According to a report on the State of Food Security and Nutrition in the World, food insecurity increased from 4.2% of the population in 2014-2016 to 10.5% in 2019-2021. Among vulnerable population groups, those being most vulnerable and struggling to access nutritious food were members of lower-income families who were young children, pregnant women, persons with disabilities, and the elderly.

“ Only 1 in 4 Thai youth have adequate physical activity. ”

Age and gender are key determinants of adequate physical activity. Populations at risk for insufficient physical activity are children and youth and women.

Encouraging Thais to engage in adequate, daily physical activity is important and urgently needed. All age groups still have a proportion having sufficient physical activity that is lower than the target of the 2018–2030 Physical Activity Promotion Plan. That target is that 75% of children and youth age 6–17 years have adequate physical activity. That is also the age group that needs special promotion because it had the lowest proportion of adequate physical activity among all age groups in 2020. When COVID-19 measures and lockdowns came into force, there was a decrease in adequate physical activity in all age groups. When considering sex, it was found that women had lower levels of physical activity than men in all age groups.

Adequate physical activity by age group



Source: Survey of Adequate Physical Activity 2012–2022, Thailand Physical Activity Knowledge Development Centre

Physical activity refers to movement throughout the day, including work, travel and recreation, as well as exercise. Adequate moderate-to-vigorous physical activity is recommended on a continuous basis to maintain good physical health.

Adequate physical activity

Age 5–17 years

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	27.8	24.2	29.1	25.8	29.5	28.6	31.4	31.0	20.3	25.9	21.4
Female	23.4	17.4	22.4	19.4	21.4	20.5	22.9	21.6	13.9	22.7	10.3
Total	24.9	20.9	27.6	23.3	26.4	25.3	26.2	24.4	17.1	24.2	16.1



Age 18–59 years

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	73.4	76.7	72.8	76.5	73.6	76.8	79.8	76.4	57.6	69.0	69.5
Female	63.9	68.4	68.1	73.0	69.3	71.4	74.1	72.8	51.4	64.6	62.2
Total	68.3	72.3	70.0	74.4	71.0	74.0	76.9	74.6	54.7	66.8	65.8



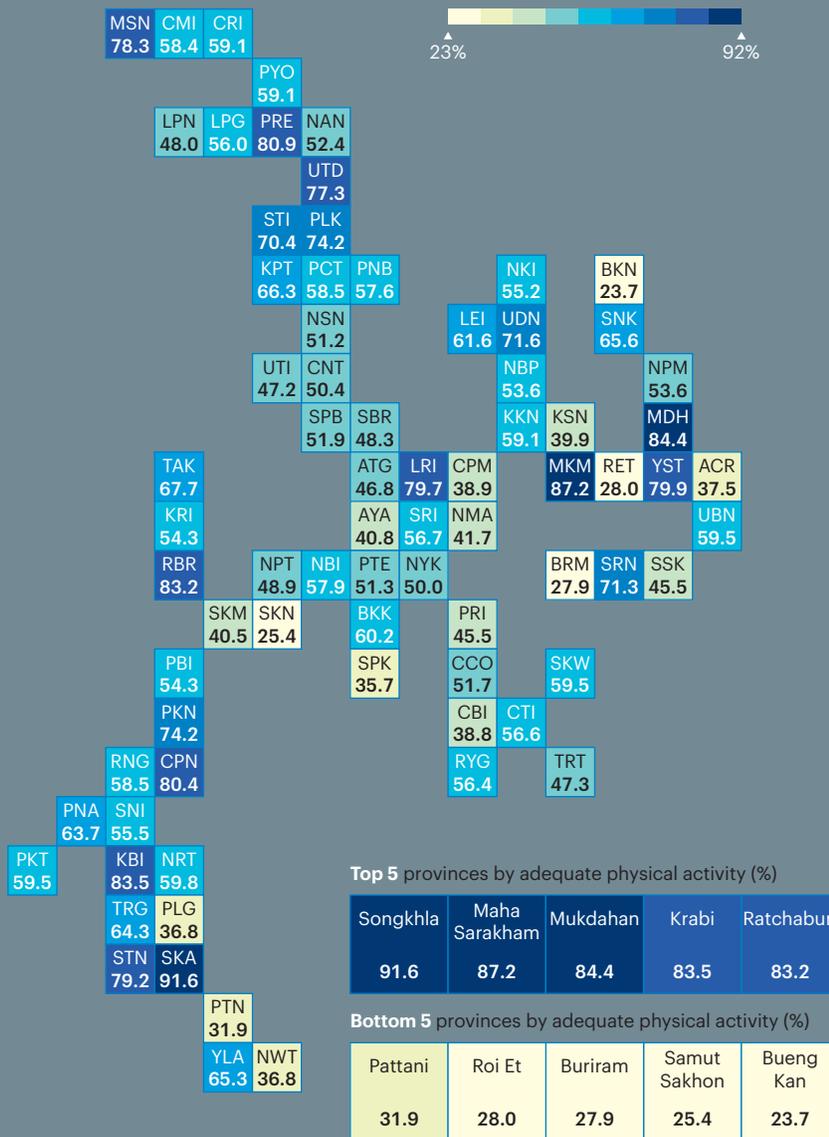
Age 60+ years

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	62.4	64.8	69.7	71.7	73.7	69.4	73.3	75.2	54.4	66.0	62.7
Female	54.7	57.8	66.3	66.4	66.6	68.4	66.8	71.9	50.9	53.1	58.8
Total	58.6	60.5	67.7	68.5	69.4	68.8	69.7	73.4	52.9	58.6	60.6



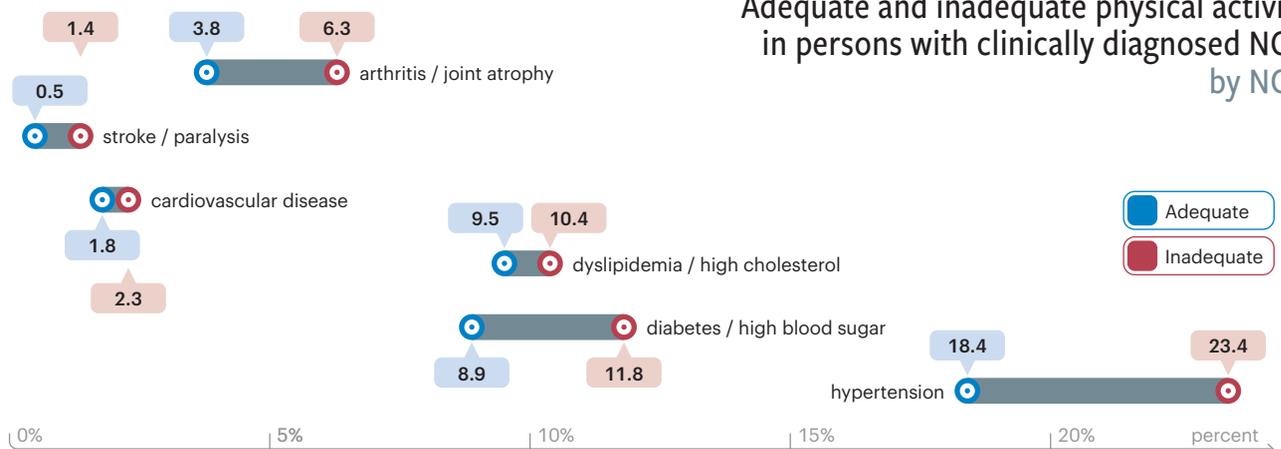
Source: Survey of Adequate Physical Activity 2012–22, Thailand Physical Activity Knowledge Development Centre

Adequate physical activity by province



In addition, Thailand also found inequalities in spatial physical activity. The difference was most pronounced between the provinces with high levels of sufficient activity where the proportion of the population with sufficient physical activity was more than three times higher than that of the provinces with low sufficient activity. These differentials may be related to many factors such as the age structure of the population in the area, occupational patterns, provincial infrastructure that facilitates physical activity, and socio-cultural characteristics of physical activity.

Having enough physical activity can reduce the risk of death from chronic non-communicable diseases (NCD). The 2021 survey found that, among the population with sufficient physical activity, respondents had less NCD than those with insufficient physical activity. Those with adequate physical activity had a prevalence of hypertension of 18.4%, compared to those with insufficient physical activity (23.4%). Encouraging adequate physical activity in all genders and ages is essential to promote long-term public health.



Adequate and inadequate physical activity in persons with clinically diagnosed NCD by NCD

“ 1 in 5 Thais who die from road accidents are adolescents and youth aged 15–24 ”

The number and death rate from road accidents in Thailand, despite a downward trend since 2016, is still considerably higher than the world average. Most of the fatalities are among the younger male population, many of which are attributable to risk factors for unsafe driving behavior.

Fully 16,957 Thais died from road accidents in 2021, or a rate of 25.9 deaths per 100,000 population. This is higher than the world average last reported in 2019 at 16.7 deaths per 100,000 population. Overall, more than three-quarters of the deaths in the past decade were male, and more than one-fifth were between the ages of 15 and 24. The proportion was higher than other age groups and about 3 in 4 were motorcycle users. Provinces in the eastern region, especially Rayong, Chonburi and Chanthaburi, had the highest road accident death rates compared to other regions.

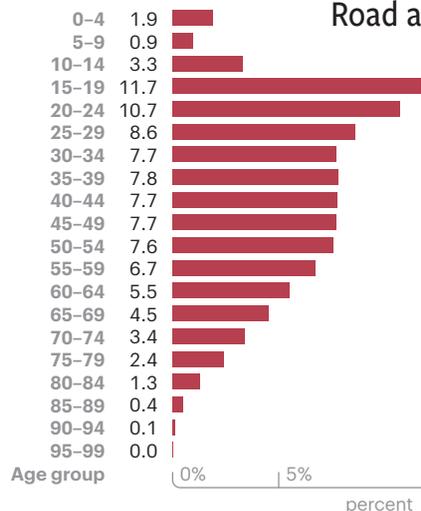
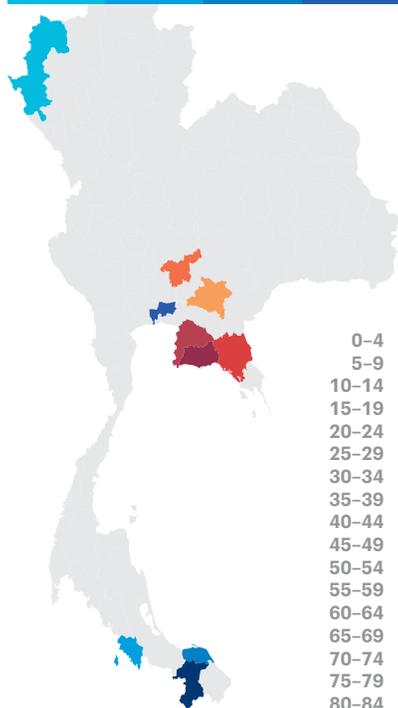
Road accident mortality (per 100,000 population): 5-year average (2017–2021)

Top 5 provinces

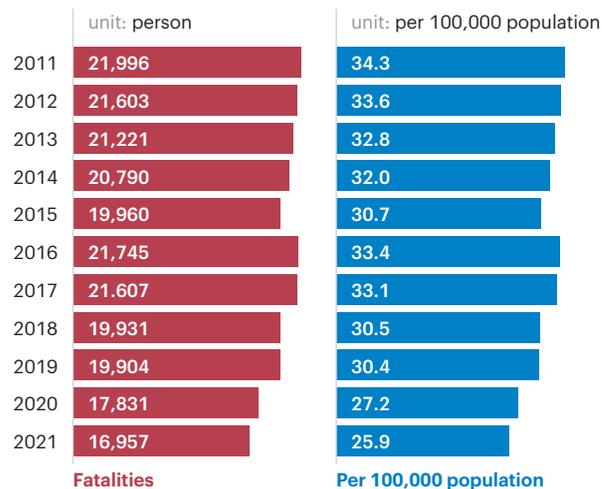
Rayong	Chonburi	Chanthaburi	Saraburi	Prachinburi
61.5	48.3	47.9	47.1	46.6

Bottom 5 provinces

Mae Hong Son	Satun	Pattani	Bangkok	Yala
17.8	17.5	15.8	15.2	14.6



Thai road accident mortality rate in 2011–2021



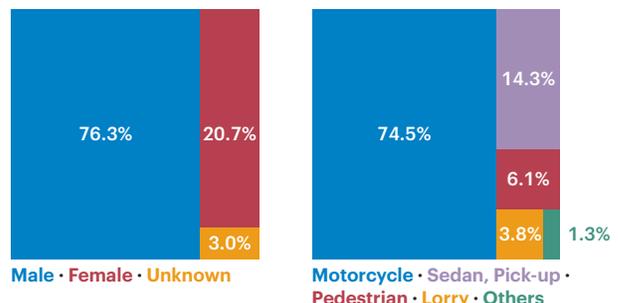
The global average in 2019 is **16.7** per 100,000 population

Source: Injury Data Collaboration Center, Department of Disease Control, MOPH

Source: Global Health Observatory Data Repository, The World Bank

Road accident mortality in 2011–2021

by age group by sex and vehicle

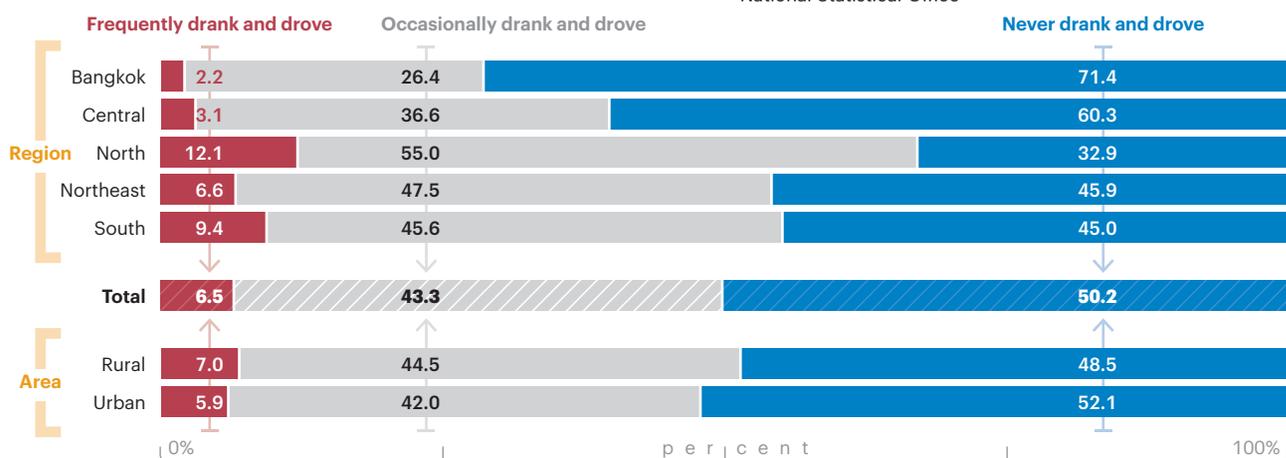


Note: Excluding deaths with unknown age group or vehicle
Source: Injury Data Collaboration Center, Department of Disease Control, MOPH

Source: Injury Data Collaboration Center, Department of Disease Control, MOPH

Drink driving among those who consumed alcohol in the past 12 months

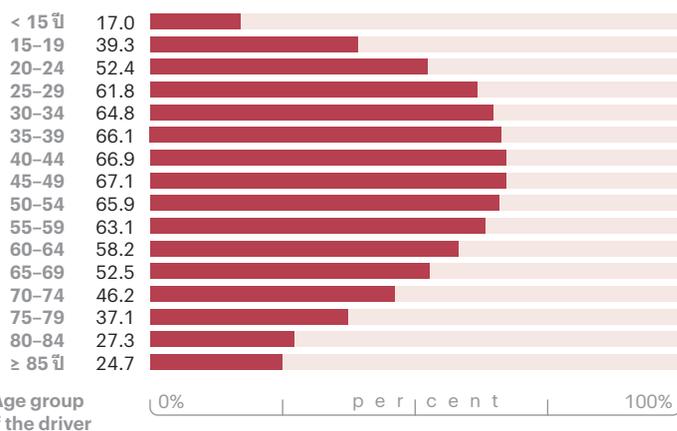
Note: Including both motorcycle and car/truck driving in the past 12 months
Source: Health Behavior of Population Survey, 2021, National Statistical Office



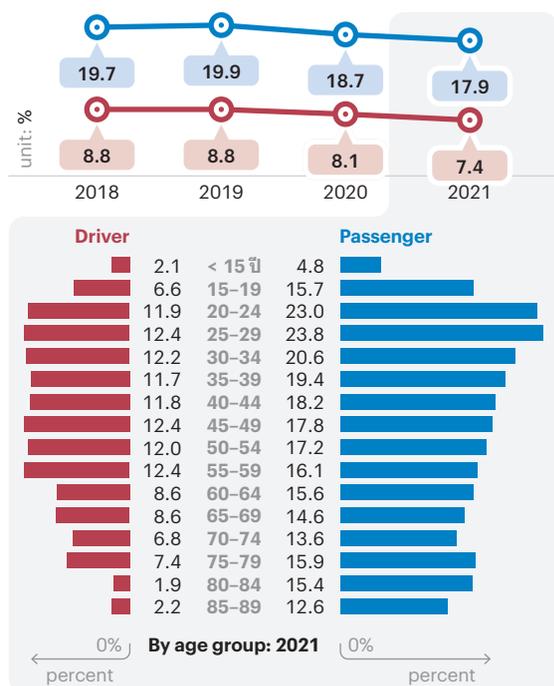
Detection of blood alcohol (regardless of above/below the legal limit) by age group

Overall, 59% of drivers had detectable amounts of blood alcohol: 52% over the legal limit and 7% under the legal limit

Note: Measurement of alcohol among drivers from December 2018 to July 2021. The survey sample is those whose appearance indicates driving under the influence of alcohol.
Source: Report on Alcohol Test in Drivers, 2017–2021 Injury Data Collaboration Center, Department of Disease Control, MOPH



Use of safety helmet among motorcycle fatalities



Note: Excluding cases whose status of using a helmet was unknown
Source: Causes of Injuries, 2017–2021 Injury Data Collaboration Center, Department of Disease Control, MOPH

Many injuries and fatalities remain attributable to risky drinking and driving behaviors, and not wearing helmets or protective gear while driving. According to a 2021 survey of people who drank alcohol in the past 12 months and were drivers of cars or motorcycles, it was found that almost half had ever driven while under the influence of alcohol, and some did this regularly (43.3% and 6.5%, respectively). Drink driving was more prevalent among rural residents and those in the north, northeast, and south among regions. According to check-points during 2018–2021, as high as 59% of drivers who were tested had detected alcohol levels, with the highest proportion among drivers aged 35–49 years.

Data from the injury surveillance system of the Department of Disease Control of the Ministry of Public Health (MOPH) found that a low proportion of motorcyclists who were injured and killed in 2021 wore a helmet. What is worse, the prevalence of helmet-wearing has been decreasing in recent years. Only 17.9% of motorcycle drivers wore a helmet, and 7.4% of motorcycle passengers wore a helmet. Youth under 15 years and older people were at higher risk because of the lower proportion of helmet use than other age groups.

6

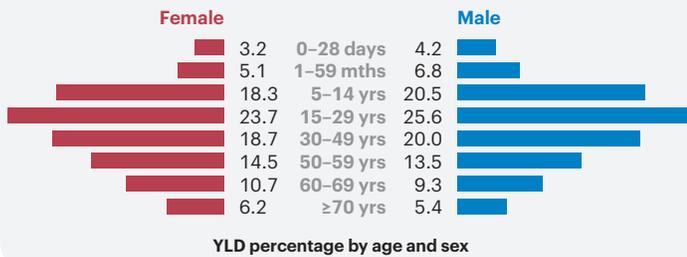
Mental Health

“ Women are at higher risk of a mental health disorder than men—but men have a higher suicide rate. ”

World Mental Health Report 2022

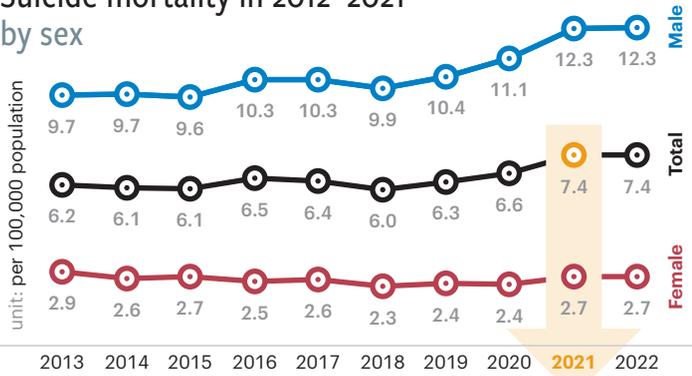


2 Years lived with disability (YLDs): Fully 15.6% are related to mental health disorder



Source: World Mental Health Report 2022, WHO

Suicide mortality in 2012–2021 by sex



2021 by age group



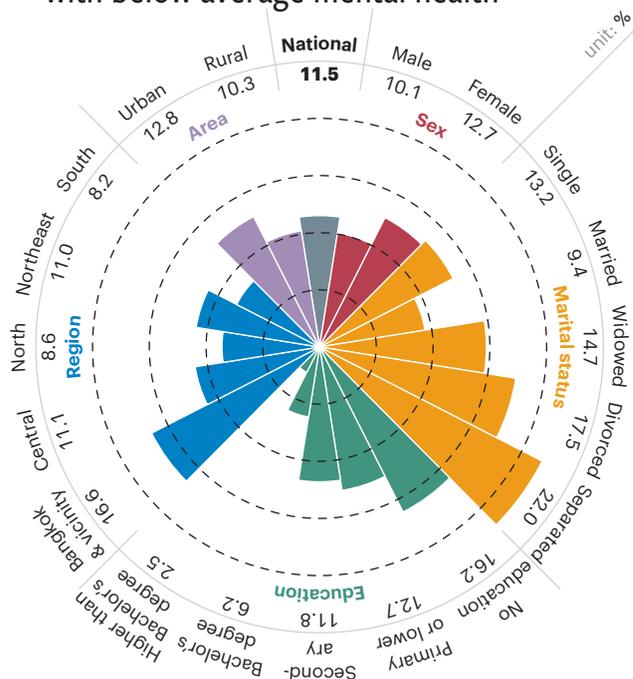
Source: Report on Suicide in Death Certificate, 2012–2021, Center for Suicide Prevention Khon Kaen Rajanagarindra Psychiatric Hospital

Determinants of a person’s mental health status operate at the individual level (such as good physical health, social and emotional skills, appreciating and knowing yourself and health behaviors), at the family and community level (e.g., nutrition and parenting, safety, social networks and support, living environment), and the structural level (e.g., economic security, public service infrastructure and social protection, equity and participation).

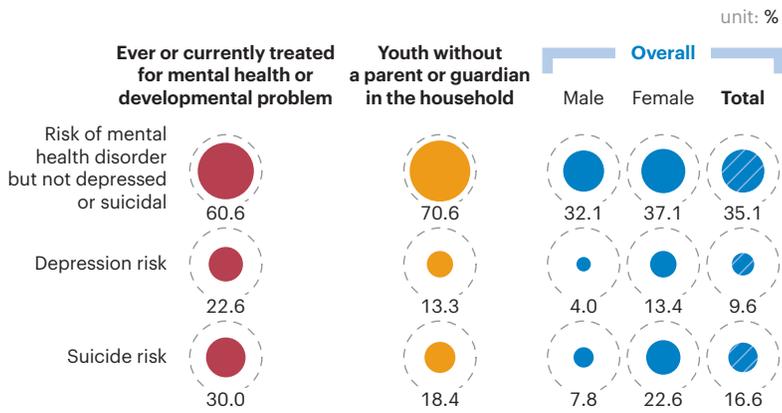
People living with mental disorders are estimated to account for up to 13% of the world’s population. Overall, over the course of a person’s life, the number of years lost due to disability related to mental disorders was higher among persons aged 15–29, especially men, followed by youth age 5–14, and adults in the working age (30–49). Interestingly, although women have a lower proportion of years lost due to mental disorders up to age 49 years, after the age of 50, the proportion of loss begins to exceed that of their male counterparts.

In Thailand, the suicide mortality rate, which is an indicator of overall mental health outcomes of people in the country, was found to be 7.37 per 100,000 population in 2021. The highest rate was among people aged 35–39,

Percentage of population aged 15 years and over with below average mental health



Source: Mental Health Survey (Happiness) in Thailand, 2020, National Statistical Office



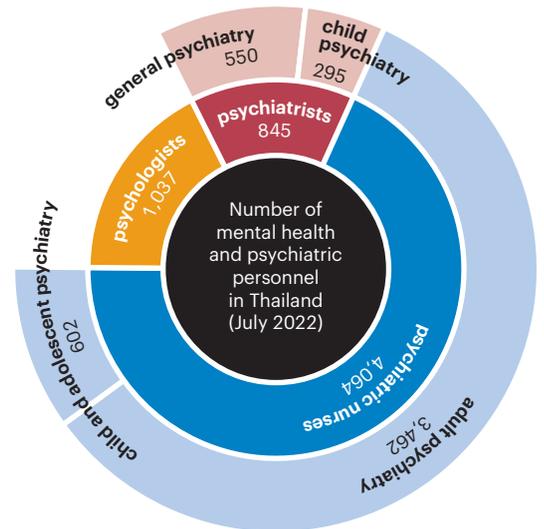
Risk of mental health disorder in children and teenagers under 18

Note: Data from February 12 to December 31, 2022. A total of 154,054 participants were evaluated (62,405 males, 91,467 females, and 182 non-specified sex). Of these, there were 4,959 youths not living with a parent/guardian, and 6,916 being treated for a mental health or developmental problem. Source: Mental Health Assessment for Youth Age ≤ 18 Years: Mental Health Check-In (MHCi) System. Department of Mental Health, Tableau Public

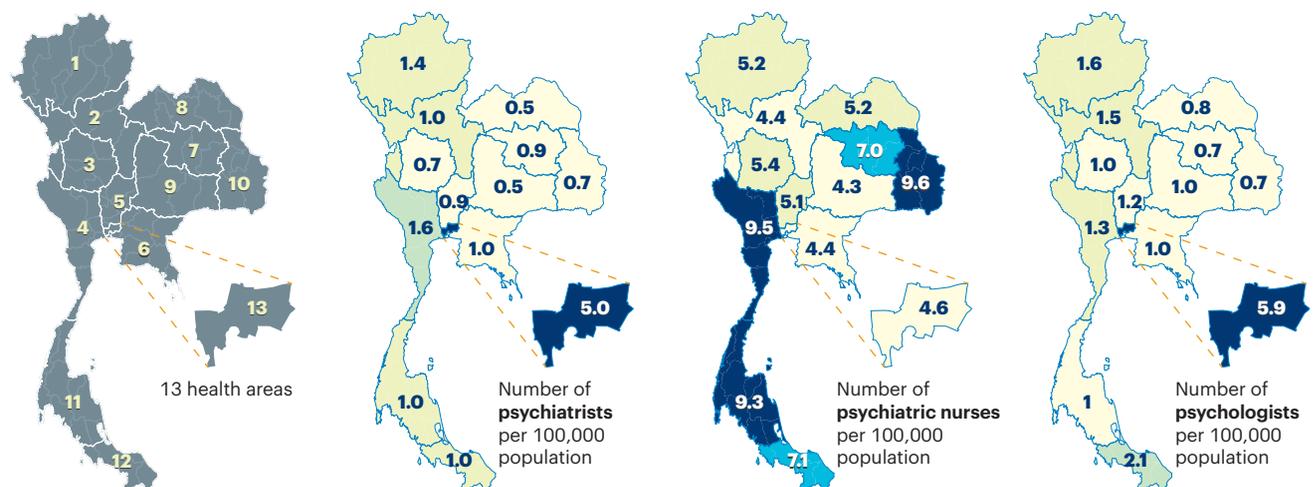
and the rate increases especially in the elderly aged 65 years and over. In the past 10 years, men had a significantly higher suicide mortality rate than their female counterparts. Based on a survey of the Department of Mental Health, one in ten Thais aged 15 and over (11.5%) have lower mental health level than other age groups and females are at a higher risk of having mental health disorder than men. The population at greater risk of mental health disorder includes those who are widowed, divorced, or separated from their spouses, have a lower level of education, living in an urban area (including Bangkok and vicinity).

Youth under the age of 18 are another group at relatively high risk of mental health problems. The 2022 Mental Health Assessment of Children and Adolescents found that more than a third were at risk of a mental health disorder but had no clinical symptoms of depression or suicidal ideation. That said, while 16.4% and 9.5% were at risk of suicide and depression, respectively, with relatively more vulnerable groups being unaccompanied youth not living with a parent or guardian, and those who have or are currently being treated for a mental health or developmental problem.

Access to mental health services in Thailand remains a challenge. The number and ratio of mental health and psychiatric personnel to the country's population remains relatively limited and tends to be concentrated only in certain areas. The concentration of psychiatrists and psychologists in Bangkok is significantly higher per capita compared to all other regions.



Number of psychiatrists, psychiatric nurses and psychologists per 100,000 population in 13 health areas

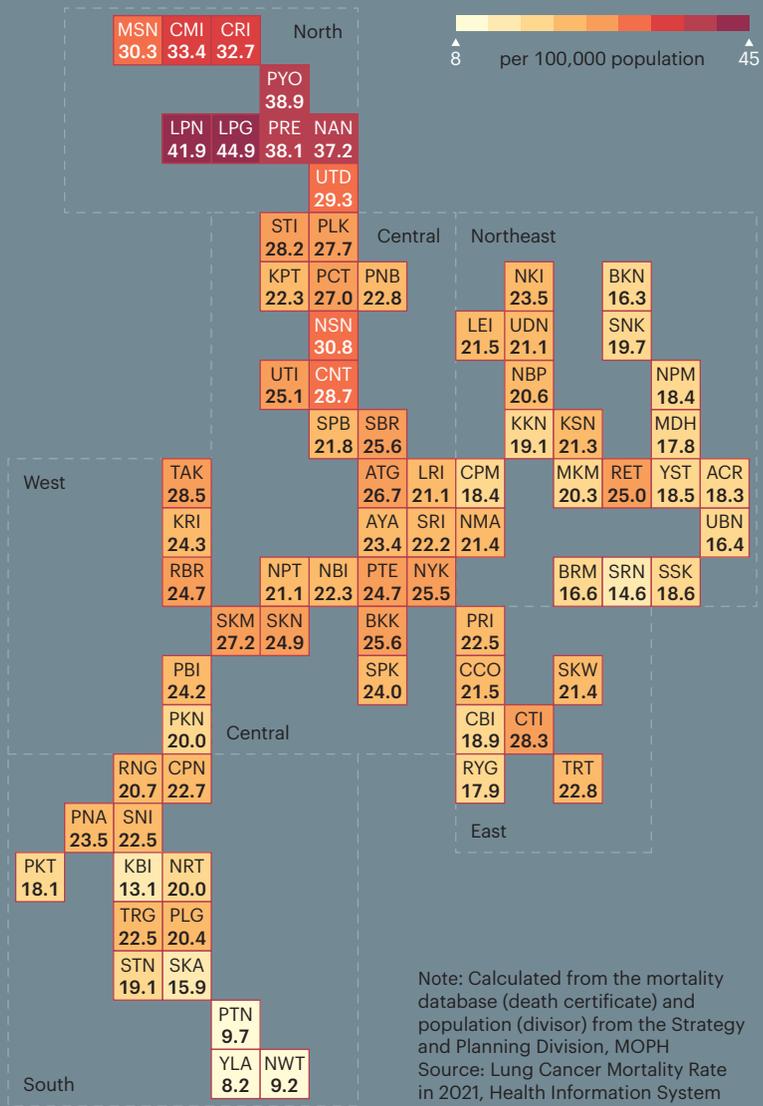


Source: Number of Psychiatric Experts, 2022, Bureau of Mental Health Service Administration, Department of Mental Health

Environment

“ Industrial waste processing facilities in the northern region are responsible for waste generators at a rate that is seven times greater than those in the eastern and southern regions. ”

Lung cancer mortality rate by province in 2020

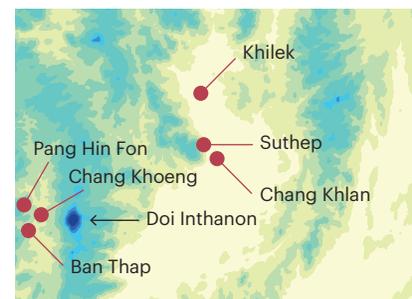


Major environmental problems in Thailand include air, waste, and industrial pollution, and these pollutants are adversely affecting the health of the population.

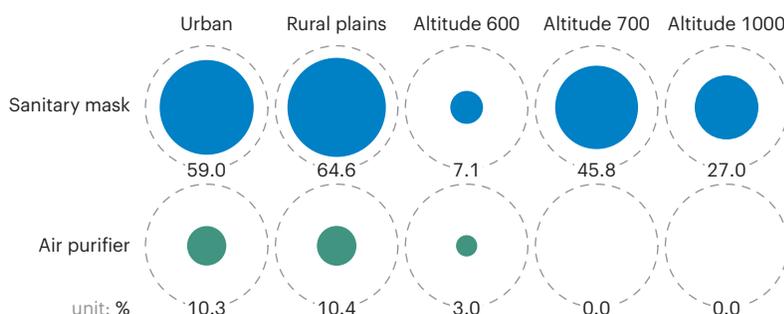
Economic activities such as transportation, industrial production and agriculture have an impact on the environment, especially air pollution. This is an issue that many sectors are becoming more interested in. In general, people living in the northern region are more exposed to PM 2.5 dust than those who live in other regions. This air pollution is probably a significant factor behind the lung cancer mortality rate in each province in the northern region (average of 25.6 cases per 100,000 population) which is significantly higher than other regions.

Behaviors for air pollution risk protection at the personal level include wearing a hygienic mask and installation of air purifiers. Even though these measures are

Willingness to invest in personal equipment to protect against pollution in Chiang Mai

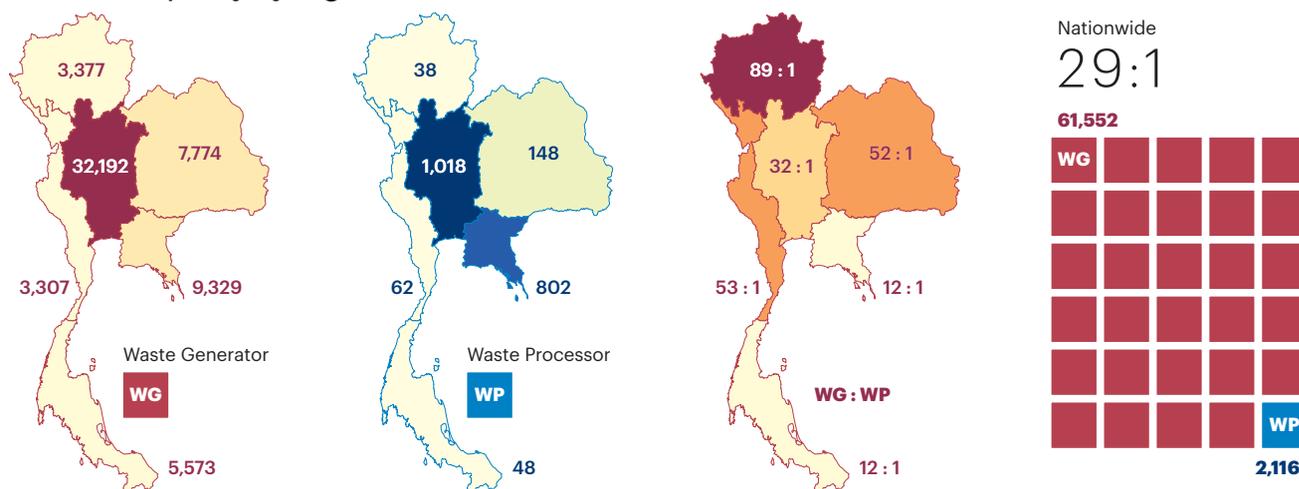


Note: Data collected from 250 households in five areas of Chiang Mai: **Urban area:** Suthep Subdistrict and Chang Khlan Subdistrict, Muang District. **Rural plains:** Khilek Subdistrict, Mae Rim District. **Altitude 600** (600 meters above sea level): Chang Khoeng Subdistrict, Mae Chaem District. **Altitude 700** (700 meters above sea level): Ban Thap Subdistrict, Mae Chaem District. **Altitude 1,000** (1,000 meters above sea level): Pang Hin Fon Subdistrict, Mae Chaem District. Source: Sereenonchi, Arunrat, and Kamnoonwatana, 2020



The distribution of industrial waste treatment and disposal plants and their capacity by region, 2021

Source: Municipal Solid Waste Management Information System, Pollution Control Department



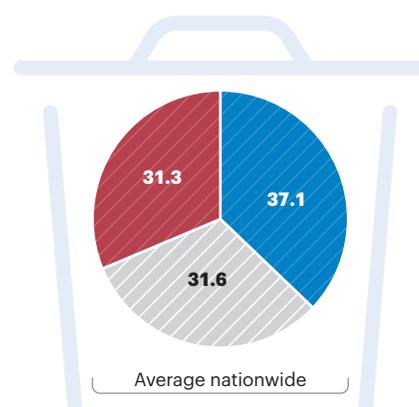
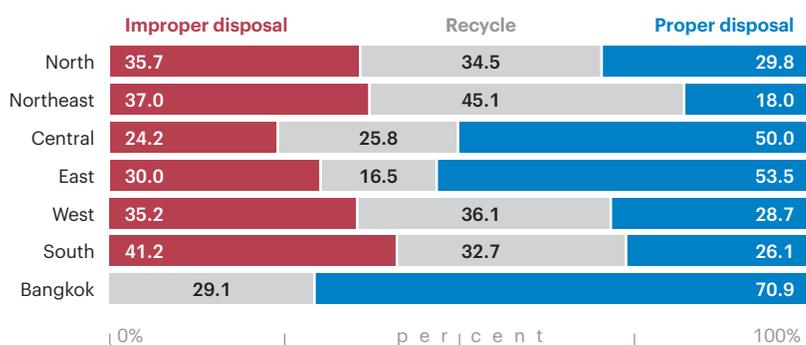
not addressing the cause of the problem directly, at least they can help reduce the health risks from air pollution. A study in Chiang Mai found that people were willing to pay for air pollution protection equipment, depending on their location. People in urban and lowland rural areas were more willing to invest in face masks and air purifiers than residents at higher elevations. Some of the differential may be related to education level and awareness of the dangers of air pollution.

In terms of the solid waste situation, Bangkok has the best management system: All solid waste is properly disposed of or recycled.

By contrast, in the southern region, the amount of garbage that was not properly disposed of was as high as 41.2%, and much higher than the national average of 31.3%.

Industrial waste is another important health issue. Each region has a different proportion of industrial waste treatment and disposal facilities. The eastern and southern regions have the lowest ratio of waste generators to waste processors at 12 to 1, while the northern region had the highest ratio at 89 to 1. The northern region is therefore more at risk of illegal dumping of industrial waste, and that will adversely affect the environment. Even though the north does not have more factories than some of the other regions, it may be the greatest polluter because it has lower waste processing capacity than other regions.

Regional solid waste situation in 2021

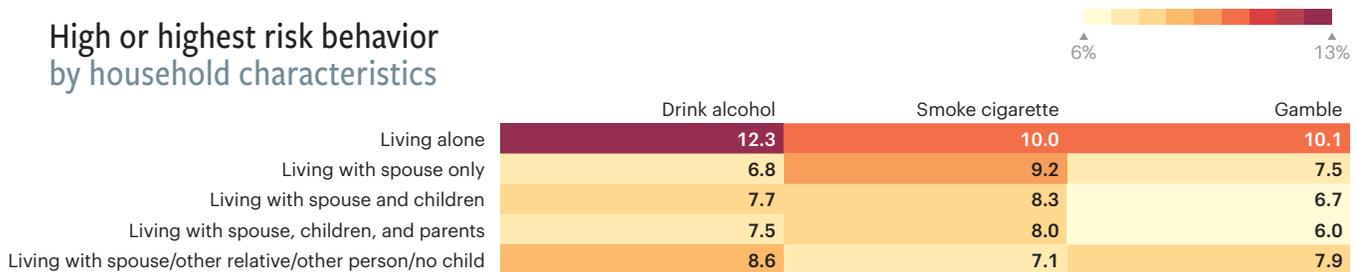


In addition to the central waste management system, there are non-formal waste buyers who recycle solid waste in many sites around Thailand. This is one of the important mechanisms to collect and recycle plastic scraps and various types of packaging. The “Saleng” Association and junk shops estimate the number of mobile recycling vehicles and scrap collectors in Bangkok to be around 30,000, and there are more than 600 legally-registered scrap shops. Still, the mobile scrap collectors have limitations in accessing homes and dwellings in gated communities and condominiums. Relevant agencies should consider supporting the recycling occupation so that it is safe and more efficient in its operations.

Source: Municipal Solid Waste Management Information System, Pollution Control Department

“ One-person families were more at risk for alcohol abuse, smoking, and gambling than other types of family. ”

High or highest risk behavior by household characteristics



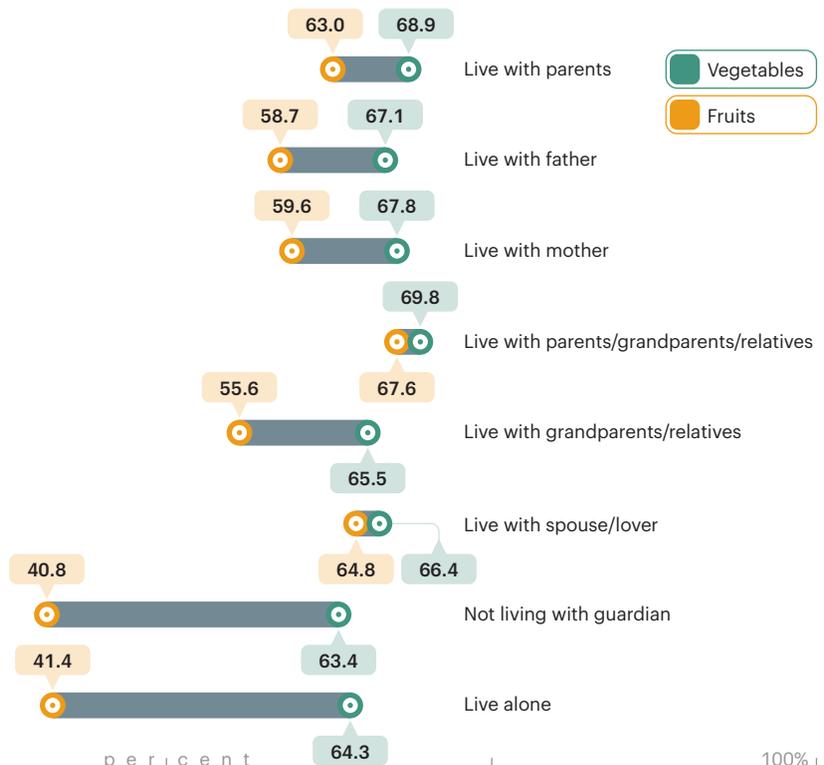
Note: There are three levels of risk behavior: 1. Low to lowest 2. Moderate 3. High to highest
 Source: Survey on Promotion for Happy Family in Workplace. (2020). Institute for Population and Social Research, Mahidol University

The institution of the family is the smallest unit and the cornerstone of society. If family members have a good relationship with each other, know their roles, take responsibility for their own tasks, and are self-reliant – that will affect the well-being of the family.

Family characteristics are associated with health risk behaviors. The Survey on Promotion for Happy Family in Workplace found that one-person families were at higher risk for alcohol consumption, smoking, and gambling than other types of family (12.3%, 10.1% and 10% respectively).

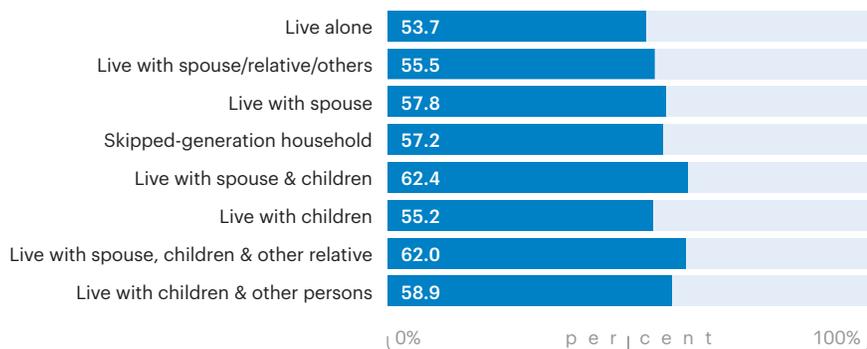
The consumption of fruits and vegetables is an important health promoting behavior for children and youth. Families in which the parent or guardian is present can help promote fruit and vegetable consumption behavior for these young people. The 2022 Thai Youth Survey found that adolescents who live alone or without their parents have lower fruit and vegetable consumption than adolescents living with parents, especially in terms of consuming fruit on a regular basis.

Regular consumption of fruit and vegetable among Thais (15-19 years)



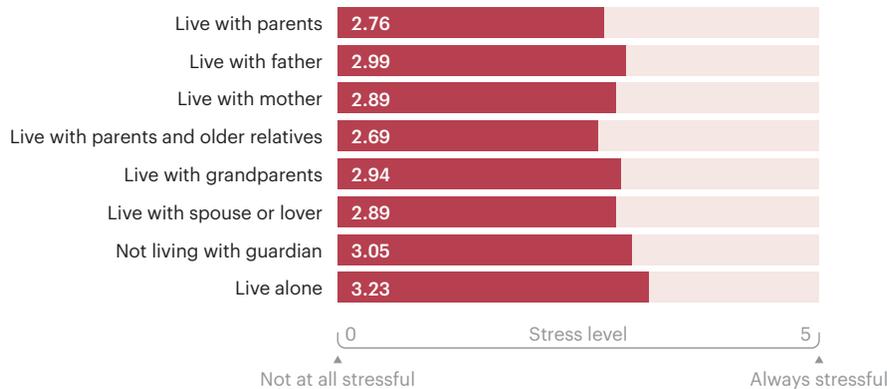
Note: “Three-generation household” means that children live with parents and grandparents;
 “Skipped-generation household” means children live with grandparents
 Source: Survey of Thai Youth. (2022). Child and Family Policy Knowledge Center

Having adequate physical activity by family type



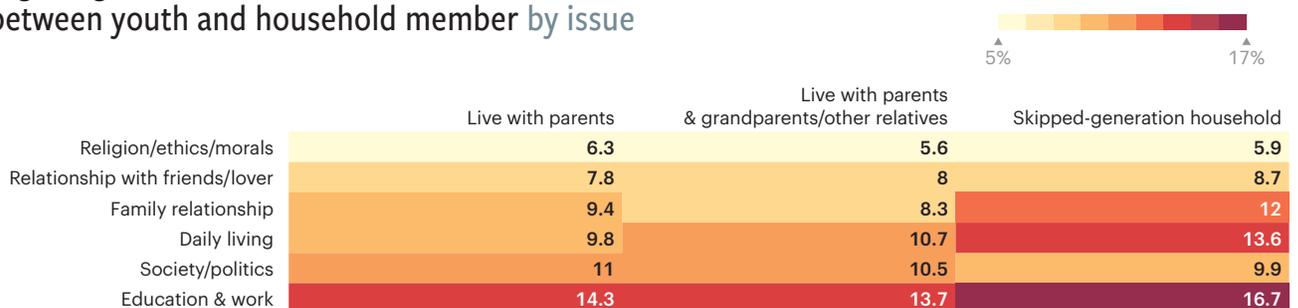
Source: Health Behavior of Population Survey, 2021, National Statistical Office

Average stress scores for Thais age 15–24 years



Source: Survey of Thai Youth. (2022). Child and Family Policy Knowledge Center

High–highest level of conflict between youth and household member by issue



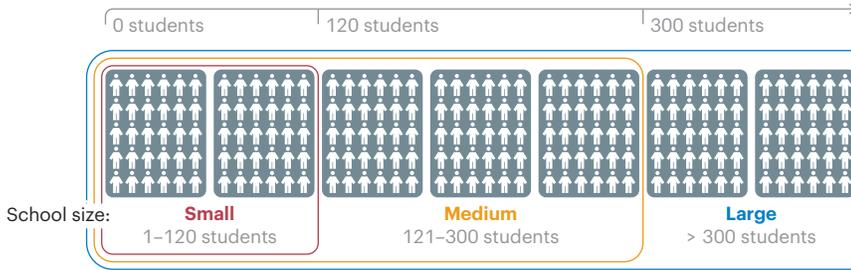
Source: Survey of Thai Youth. (2022). Child and Family Policy Knowledge Center

Another important aspect of health promoting behavior is having adequate physical activity. The characteristics of the family play an important role in engaging in regular physical activity of its members. In the case of Thailand, there should be more attention and concern about this matter since adequate physical activity is still far from the national target. However, the 2021 Health Behavior of Population Survey found that families in which the parents and children live together had a higher level of physical activity (62.4%) than one-person households (53.7%).

Family structure also affects the mental health of family members. The 2022 Survey of Thai Youth found that youth in skipped-generation households experience more conflict of opinion on school/work issues, daily living, and relationships with friends or loved ones. By contrast, youth living with parents or in a three-generation household have less of these conflicts. In addition, youth who live with both parents had lower stress compared to youth living alone or not living with their parents.

School Environment

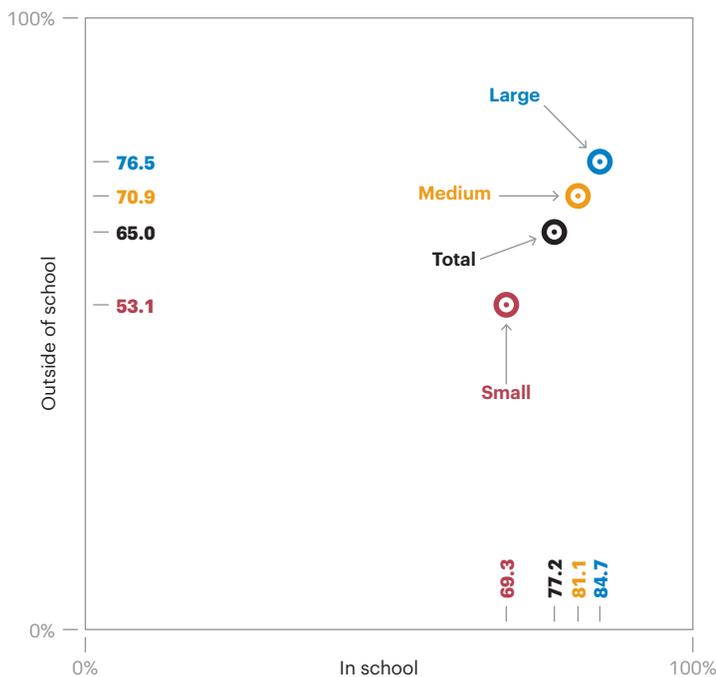
“ 1 in 4 smaller Thai schools lack personnel trained in childhood nutrition to manage the student lunch program. ”



Percentage of schools with personnel responsible for managing student lunch or trained in basic nutrition by school size



Percentage of schools with places where food and beverages are sold to students in and around the school by school size



Note: Total 1,144 schools (407 small schools, 639 medium schools, 98 large schools)
 Source: Report of Food Environment Survey Project and Food Management in Schools and Outside the School Campus: Nutritional Status of School-aged Children and Related Factors. Phase 1, 2013-2014, International Health Policy Program

School is an important place that affects the health of school-aged children. Social determinants of health in the school context are divided into six main areas: physical and structural environment, health policy, health programs, health resources, school atmosphere, and school composition.

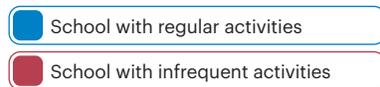
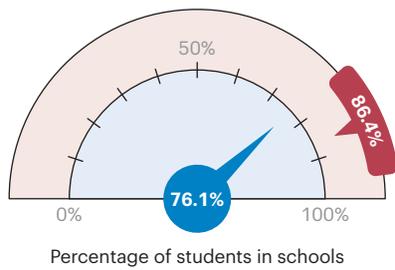
Small, medium, and large schools face different challenges in promoting diets for their student population. Smaller schools tend to have a shortage of school personnel trained in basic nutrition. Large schools face challenges in managing the food environment within and around the school. That is because large schools have more food and beverages available both inside and outside the school (85% and 77% respectively).

School policy implementation is an important factor that may be related to the health behavior of students. In terms of smoking, it was found that schools which

Safety in travel to/from school

Commuting to school can be a hazard given the prevalence of road accidents in Thailand. In areas without extensive public transport, many parents have no choice but to let their children ride motorcycles to school and this can lead to the high risk of road accident. Taking the school bus also carries a risk, despite the assurances from the Department of Land Transport regarding the safety standards of school buses. An informal survey by the Center for Road Safety Thailand found that, in practice, at least 80% of school buses do not have the standard safety measures, and do not have a license from the Department of Land Transport to operate a school bus.

Students who want to try smoking by school with anti-smoking campaigns



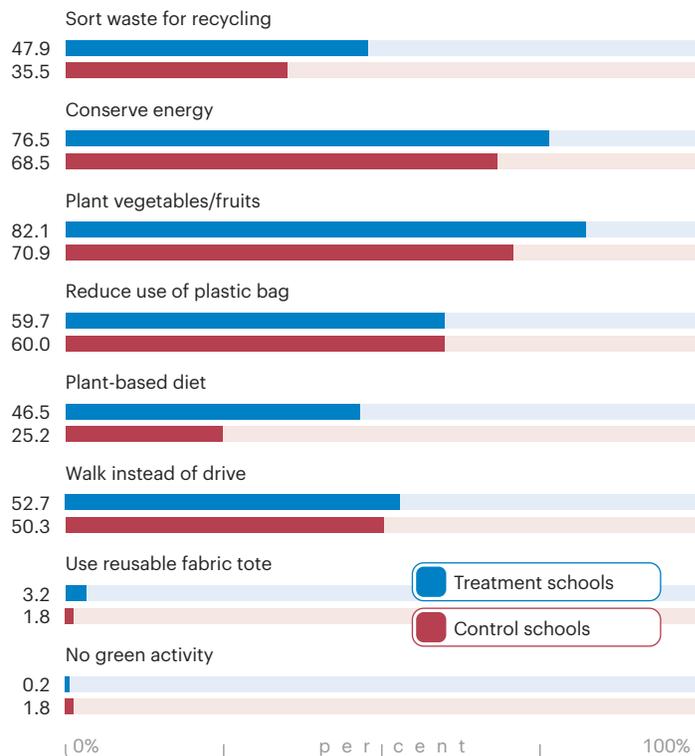
Note: A total of 3,156 students from all regions of Thailand were surveyed, of which 72.4% were in schools that regularly organized anti-tobacco activities and 27.6% were in schools that infrequently organized anti-tobacco activities.
Source: Phetphum, et al., 2022

regularly organized anti-smoking campaign activities had a lower proportion of students who wanted to try smoking (13.6%) compared to schools that infrequently implemented anti-smoking programs (23.9%).

Schools that focus on physical activity of students, such as the Active School Project that encourages children to move their body throughout the day, can increase the proportion of students who have adequate physical activity. The proportion of Grade 6 students in the Active School had a level of physical activity that was still low (16%), however students in the typical Thai school had very low level of adequate physical activity (0.6%).

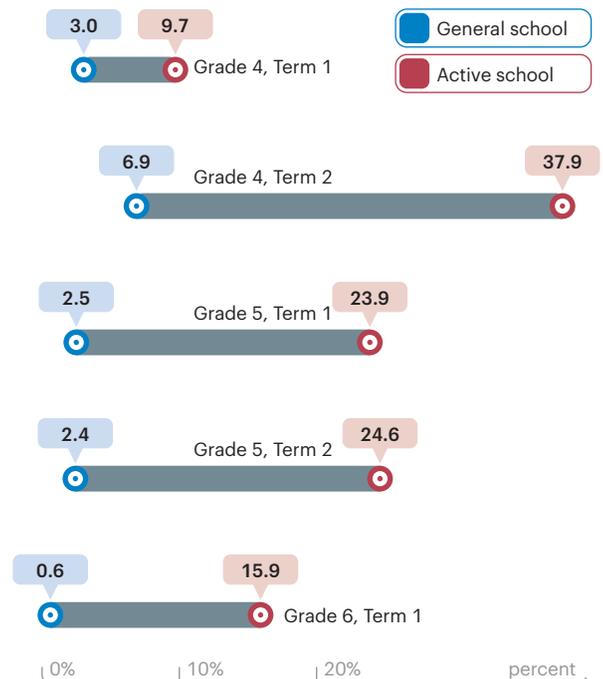
Today in Thailand, more schools are implementing environmental projects for students, such as exploring approaches to reducing global warming, waste separation, energy conservation, planting vegetables or trees, or eating plant-based foods, among others. However, some behaviors are harder to change. For example, the use of plastic bags and relying on a car instead of mass transit are no better in schools with environmental projects than those that do not have these projects. Clearly, there are other important factors involved which are motivating students.

Student behavior in reducing global warming by school project



Note: Post-assessment results after implementing the 3Rs (Reduce, Re-use, Recycle) Project in Grade 5 and 6 students in participating schools (359 students) compared with comparable schools, which did not carry out the activity (331 students). Students could choose more than one option.
Source: Banchonhattakit, Inmuong, Duangsong, Phimha, Prachaiboon, and Padchasuwan, 2022

Students with sufficient physical activity (60 minutes per day) by project participation



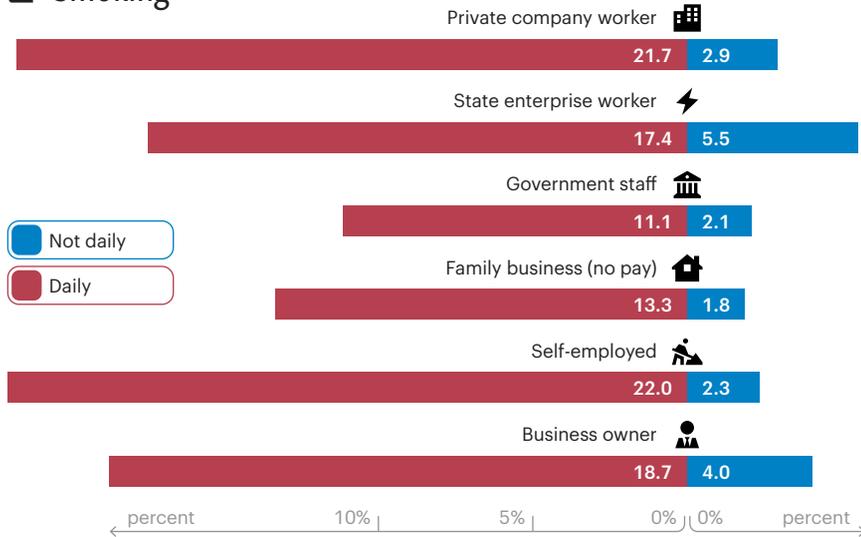
Source: Active School Project, Institute for Population and Social Research, Mahidol University, 2019

Workplace Environment

“ Manufacturing and service workers smoke more than any other occupational group. Managerial workers are more likely to abuse alcohol and be obese than other categories of employees. ”

Four health risk behaviors by work status

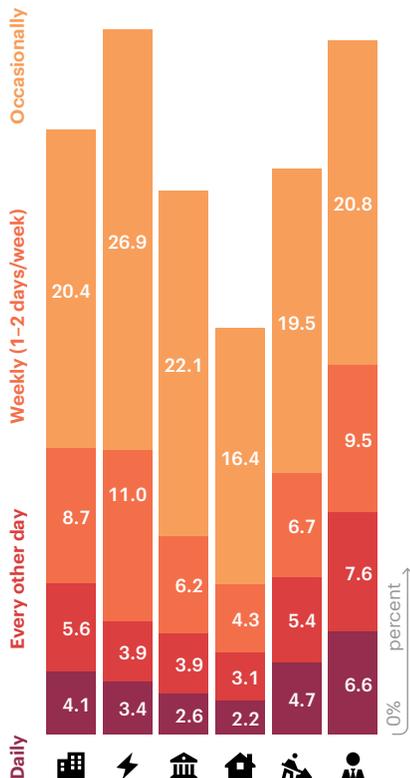
I Smoking



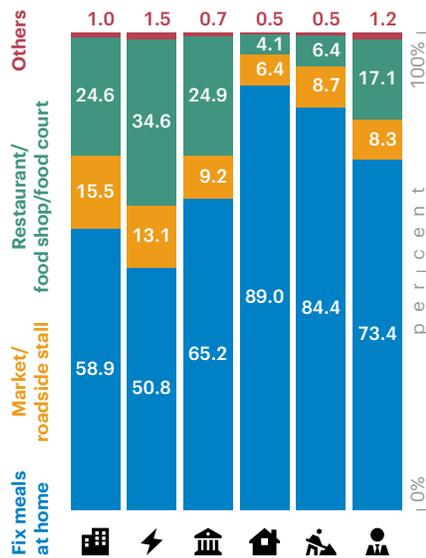
On average, working people spend up to one-third of each day at the workplace. The nature of their work and the work environment, including the policy of the organization or workplace in caring for the health promotion of employees, is a determinant of the health of working people that must be emphasized.

Risk behaviors and health risk factors of the Thai working-age population differ according to working status. For example, regarding smoking cigarettes, workers in the private sector and self-employed workers need closer attention and support for behavioral changes as it was found that more than one in five smoked every day. Regarding alcohol abuse, it was found that employers, workers in a private business, and workers in state

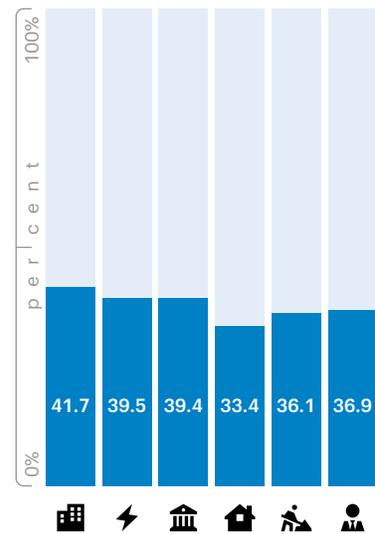
II Alcohol Consumption



III Food Consumption and Most Common Source



IV Inadequate Physical Activity



enterprise organizations made the highest proportion of those who drank at least weekly.

Food consumption and physical activity are also affected by the workplace environment, both in the private

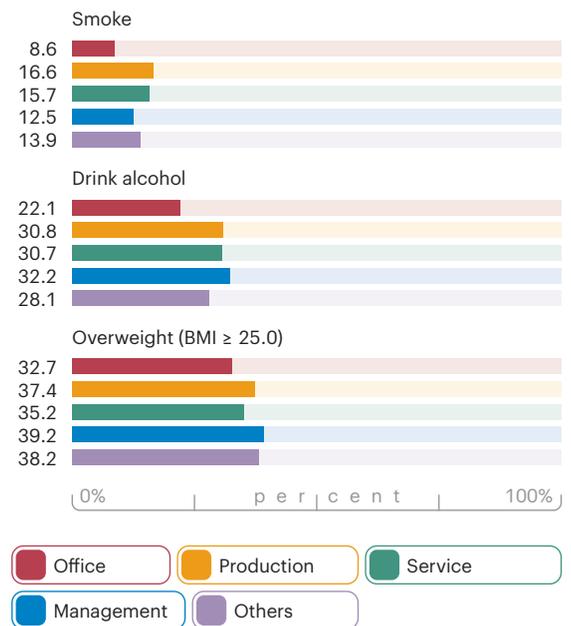
Note: Only employed people
Source: Health Behavior of Population Survey, 2021, National Statistical Office

sector and government/state enterprises. Employees typically eat food out, preferring to buy or consume food in markets and restaurants, and have insufficient physical activity on average each day more than other groups of workers. Therefore, organizations or establishments should play a more active role in promoting a healthy food environment, as well as having policies or structures which encourage employees to engage in physical activity during the workday.

According to a 2021 Happinometer Survey in organizations, it was found that more than one in three were obese, with the highest proportion in the management group. Alcohol consumption was also highest in the managerial group. This was followed by workers in the manufacturing and service divisions. The latter two groups had a higher proportion of workers who smoked than other types of workers.

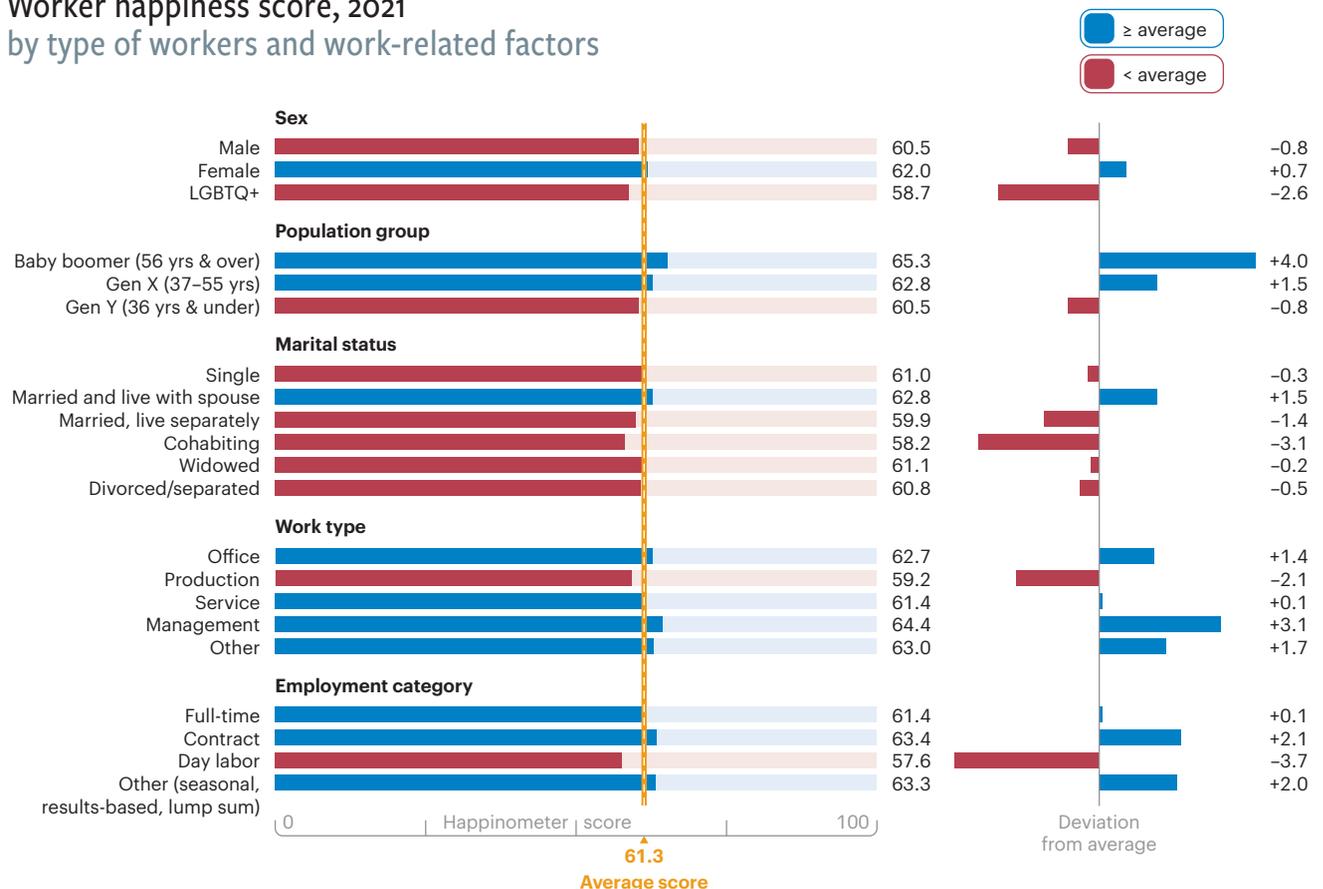
In the happiness dimension of working people, groups with lower levels of happiness than other groups were LGBTQ workers, Generation Y workers, workers who are married but do not live together or unmarried cohabiting couples, production workers, and day laborers with relatively low job security.

Smoking, drinking and overweight by type of work



Note: A sample of 20,980 working people; “Smoking”: smokes seldom, often and regularly; “Drinking”: almost every month, every week, or every day.
 Source: Worker’s Quality of Life, Happiness, and Organization Engagement Questionnaire, 2021, Institute for Population and Social Research. Mahidol University in collaboration with ThaiHealth

Worker happiness score, 2021 by type of workers and work-related factors

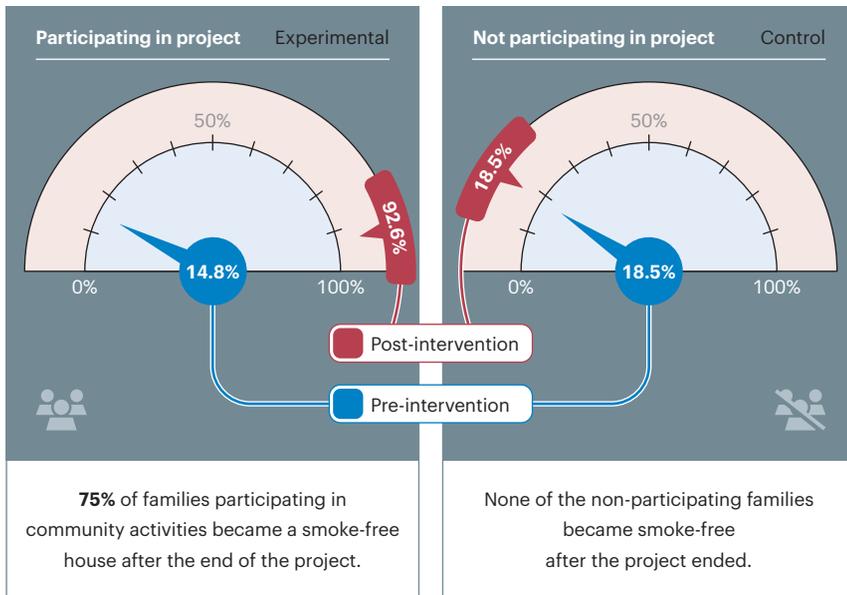


Source: Worker’s Quality of Life, Happiness, and Organization Engagement Questionnaire, 2021 (Happinometer), Institute for Population and Social Research, Mahidol University

Community Environment

“ Communities should campaign for alcohol-free festivals, concerts, and public events. In the northeast and the north, 70.5% and 69.6% of drinkers drank at these events in the past 12 months, and that is significantly higher than the national rate of 59.8%.”

Households that ban smoking in their homes by participation in community projects

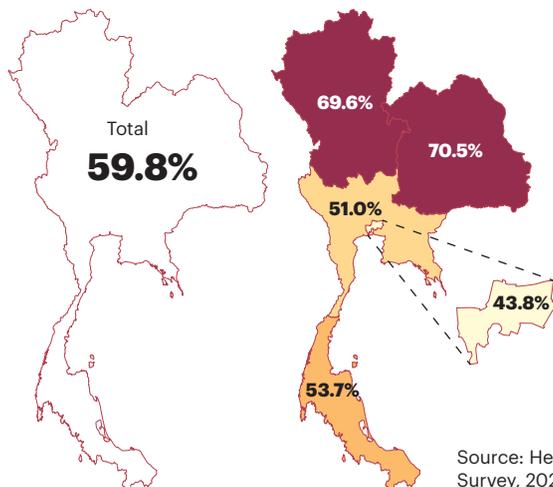


Note: This was an experimental study in 54 families with smokers in their homes in Thanyaburi District, Pathum Thani Province. The families were randomly divided into experimental and control groups, with 27 families per group. The experimental group received the project intervention for creating a smoke-free home 5 times in 6 months. The control group received no project intervention. The result is a comparison of having no-smoking rules for the house before starting the project and after the end of the project.
Source: Suteerangkul et al., 2021

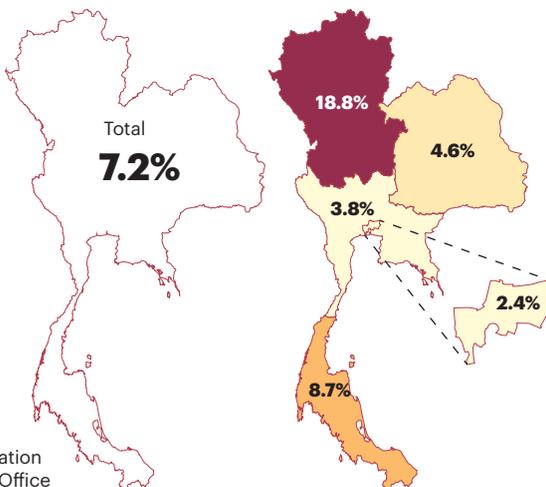
The community has great potential to promote the health of local residents through the creation of a physical, social, and cultural environment conducive to a healthy lifestyle.

Communities can drive changes in the health of people in the locality. For example, exposure to secondhand smoke from smoking indoors is a health risk that the community has the potential to help manage. Research found that the proportion of families who engaged in community participation activities, gained knowledge from community campaigns, and received home visits for encouragement. The activity resulted in more families banning smoking in their homes from 14.8% to 92.6% in six months. Fully 75% of those participating in the activity have created a smoke-free home.

Percentage of drinkers who consumed alcohol at festival venues, concerts, public events in the past 12 months

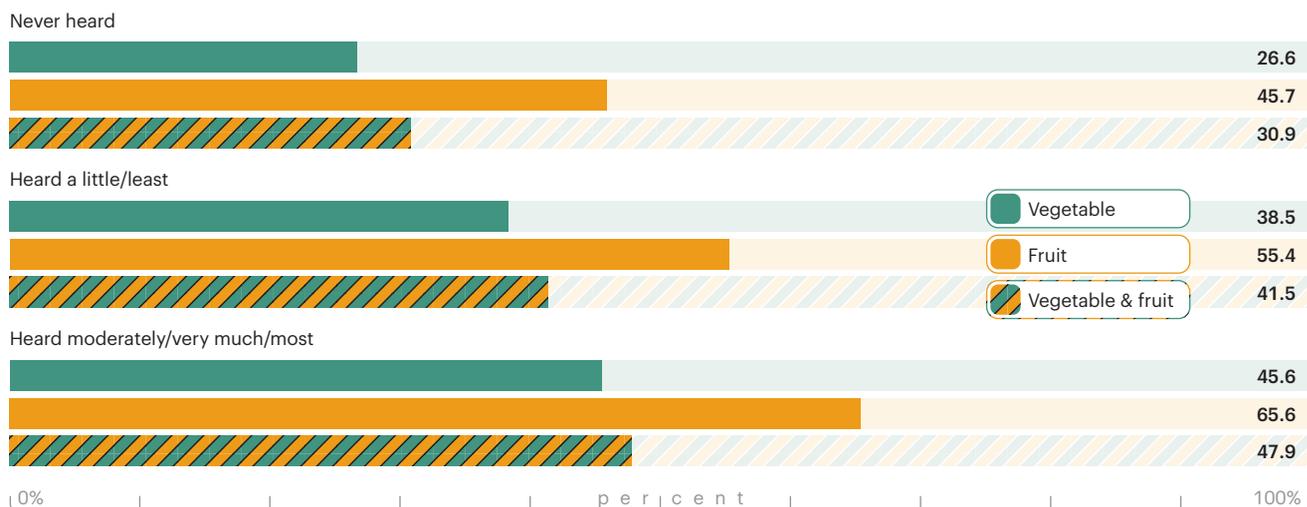


Percentage of drinkers who ever drank untaxed liquor, home-brewed liquor, and/or community liquor



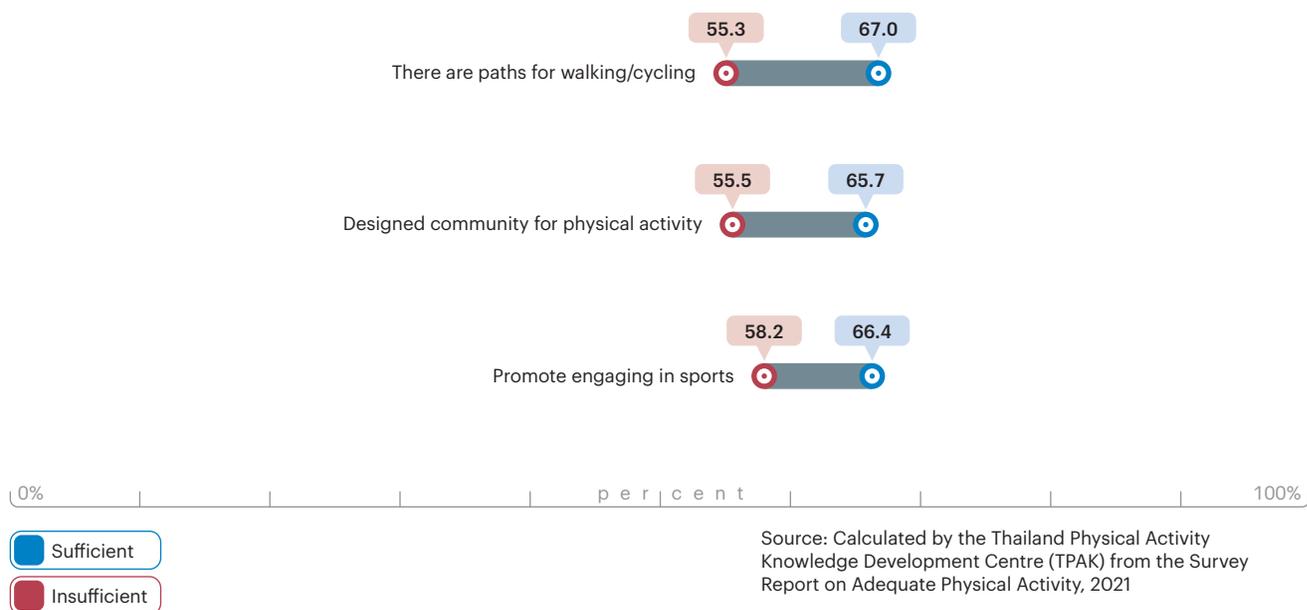
Source: Health Behavior of Population Survey, 2021, National Statistical Office

Thais aged 15 years or over by sufficient consumption of fruit and vegetable and awareness of local campaign



Source: Fruit and Vegetable Consumption Situation among Thai People (National level) 2022. Institute for Population and Social Research, Mahidol University

Proportion of having enough physical activity by area management and community activity



Source: Calculated by the Thailand Physical Activity Knowledge Development Centre (TPAK) from the Survey Report on Adequate Physical Activity, 2021

Regarding drinking alcoholic beverages, in addition to campaigning for alcohol-free festivals in the community, there is also the issue of illegal liquor, brewed liquor, and community liquor sales that is outside the taxation system. The northern region has the highest consumption of these illicit beverages at 18.8%, compared to 7.2% for the country overall.

In terms of food consumption, a correlation was found between adequate fruit and vegetable consumption and awareness of the campaign on the consumption of fruits and vegetables in the community. The higher the level of awareness of the campaign, the higher the proportion of fruit and vegetable consumption.

Finally, the management of the community activities must address physical activity. This means having infrastructure to walk or cycle, designing environments for physical activity, promotion of recreational sports, and organizing sporting events or other organized physical activities. People in those communities with physical activity promotion had a higher level of adequate physical activity than communities which did not create an environment suitable for physical activity.

“ Thailand has continuously placed importance on participation in health policy formulation. This was most evident when the National Health Act of 2007 was promulgated by requiring the establishment of the National Health Assembly or a local assembly or a specific assembly so that every sector can propose policy issues and truly participate in policy formulation. ”

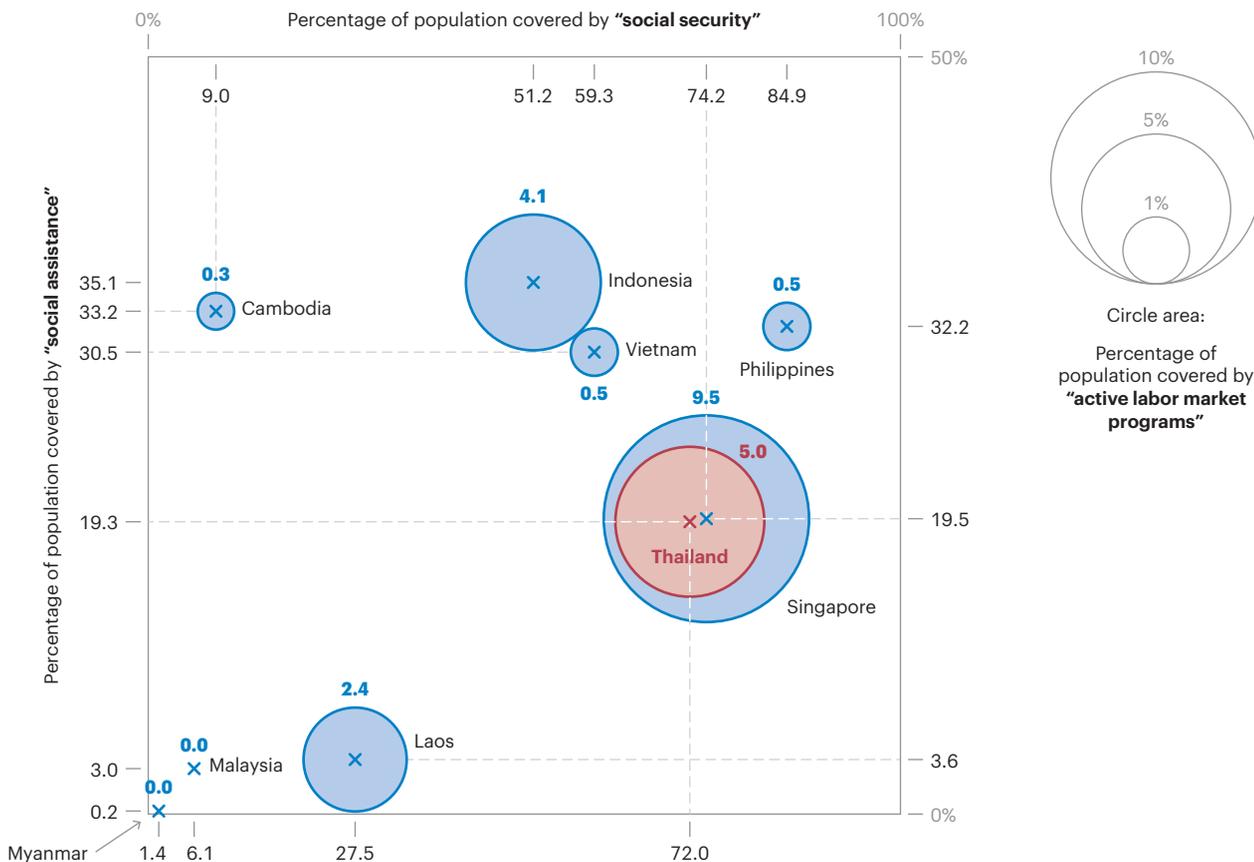
The problem of inequality in Thailand has many dimensions. In particular, there is inequality in income, education, and opportunities to access welfare or essential services. Thailand has continued to implement policies to reduce inequality as part of the national effort to achieve the Sustainable Development Goals (SDG) in 2030.

The Commission on Social Determinants of Health 2005–2008 was established by the World Health Organization to set the direction for policies to manage social factors that affect health inequity. The Commission focuses on three main issues:

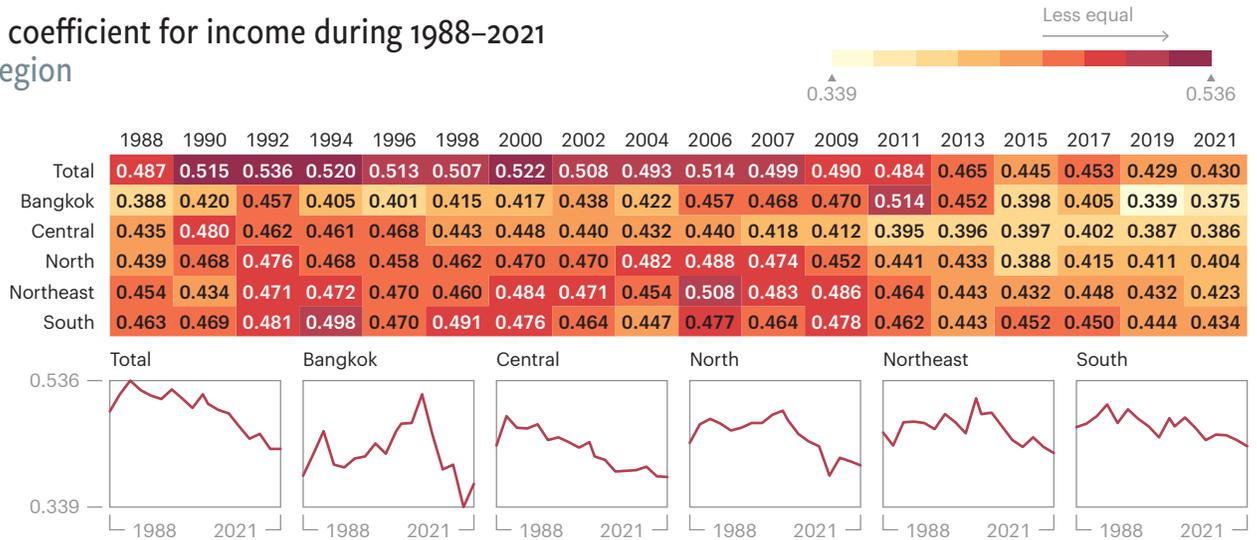
1. Addressing the problem of determinants of health at the structural level that determines living conditions, hygiene, living arrangements, education, health services and working conditions, that in turn determine individual lifestyles and health behaviors
2. Collaboration between various sectors
3. Social engagement and empowerment

In terms of income, data from the National Statistical Office (NSO) showed that the Gini coefficient of income continued to decline across regions. In addition, the provision of social welfare to reach the target group who need assistance is another indicator of inequality reduction.

Social security coverage by type and ASEAN-member country in 2015



Gini coefficient for income during 1988–2021 by region



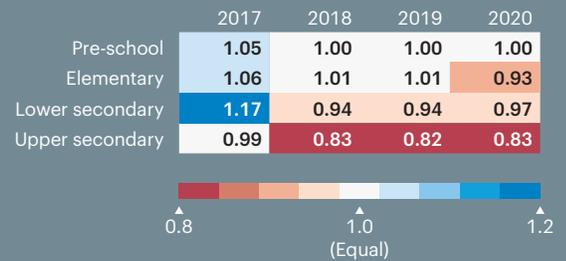
Source: National Statistical Office

In education, the Thai education continuity rate is high at all levels. This is true especially at the secondary school level (Grade 7) where the proportion staying enrolled is almost 100 percent. The enrollment rate for Grade 10/vocational education and tertiary level is about 90% of eligible students. The Gender Parity Index (GPI) has improved for pre-school students and lower-secondary school students since 2016.

The area where Thailand still needs to improve is reducing inequality in property ownership that is still highly unequal. Progressive tax measures are needed to achieve more fairness.

For a long time, Thailand has placed importance on policies that focus on intermediary factors (such as living conditions, access to food, health behaviors, etc.). For example, Thailand issued the Tobacco Products Control Act in 1992 and the Non-Smokers Health Protection Act in 1992, and the Tobacco Products Control Act in 2017 by repealing the original Act. The new Act expands the definition of tobacco products to include more inclusive and stricter measures. In addition, Thailand has a policy to reduce health risk factors, for example, by the Alcohol Control Act of 2008. The Land Traffic Act (No. 13) of 2022

Gender parity index by education level

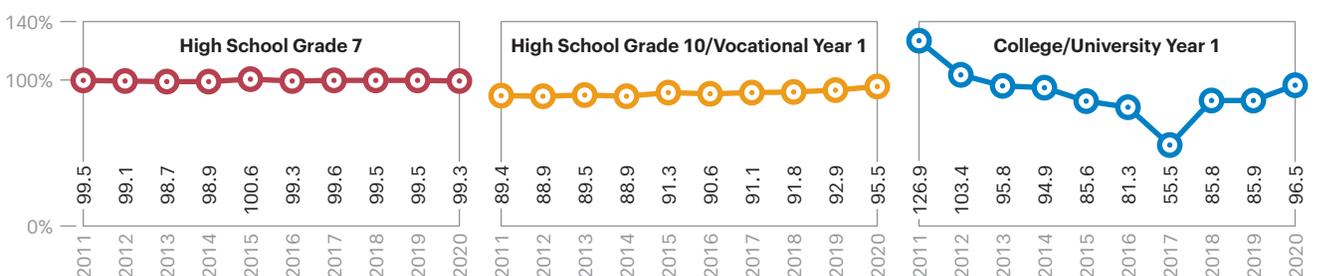


Note: The Gender Parity Index is the ratio between the net attendance rate of male and female students.
Source: National Statistical Office

requires that, if a passenger is a child under 6 years old or not taller than 135 centimeters, a car seat for children must be used.

Reducing inequality to create health equity is therefore an important mission of every sector. All must work together to make it a reality and ensure that no one is left behind.

Secondary and higher education enrollment rate, academic years 2011–2020



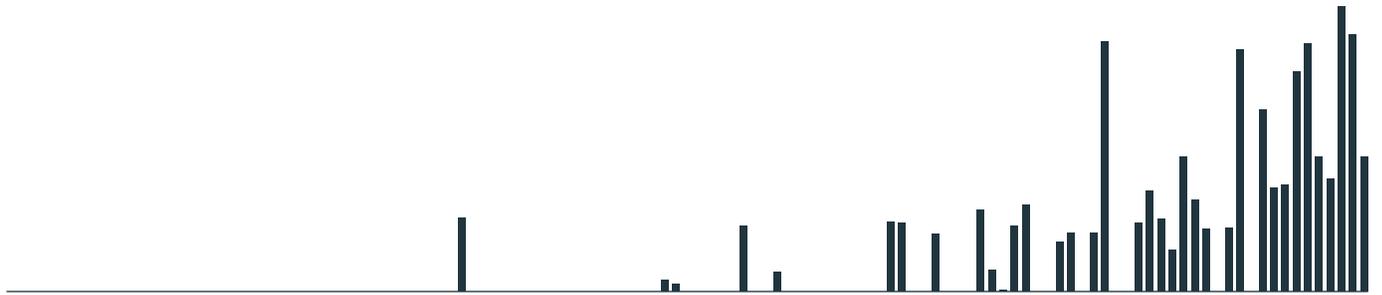
Note: The first year of higher education does not include open university students of Ramkhamhaeng University and Sukhothai Thammathirat Open University.
Source: National Statistical Office

Format for Citation

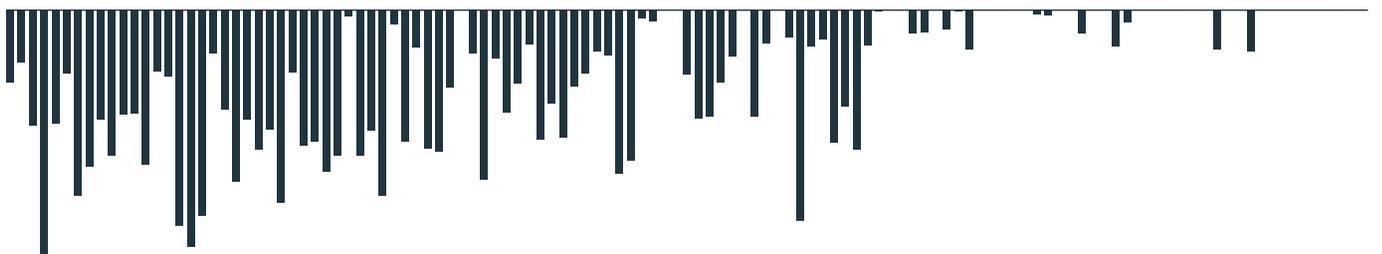
Thai Health Project. 2023. Title of article. *Thai Health 2023* (page number of article).
Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

Example for Citation

Thai Health Project. 2023. Thailand and Food Security. *Thai Health 2023* (pages 62–67).
Nakhon Pathom: Institute for Population and Social Research, Mahidol University.



10 Outstanding Health Situations



Narcotics in the Community: What Is the Solution?

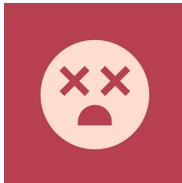
“ According to drug treatment admission data in 2021, methamphetamine was the most prevalent type of drug at 75%, followed by Ice (crystal meth) at 8.6%, marijuana at 4.7%, and heroin at 3.9%. These data refer to the population age 18–24 years, which is the age group with the highest prevalence of drug use. ”



Source: thainews.prd.go.th/th/news/print_news/TCATG230221163820214

Introduction

In April 2022, there was a disturbing news report about a young woman drunk on drugs and alcohol, with hallucinations, stabbed her father to death.¹ This is another example of violence linked to drug problems, which is a daily occurrence in Thailand. Data from the Department of Mental Health found that, from the statistics of patients receiving psychiatric services in 2021, there were 155,631 amphetamine-addicted psychiatric patients, and 204,984 other drug addicts in the treatment process each year. About half of the cases also had a history of violence.² This is a deplorable situation. Nowadays, drugs have spread into communities across the country, causing violence and serious impacts.



Erosion of public health including physical deterioration of the drug user, permanent damage to the brain and nervous system of users.



Social problems among those in contact or living with drug addicts, refusal to work or complete one's education.



Waste of state budget to attempt to treat recidivist drug addicts according to the Drug Addict Rehabilitation Act. If this is allowed to continue and spread, a nation of drug addicts will reduce efficiency of labor.



Crime as drug causes robberies and other criminal offenses due to illusions.

This article is a discussion of the problem of drug addiction in Thailand. The focus is on youth addiction to amphetamines. The article discusses challenges to government in addressing the problem, and the role of Civil Society organizations and the home community to help find solutions.

The Drug Problem Around the World

The United Nations (UN) views the drug problem as an obstacle to economic and social development, in addition to the problem of malnutrition, sickness, crime, and environmental deterioration. The UN has established a dedicated agency to deal with the problem of drugs and transnational crime, namely the United Nations Office on Drugs and Crime (UNODC). Its purpose is to control the supply and demand of drugs according to the requirements of three UN conventions on the control of drugs and monitor the social and health impacts of drug use, including the spread of HIV from drug use. UNODC assists law enforcement agencies of various countries, and supports drug addict treatment projects and community-based drug abuse prevention, including projects to reduce dependency on addictive plant-based narcotics by helping people to pursue alternate—and legal—livelihoods.³

According to the 2017 World Drug Report, published by UNODC, approximately **35 million people worldwide suffer from drug abuse and require treatment**. It is estimated that **5.5% of the world's population between the ages of 15 and 64 use drugs** (approximately 271 million people), a 30% increase from 2009. Part of this increase is due to the fact that the population age 15–64 has also increased by 10%. There is an increasing trend in the use of opium-derived drugs in Africa, Asia, Europe and North America, while Cannabis use is more prevalent in North America, South America, and Asia.⁴ These statistics reflect that, at present, the drug problem is still an important challenge that is expanding globally, and countries will need to work harder to prevent and suppress narcotics abuse.

Drug Use in Thailand: Youth Are the Principal Risk Group

The Office of the Narcotics Control Board (ONCB) reports that, in 2021, there were 130,543 drug cases with 132,675 suspects. Although the number of cases decreased from 2020, the three main types of drugs being trafficked (methamphetamine, marijuana, heroin) were found in increased volume. Some of the seized drugs were destined for export to ASEAN, East Asia, and Oceania. Domestically, Thailand is confronting the spread of methamphetamine, Ice, heroin, and ketamine, with particular concern for outbreaks among groups of youth.⁵ The ONCB has summarized the drug situation in Thailand as follows: **Solving the drug problem is still a challenge because it is unable to manage drug production sources outside the country**, such as highland populations of the Wa, Muser, Thai Yai,

and Kokang tribes whose production areas are located in neighboring countries. There is a continuous attempt to smuggle drugs into/through Thailand. As for the problem of drugs in villages or communities, the situation shows no declining trend. More importantly, the drug epidemic among youth continues to fester. In 2018, 39% of the population involved in drug abuse (both in prison and treatment) were age under 24 years old, and **persons age 20–24 years have the highest prevalence of drug abuse among age groups**.⁶

From the study of risk factors affecting drug addiction among young people, it was found that such problems were caused by several factors, such as social environment, economic structure, social beliefs, values, political influence, etc. The situations that tend to cause risks include

family status in which parents are prone to divorce

peer group influence of a group

observing drug use in the family or community

media by presenting misleading examples among young people, such as the 'coolness' and wealth that comes from using and dealing in drugs

community environment and educational level that contribute to youth lack of accurate knowledge and understanding about narcotic drugs⁷

Addiction or entering the drug cycle among Thai youth occurs for many reasons. For example, there may be social conditions that induce the use of drugs. In addition, young people today may have more free time on their hands and may feel they do not have anything pleasant and satisfying to do. This causes young people to commiserate together, and all it takes is one peer to introduce the use of recreational drugs to the group. This will put pressure on youth to turn to drugs as a solution, such as those from troubled domestic situations, broken families, or even drug

and alcohol addiction in the household. Even among those who have steady, gainful employment, there can be social and economic pressures to use drugs to enhance performance. Youth lack sources of good advice and motivation. Plus, they may have too few outlets for creative aspirations and tendencies. In addition, lower-income communities may tolerate the presence of drugs in the neighborhood, where people can be seen trading and using drugs out in the open. All these pressures and inducements may be too hard to resist for youth who are frustrated in their lives for whatever reason.⁸

Nowadays, the spread of drugs is made easier by online platforms and social media. These channels have become an efficient, anonymous way to conduct drug trafficking, especially at the level of small wholesale and retail, coupled with parcel delivery services as a channel for delivering drugs directly to the users. The Internet is facilitating online financial transactions (E-banking), and even digital currencies, such as bitcoin, can be used for drug purchases to evade detection.⁹

■ Youth and Narcotic Drugs

According to data on drug treatment in 2021, it was found that “Yaba” (amphetamine) was the most prevalent (75%), followed by Ice (8.6%), marijuana (4.7%), and heroin (3.9%). Persons age 18–24 years old had the highest prevalence of drug abuse.¹⁰ The factor that makes it easy for young people to access drugs is that, nowadays, **drugs are cheaper than ever, and the retail traffickers target youth under 17 years of age** (because there is a lighter punishment for minors). **While most youth first become familiar with drugs for personal use and recreation, some will progress into a dealer role.** With the ubiquitous Internet transaction and mobile phone applications, any youth can easily contact and make deals for drugs with others, and remain totally anonymous in the process. Drug delivery points can be random locations, maybe near electric poles and street signs, with no indication of illegal narcotics.

According to the research of Somchai Thanyathanakul (2010), it was found that the reasons why youth approach or depend on addictive drugs consist of five factors:¹¹

1 Curiosity to try new things and wanting to have experience with forbidden things;

2 Paying more attention to relationships with friends and the peer group. During youth, there is often a desire to please friends or indulge their friends in order to socialize themselves. Therefore, if friends try to persuade someone to use drugs, there is a high risk of joining in with abandon, primarily to earn the praise and acceptance by peers;

3 Being deceived: If youth live in risky areas, they may be unknowingly consuming drugs. Drugs can come in the form of snack foods, candy or doctored cigarettes;

4 False beliefs: It is often believed that using drugs helps to induce relaxation or pleasure, and help the user to temporarily forget about suffering. Youth usually start by smoking a mild narcotic drug, then progressing to methamphetamine, marijuana, morphine, or finally heroin; and

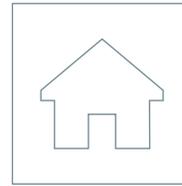
5 A conducive environment: Youth in lower-income communities with dense housing will be exposed to a wide range of drugs and drug abuse. Economic stress also leads to drug abuse to ease sufferings.

Drug addiction in youth inevitably affects many aspects. There are the immediate adverse health effects and then the criminal impacts. Using narcotic drugs at a young age causes brain and nervous system damages. Mental functioning deteriorates, and chronic users may experience hallucinations and paranoia. Their social and family life becomes increasingly restricted. The legal consequences can be severe. The Narcotic Drugs Act of 1979 stipulates that offenders of Class 1 drugs are subject to imprisonment from six months to three years or a fine from 10,000 to 60,000 baht, or both. However, if the offense is drug possession for sale, the maximum penalty is death.¹²

Addressing the Drug Problem

Tackling drug problems requires collaboration between the government, society, and community. In the past, the Thai authorities mostly focused on suppression and legal prosecution. Mostly, arrests and prosecutions take place after. Drug suppressions was often a coordinated action by the administrative, military, and police agencies. Later on, the government encouraged Civil Society organizations and other NGOs to become involved. Local leaders were recognized as an important change agent to lead communities away from drugs. This decentralized action was manifest in the form of “**Drug Prevention Action Plan**”, whereby each province will name the plan to their own context under the Center for Drug Prevention and Suppression. The plans call for inter-sectoral collaboration, especially in dealing with the modern form of drug trafficking through private parcel transport. Some provinces have installed parcel scanners (X-Ray) to screen mailed and courier packages for drugs.

Collaboration in resolving the drug problem involves producing maps of communities and zones for level of drug risk and severity. Data are continually updated on trafficking and consumption. Villages are color-coded by degree of the problem:



White color denotes a drug-free zone



Green represents a community with a minor drug problem

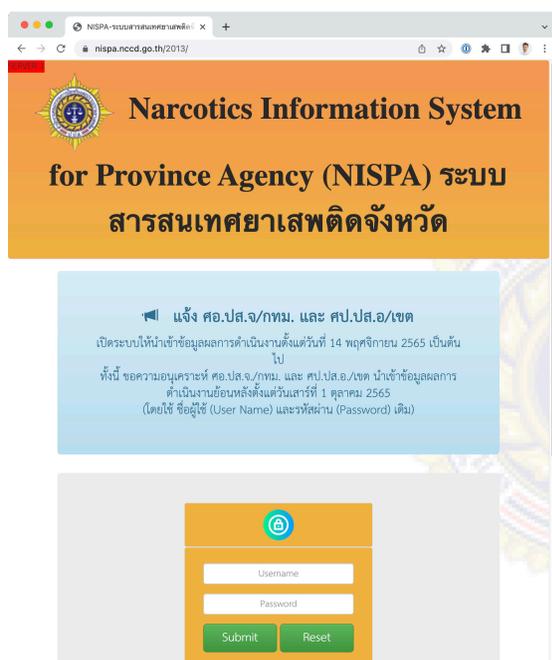


Yellow denotes a village with a moderate drug problem



Red denotes a severe drug problem.

Website of the Narcotics Information System for Province Agency (NISPA)



Source: nspa.nccd.go.th

The aim of the color coding is to encourage communities to progress gradually, from red to yellow to green. This makes the end goal seem more attainable.¹³ The status and progress of communities is recorded in the drug performance report in the Narcotics Information System for Province Agency (NISPA). However, statistics on drug use and trade are difficult to collect and almost certainly under-reported given the threats by drug gangs and cartels.

In addition, the concept of solving drug problems also includes the issue of rehabilitation and therapy. Thailand offers voluntary treatment of drug addiction at a medical facility. Law enforcement operates drug behavior change centers which accept cases for treatment starting from the age of 18 years. Various measures to solve drug problems at the local level are integrated with community authorities. They are given authority to conduct sweeps or random urine tests for students in various educational institutions. Persons found with drugs in their system are referred to treatment at a designated facility free of charge. However, cases of recidivism are referred to a higher authority for legal action. Authorities conduct random inspection of service establishments and entertainment places, as well as parks, train stations, bus stations, fitness centers, dormitories and educational institutions.¹⁴ However, the integration of solving problems of the government, Civil Society,

and the host communities must be implemented with a common vision and direction. There must be mechanisms for community participation as a tool to effectively solve such problems in a sustainable way, with government agencies to provide technical assistance and backstopping.

From research on educational institutions and policies and measures to prevent drug abuse among youth,¹⁵ it has been found that most Thai schools have some activities or projects on drug awareness and prevention. This is consistent with the policy of the Ministry of Education on the approaches to drive the implementation of “social immunization” and drug prevention in the school setting. The school is responsible for organizing various activities and projects to combat drugs. Students are made aware of the adverse effects of addictive drug use and become more involved in public education in conjunction with special events, such as

- World Drug Day
- Tiny Spy Project
- Re-X-Ray Project
- To BE NUMBER ONE Project
- White School Project

Teachers also integrate drug prevention subjects under the health education. There are also activities related to drugs such as anti-drug sports activities, dramatizing and skits to depict drug problems, visiting students’ homes to monitor the domestic risk environment, installation of anti-drug signs, home-room activities to discuss risk behavior and provide education about the dangers of drugs. In addition, the subdistrict health promotion hospitals regular send resource persons to educate students about the dangers of drugs, while the ONCB provides drug testing kits to be used to screen students, among other inputs.

Summary

The drug problem threatens the entire Thai society and the country’s economy. Of particular concern is the damage to the new generation of Thai youth, as drugs will stunt their growth and development, possibly with life-long adverse impacts. Methamphetamines is the main drug problem in Thailand. Therefore, effective programs are urgently needed to address methamphetamine among youth. All parties must work together. However, there have been challenges when implementing policies and measures. More drugs in communities and trading drugs through online platforms, which is increasingly difficult to control and monitor, are among main challenges. Therefore, the participation of the social sector and community needs to be given more emphasis. Households and host communities must take ownership of their role in solving the drug problem and take sustainable action to eliminate drugs from the home and neighborhood. The government has gradually recognized that simply taking a punitive approach to the drug problem is not working as well as it should. Instead, a more comprehensive approach is needed, for example, by encouraging educational institutions to play a more active role, such as increasing youth surveillance measures, drug counseling, and arranging activities to build social immunity against initiating drugs.

Public relations image for the Re-X-Ray Project



Source: thaigov.go.th/news/contents/details/60773

E-cigarettes Are Making Great Inroads in Thailand: Need to Speed Up Control

“ Electronic cigarettes, in addition to containing nicotine and carcinogens, also contain various heavy metals that are toxic to the lungs, kidneys, etc. It is shocking that more than half of e-cigarette smokers in Thailand are youth aged 15–24 years old. The threat from e-cigarettes to children and youth is therefore a social and public health problem that must be seriously addressed by all parties. ”

Introduction

E-cigarettes are becoming a topic of widespread debate both globally and at the national level. In Thailand, a working group has been established to advocate for legalization of e-cigarettes. The advocates are calling for an amendment to the law to allow the import and sale of electronic cigarettes. However, e-cigarettes are global threats and already finding their way into young groups of Thais. Thus, it is necessary to take a look at the situation, review the characteristics of e-cigarettes, what research has found thus far, and guidelines for control and situations in Thailand as well as other countries.

What is an e-cigarette? Electronic cigarettes are electronic devices that deliver smokeless *nicotine* into the body. The technology is referred to by a number of names, including

e-cigs

e-hookahs

mods

vape pens

vapes

tank systems

electronic
nicotine
delivery
systems:
ENDS

vaping

JUULing

The strong addictive power of e-cigarettes can increase nicotine levels in each consumption to reach levels higher than regular cigarettes. As is well known, nicotine causes an elevated heart rate, high blood pressure, cerebrovascular disease, and risk of stroke. As a result, users of e-cigarettes may switch back to using regular cigarettes or other addictive substances.

In addition to nicotine, chemicals in e-cigarettes also contain heavy metals, such as

nickel and chromium, which are toxic to the lungs

cadmium, which is toxic to the kidneys

E-cigarettes contain carcinogenic substances such as

benzene

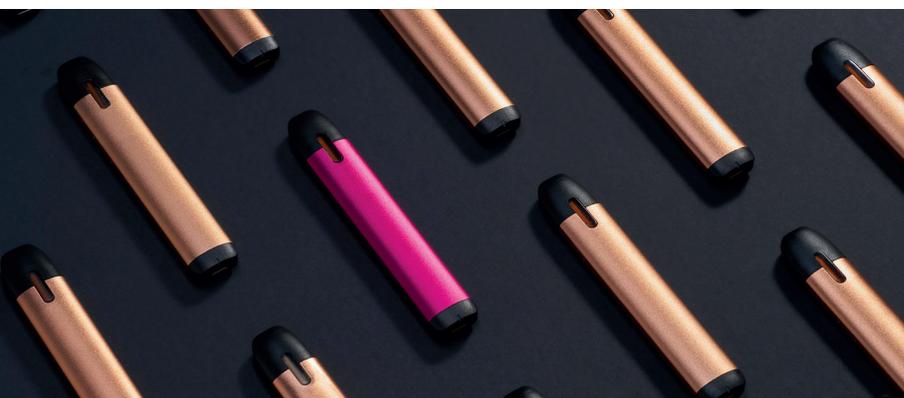
acetaldehyde

E-cigarette chemicals also contain substances in the liquid solvents which, when heated to steam can become carcinogenic.

diethylene glycol

glycerol

E-cigarettes may contain fruit flavoring agents or fragrances that have the effect of destroying the bronchial mucosa, and there is a release of microscopic particles such as PM_{2.5} and nanoparticles that infiltrate and harm organs throughout the body.



E-Cigarettes in Thailand

With the dangers of e-cigarettes cited above, more countries are trying to implement e-cigarette control policies. However, due to the penetration of the influential multinational cigarette industry, each country has different measures according to the context of each country. In the United States, originally, there was a ban on imports and the production of e-cigarettes due to the incidence of acute pneumonia caused by e-cigarette smoking (EVALI - E-cigarette or Vaping product use-an Associated Lung Injury).^{1,2} The earlier US policy had to be changed after the tobacco industry successfully filed a lawsuit resulting in the Federal Court of Appeals to rule, in December 2010, that “e-cigarettes are a tobacco product and not a drug. Therefore, the importation of the product cannot be prohibited. As a result, the consumption of e-cigarettes by teenagers increased exponentially. The rate of youth e-cigarette use in the United States increased from 1.5% to 20.8% from 2011 to 2018, according to the 2021 National Youth Tobacco Survey (NYTS). That survey asked middle and high school students about the use of nine types of tobacco products, and found that e-cigarettes were the most commonly used tobacco product at the time.³

A survey by the Thai National Statistical Office (2021) found that there were 78,742 e-cigarette smokers, representing 0.1% of the sample, and more than half of e-cigarettes smokers are youth age 15–24 years old, residing mostly in Bangkok and the central region. Of particular concern are the awareness and attitudes of e-cigarette smokers. The NSO survey found that 57.9% believed that the dangers of e-cigarettes were less than those of conventional cigarettes. Only 34.5% believed that e-cigarettes were equally dangerous, and **only 7.6% believed e-cigarettes were more dangerous than cigarettes.** The World Health Organization (WHO) Global School-based Student Health Survey in 2021 included a sample of students in junior high school level and found that use of e-cigarettes was increasing. The use of e-cigarettes increased from 3.3% in 2015 to 8.1% in 2021, with most students having false beliefs, about e-cigarettes. For example, students believed that e-cigarettes are not dangerous and not addictive. According to the results of both surveys, the sample of youth viewed e-cigarettes as being safer than conventional cigarettes, and that should be an issue of concern in Thai society given the long-term health hazards of e-cigarettes.

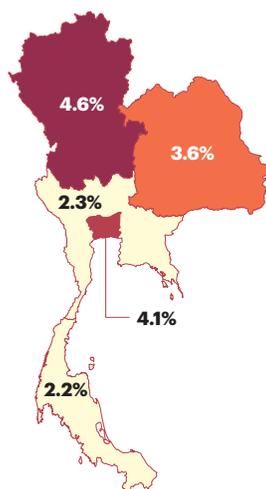


Source: themomentum.co/e-cigarette-law-around-the-world

In the UK, despite the law prohibiting the sale of cigarettes and e-cigarettes to persons under 18 years of age, a national survey on e-cigarette use by ASH-Action on Smoking and Health found that youth age 11–17 years had an increasing rate of e-cigarette use, from 4% in 2020 to 7% in 2022. Nearly, half of e-cigarette smokers (47%) under age 18 said they were able to buy e-cigarettes from regular stores. Also, a sample of e-cigarettes found that one out of four were a non-standard product that should have been prohibited. Still, 56% of 11–17 year olds saw promotions for e-cigarettes at both at retail and online outlets.⁴

In terms of policy, after e-cigarettes began to appear in Thailand around 2008, health networks and civil society groups took notice. They started a movement to lobby for control of e-cigarettes in Thailand. For example, Dr. Hathai Chitanon, President of the Thai Health

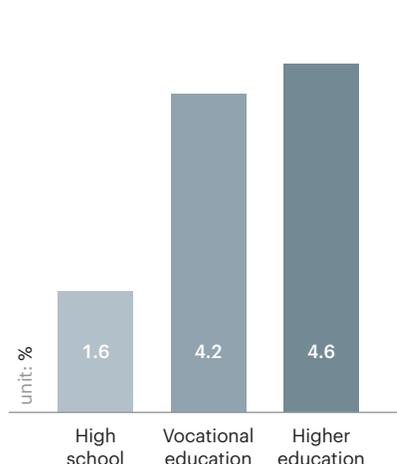
Prevalence of e-cigarette use among Thai youth by region



Promotion Institute, National Health Foundation, issue press announcements to raise awareness on this issue continuously over time. Ultimately, the Department of Disease Control and the Food and Drug Administration recommended prohibiting the import and sale of e-cigarettes. Subsequently, Thailand issued a “rule” that has a general force for controlling e-cigarettes, namely the announcement of the Ministry of Commerce in 2014 regarding stipulating hookah and electronic hookah or e-cigarettes as prohibited products from import. In 2015, there was an order of the Consumer Protection Board No. 9/2558, by virtue of Section 36 and Section 38 of the Consumer Protection Act B.E. 2522, which prohibits the sale and service of electronic cigarettes.⁵

The challenge for Thailand in e-cigarette control can be divided into two major issues: The first issue is the problem of law enforcement to control e-cigarettes in online media. There are limitations in the law enforcement process, yet it is a problem that should be urgently resolved. The

Prevalence of e-cigarette use among Thai youth by education



Tobacco Control Research and Knowledge Management Center (TRC) presented the results of a recent study.

“Survey of Thai Youth in Education Institutes” in 2021⁶

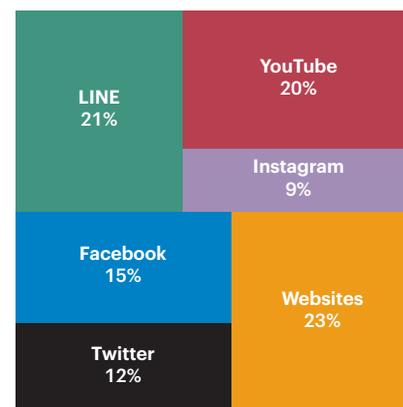
found that the overall prevalence of e-cigarette use among Thai youth was 3.4% (42.0% smoked conventional cigarettes, 2.4% smoked both types). The North Region had the highest prevalence at 4.6% followed by Bangkok with 4.1%, the Northeast with 3.6%, the Central Region with 2.3%, and the South Region with 2.2%. By education grade level, use of e-cigarettes among students in higher education was 4.6%, vocational education 4.2%, and high school 1.6%. The proportion of women smoking e-cigarettes increased by 3.6 times. The key risk factor was the youth visiting social media sites with content on e-cigarettes. If the youth visited these sites almost every day, their chance of using e-cigarettes was 3.7%. Indeed, those visiting social media sites with e-cigarette content had 7.7 times the chance of using e-cigarettes compared to youth who never visited those online sites.

“E-cigarette marketing communication in social media” in 2021

It was found that there were sales and promotions of e-cigarettes in social media by up to 300 IDs (promoters) across six platforms, with the highest proportion being Internet website (23%), LINE app (21%), YouTube (20%), Facebook (15%), Twitter (12%) and Instagram (9%).^{7,8}

An interesting point is the law that governs the use of online media in Thailand, such as the Computer-Related Crime Act (2nd Edition) B.E. 2560, Section 14 (1), stipulates that “Whoever commits the following offences shall be liable to imprisonment for a term not exceeding five years, or a fine not exceeding One Hundred Thousand Baht or both: (1) Dishonestly or by deception, entering wholly or partially distorted or false computer data into a computer system in a manner likely to cause damage to the general public; which is not a defamation under the Criminal Code.”⁹ This means that the relevant agencies can use their

Social media platforms used for sales and promotions of e-cigarettes



Myths and Misunderstandings About E-Cigarettes

legal powers to prosecute those involved in e-cigarette promotion by focusing on advertising or sales in online media. However, in practice, law enforcement of this offense is still very limited.

The second major hurdle in regulating e-cigarettes is the resistance to any intervention in the e-cigarette control policy by political groups that cooperate with international tobacco companies who want to introduce e-cigarettes into the country. For example, in 2019, a subcommittee was established to study tobacco and e-cigarettes in the Commerce and Intellectual Property Commission of the House of Representatives. That subcommittee later became a working group to advocate for legalizing e-cigarettes by the Minister of Digital Economy and Society (Mr. Chaiwut Thanakamanusorn).¹⁰ The justification was that it would be easier to control e-cigarette sales online by legalizing e-cigarettes. An e-cigarette advocacy group was appointed as an advisor to the Commission with the justification that opinions of all concerned parties should be heard. However, civil society groups argued that such an approach violates the WHO Framework Convention on Tobacco Control's Article 5.3 on Protecting public health policies from commercial and other vested interests of the tobacco industry.¹¹ In addition, there has been criticism that such pro-tobacco efforts may be the reason why the Computer-Related Crime Act (2nd Edition) B.E. 2560) is not being actively enforced.

There are far too many people around the world who have the wrong attitude that e-cigarettes make it easier to quit smoking, or that e-cigarettes are less dangerous than conventional cigarettes. A review of research by the Cochrane Library on e-cigarette smoking cessation in the found two trials in New Zealand and Italy to compare smoking cessation with e-cigarettes with the use of patch or use of placebo in people who wanted to quit smoking. Those studies found that the use of e-cigarettes for smoking cessation had relatively low success.¹² A synthesis of studies of e-cigarette smoking cessation found conflicting results. In one study, e-cigarette users quit conventional cigarettes less frequently than non-e-cigarette users.¹³ Some studies have found that e-cigarettes actually cause more addiction: that is, dual use reinforces addiction.¹⁴ A study from 28 countries in the European Union found that using e-cigarettes makes a person less likely to quit smoking conventional cigarettes.¹⁵ Finally, the WHO report on the global tobacco epidemic 2019: Offer help to quit tobacco use states that there is low confidence in the use of this product [e-cigarettes] for smoking cessation, as the data are contradictory.

There is another argument that e-cigarettes are a form of harm reduction for traditional smokers, and can reduce the harm from smoking-related diseases. This is an ideological struggle between those who support the use of e-cigarettes and those who are against them. Groups that disagree with the use of e-cigarettes will present a discourse that “quit, don’t switch” is the way to go. By contrast, the tobacco industry often cites harm reduction as a propaganda campaign to promote e-cigarettes, claiming that a person’s addiction to tobacco is caused by nicotine, the most harmful toxin in tobacco smoke. E-cigarettes can be adjusted to gradually tapering down the amount of nicotine, thus, acting as a bridge to nicotine replacement products. Harm reduction approaches to tobacco control are available to smokers who are unable or unwilling to quit smoking as a way to switch to a less harmful form of nicotine. It may eventually help conventional smokers to quit using nicotine altogether.¹⁶ It can be seen that electronic cigarettes are now firmly part of the tobacco industry’s business strategy. Big Tobacco is providing research grant to scientists in many organizations on the issue of ‘Tobacco Harm Reduction.’ This gives industry the ammunition to cite the benefits of e-cigarettes as a form of harm reduction. This strategy was also used by e-cigarette advocates in Thailand to argue for legalization.



It's time to be tobacco-free for good.

The FDA has **not** approved e-cigarettes as a quit smoking device.

Quit, Don't Switch.

AMERICAN LUNG ASSOCIATION

FREEDOM FROM SMOKING PLUS

Access 10% off the American Lung Association's proven-effective Freedom From Smoking® Plus at Lung.org/quit-dont-switch.

Part of the public relations project to help people quit smoking conventional and electric cigarettes, under the slogan “Quit, Don’t Switch” of the American Lung Association in the USA

Source: lung.org/quit-smoking/e-cigarettes-vaping/quit-dont-switch

Guidelines for Controlling E-Cigarettes

As of mid 2022, there were 109 countries that regulated e-cigarettes.¹⁷ There are advantages and disadvantages of the different approaches, as summarized below:

1

Prohibition: Thailand uses this method to control e-cigarettes, i.e., prohibition of importation, prohibition of sale and prohibition of service. This has the advantage of being able to directly protect the health of the people, and does not increase the workload of tobacco control efforts the country. The disadvantage is that it causes smuggling to violate the law to import, corruption in soliciting bribes from possession of e-cigarettes, and creation of a sophisticated underground market to deliver product to consumers.

2

Regulation as medicinal products: The advantage is that this puts e-cigarettes under the control of medical practitioners and pharmacists, as well as the standards control of the Food and Drug Administration. However, the e-cigarette business has no intention of promoting e-cigarettes as a drug. This measure can protect young people, but the disadvantage is that there is no research to support the long-term safety of e-cigarette use.

3

Component ban: The advantage is to prevent additives that may attract youth, such as flavor enhancers, and preventing the use of other drugs mixed in e-cigarette liquids such as cannabis oil. The disadvantage is that this method does not prohibit the smoking device (In the case of a device that can be filled with liquid, the device itself may be used for other addictive substances.). This measure continues to cause addiction to nicotine.

4

Regulation as poisons: The advantage is that this would add 'teeth' to the inspections by government agencies through a permit system, which can control the standard of substances in e-cigarette liquid. The disadvantage is that allowing any use causes/worsens addiction to nicotine. There is no research on the levels of toxins in tobacco products and e-cigarettes. Therefore, toxin control is difficult.

5

Regulation as tobacco products: For Thailand, there is already the Tobacco Products Control Act B.E. 2560, but more detailed rules must be issued if it is to cover e-cigarettes. The disadvantage is adding workload for tobacco control agencies of countries that are not yet ready for even basic tobacco control. More importantly, nicotine addiction will still remain.

6

Regulation as consumer product: The advantage is not found as there is no specific law to control e-cigarettes. The disadvantage is that people can easily access it anyway. This may lead to more problems with proliferation of e-cigarettes. Market control measures may not be tight enough because it is a consumer product. The result will be worse addiction to nicotine and may increase the number of conventional smokers as well.

7

Regulation as unique product: The advantage is that if there is a specific e-cigarette law, it may be more convenient for regulation and law enforcement. The disadvantage is that the Thai bureaucratic system may not support the establishment of a specific agency to directly enforce e-cigarette laws. Therefore, it will be problematic to control e-cigarettes and discontinue nicotine addiction.

Summary

E-cigarettes are becoming a health threat to Thai society and, in particular, a threat to youth and young people that are the prime source of future development. While the Thai population is transitioning into becoming a Super Aged Society, the working-age population is declining. Thailand has a clear policy on e-cigarette bans and has issued

various laws, such as 2014 announcements from the Ministry of Commerce stipulating that hookah and electronic hookah or e-cigarettes are prohibited products from being imported into the Kingdom, and the 2015 Consumer Protection Board's Order No. 9/2558 stipulating the prohibition of sale and service for e-cigarettes. However, enforcing these laws is problematic. This is especially the case for online media control. In addition, there are strong efforts of political and industry interest groups to legalize e-cigarettes. Therefore, Thai society needs to be aware of the issues and dangers. They need to be skeptical of research on the safety of e-cigarettes, since those studies may have been funded by big tobacco companies. There needs to be a study of the context of law enforcement within Thailand as well to identify which

measures are appropriate and which are not. Currently, the e-cigarette import ban is still appropriate to limit the availability of this product from youth. This is especially important because, the earlier age a person starts to smoke, the more likely it is that they will become addicted to nicotine and this will negatively influence their health in the long term.

Source: unsplash.com/photos/aX9KIIQlrVE

Safe Pedestrian Crosswalks and Pedestrians: Approaches Toward Improvement

“ Before the spread of COVID-19, there were approximately 1,200 deaths of pedestrians; of these about 400 occurred at pedestrian road crossings. Solutions to reduce accidents to pedestrians and those crossing roads involve the behavior of drivers of motor vehicles and pedestrians, the road and pathway infrastructure, and the work of related agencies. Only that way can Thailand reduce the incalculable cost of losses. ”



Source: unsplash.com/photos/WvaZK5--Pnc

Introduction

On the afternoon of January 21, 2022, Thailand lost valuable personnel in the medical field when Dr. Waraluck Supawatjariyakul, an ophthalmologist of Ophthalmology Department, Faculty of Medicine, Chulalongkorn University was hit by a large motorcycle while crossing the road on a zebra crossing on Phayathai Road. The incident had a psychological impact on the general public, and raised the issue of the safety of pedestrians and people who want to cross the road at a pedestrian crossing. In fact, accidents like these have been happening continuously and always get reported in the news.¹ These very preventable accidents reflect the unresolved structural problems of pedestrian accident reduction management, the lack of coordination between responsible agencies, and a general rejection of pedestrians' rights in the mind of drivers of motor vehicles in Thailand. As a result, each year, far too many Thais are victimized on the roads when they should never be. This article discusses the problem of pedestrian safety and pedestrian accidents in Thailand using a conceptual framework for accident reduction, and concludes with recommendations for reducing such accidents in Thailand.

Figure 1 Stopping at a Crosswalk in Bangkok: A Survey by the ThaiRoads Foundation.



A field survey of 12 crosswalks in Bangkok (not near intersections with traffic lights) in Bangkok.

The survey enumerated 14,353 vehicles: 6,449 motorcycles; 7,619 cars; and 285 buses passing through a crosswalk.

Only 11% of vehicles stopped for people who were waiting to cross in the street.

Vehicles that stopped: motorcycles = 8%; cars = 14%; and buses = 20%.

Motorcycles were the least likely to stop at crosswalks to allow pedestrians to cross.

Source: matichon.co.th/local/quality-life/news_3168010

Accidents of Pedestrians in Thailand

Before the COVID-19 epidemic in Thailand, there were approximately 20,000 deaths from road accidents per year. About 6% of pedestrians died in these accidents, or about 1,200 people per year. If looking deeper, about 400 died while crossing roads or 1–2 deaths per day.² Over half the accident fatalities involved motorcycles, private cars and trucks respectively. Pedestrians, particularly road crossing people, are vulnerable road users who have been ignored. Human physical limitation regarding the predicted crash and the road visibility condition are additional causes of accidents. Indeed, on any given day, up to three out of four motor vehicles on the road are motorcycles. The number of motorcycles increases every year and this may result in the increase of motorcycle accidents

too. In any case, the large loss of life on the roads in Thailand is taking a tremendous toll on the society and economy. Such loss may occur among family members and the young generation that will be the country's major workforce in development.

The ThaiRoads Foundation surveyed the behavior of 14,353 drivers of motor vehicles at 12 pedestrian crossings in Bangkok (that were not close to intersections or places with traffic lights). It was found that only 11% of vehicles stopped when someone was waiting at the crossing in order to cross the road. What is more, motorcycles were less likely to stop (8%) than cars/pick-ups (14%), and city buses (20%).³ Put another way, 92% of motorcyclists ignored pedestrians waiting to cross the road (Figure 1). This reflects the high risk of road accidents among these pedestrians.

Thailand already has a law that clearly defines penalties. Indeed, the fine was increased in September 2022 to 4,000 baht (from the original 1,000 baht) for those failing to stop for pedestrians to cross the road. Depending on the circumstances, and whether an accident occurred by ignoring the law and people's safety, the fine can be 5,000 to 20,000 and one year imprisonment, or both. Despite the law and penalties, the number of injuries and fatalities from pedestrians at road crossings is not decreasing. There remains an average of 10–20 cases of injury/death per day at pedestrian crossings and pathways in large cities around Thailand, regardless of whether it is a main road or a secondary road. Thus a more comprehensive analysis of causes of accidents is needed to inform a holistic solution to this persistent and deadly problem.

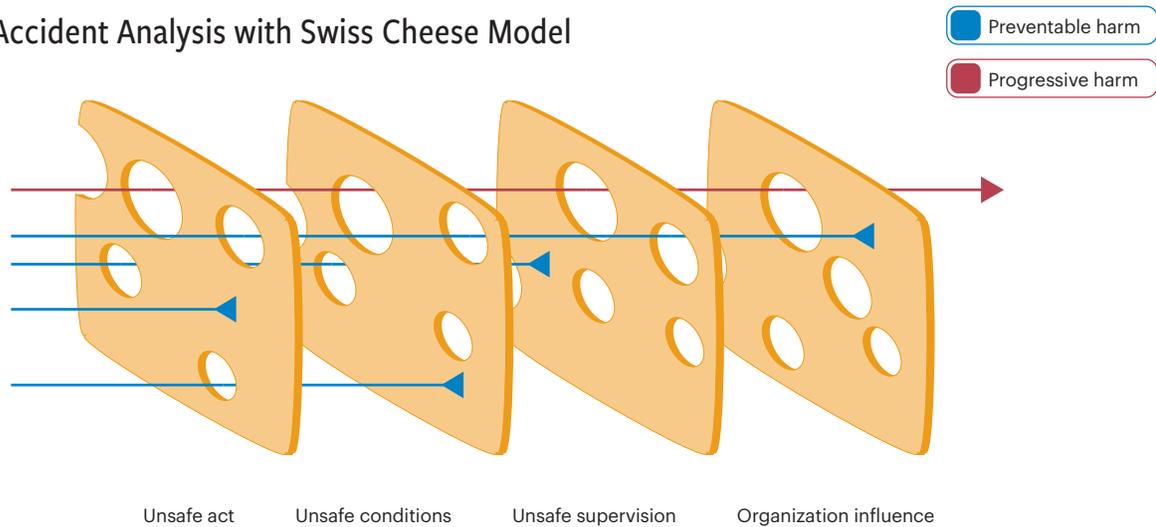
Swiss Cheese Model: Theory and Accident Analysis

Pedestrian and road crossing accidents are not decreasing, despite laws and stiffer penalties. Clearly, legislation alone cannot cause road users to change their behaviour and create more safety. Thus, it is important to study the problem in a more systematic way to understand the root cause of road crossing accidents. One conceptual framework for the analysis is based on the “**Swiss Cheese Model**” by Prof. James Reason.⁴ The Swiss Cheese Theory explains that accidents are not caused by negligence or fate. Instead, the problem is a systemic defect that is a hierarchical, interconnected process of failure. All human beings are limited and prone to error on any given day or in any given moment. The organization of such hierarchy of risk plays an important role in investigating, collecting data, recording, and analyzing details of defects in each level of the problem. While, the risk of road accidents in some cases can be prevented at the behavioral level, in most cases, revisions are required across all levels in the hierarchy.⁵ The following explains this in greater detail.

Level of unsafe acts: This level refers to accidents at crosswalks that are attributable to the behavior of both the crosser and the driver. That said, accidents in the crossing area are mostly caused by mistakes on the part of the driver, such as trying to predict whether someone is attempting to cross or not. Other drivers ignore (or do not recognize) that they are approaching a crossing and, therefore, do not slow down. Areas around schools or pedestrian crossings generally have a posted speed limit of 50 km/h or less. Another important factor is from **the perspective of social risks**. In Thailand, road construction has traditionally given priority to motor vehicles to access everywhere. This is the opposite of many countries in Europe that are trying to reduce the use of cars, and encourage commuters to use public buses or bicycles. Therefore, in Thailand, the driver’s point of view will always be they have right of way over pedestrians. As a result, people crossing the road feel like they have to wait for cars to go first, and then have to hurry across the road when they finally have a chance to cross. There is also a lack of knowledge and skills for evaluating accident prediction (hazard perception), which is a skill that must be instilled from childhood through the schools. Pedestrians need to know to stop before entering a crosswalk, and they should be fully alert and look both right and left. They must not allow for any distractions such as looking at their cell phone or watch. In addition, the pedestrian must not assume that vehicles will stop simply because the pedestrian has entered the crosswalk. For example, in Japan, KYT (Kiken Yoshi Training) techniques are taught, which ingrains safe habits by using hand signals and saying out loud what they are supposed to do before crossing the road. This is a form of consciousness-raising technique. Overall, in Thailand, there is a need for social norms to change so that the rights of pedestrians are more respected, and that pedestrians claim legitimacy to walk safely in the city.

Level of unsafe conditions: Many footpaths and pedestrian crossings may seem safe to enter and walk across, but there may be underlying dangers in the context of physical engineering. For example, in Thailand, roads in urban areas still allow a speed of 80 kilometers per hour which, obviously, can be lethal if there is a collision with a pedestrian at that speed, equivalent to a person falling from the 8th floor or with a chance of survival of less than 10%. By contrast, in other countries, the speed limit in urban areas is usually never above 50–60 kilometers per hour, or, if it is a residential area, the speed limit is further reduced to 30–40 kilometers per hour. At these lower speeds, and in normal conditions, vehicles can easily brake when someone crosses the road. Road accidents may take place, but not leading to death. In addition to speed limits, road size also matters. If the road is wide with more than two lanes, a pedestrian bridge should be constructed, not painting a zebra crossing. In addition, the physical design of the area before the crossing is also important. There can be structural adjustments, such as making the road narrower as a vehicle approaches the crosswalk, so that the driver feels the need to slow down. There are attempts to augment the lighting at crosswalks, for night vision and especially around schools, hospitals, and residential areas. Therefore, in the design of crosswalks and sidewalks, standards must be set which take into account the safety of pedestrians and not just as a convenience.

Figure 2 Accident Analysis with Swiss Cheese Model



3

Level of unsafe supervision: This refers to supervision by the relevant agencies in the locality, and tasks them to address insecurity in use of crosswalks and sidewalks. For example, the authorities must ensure that pedestrian walkways are not obstructed, and must be wheelchair accessible. There may be different construction styles, including the style of marking lines, installing lighting, or specifying dangerous crossing points. While these guidelines may exist, they are not always sent to the relevant agencies, or used to analyze to the root cause of accidents at crosswalks. Another problem is that the agencies in the area lack budget, manpower, or leadership in integrating information and enforcing the law. Key weak points are a lack of risk monitoring at the area level, and lack of risk information sent to drivers and pedestrians to create a culture of safe crossing the road.

4

Level of organizational influence: This level concerns the involvement of the authorities responsible for crosswalk management or pedestrian safety, especially the physical

infrastructure. Improvements in this area require the collaboration of many departments, e.g., the Department of Highways, the Department of Rural Roads, local administrative organizations, the Department of Local Administration, the Royal Thai Police (law enforcement), the Department of Land Transport (driving license), the Ministry of Education (citizen education), etc. Currently, these entities are working separately with a lack of integration between units. There is ad hoc collaboration in the wake of a horrendous accident, but that coordination is rarely sustained and, thus, there is no continuous supervision and monitoring.

In conclusion, to identify any solution to the problem of pedestrian and road crossing accidents in Thailand, the first step must be an analysis of the root causes of the problem. Then, a systematic security system must be designed and implemented that connects all parties to reduce human error.

Urgent Need to Make Safer Pedestrian Crossings and Sidewalks in Thailand

In the case of Thailand, it must be acknowledged that humans are prone to error. Thus, according to the **Swiss Cheese Theory**, there must be a system that prevents mistakes at all levels by closing the risk gap. The following are approaches that need to be urgently considered:



Source: unsplash.com/photos/u8kBtIORJ7Y

1

Infrastructure development: In order to meet standards for pedestrian and crosswalk safety, **in the short term**, all crossings must be inspected for adequate safety conditions, such as the presence of early warning signs, good illumination, pedestrian-activated stop lights or countdown lights or road design to prompt drivers to slow down when approaching a crosswalk (e.g., narrowing lines, traffic calming, rumble strips). **In the long term**, speed limit zones where accidents occur most often must be implemented or there must be a regulation of speed limit at 50–60 kilometers per hour for certain roads.

2

Law enforcement: It is an essential component if the country is to achieve long-term and continuous behavioral change. In the short term, this can be augmented by creating an automated 24-hour detection system by applying the latest surveillance technology. This should include a CCTV camera system or the use of AI to detect offenders who run red lights at crosswalks, or do not slow down when a pedestrian has entered a crosswalk. Drivers must be made aware that they are being watched, including the use of warning signs to prompt drivers to slow down in the crossing area. Most importantly, there must be strong law enforcement and severe penalties when an offense is verified, especially in the case of collisions resulting in injury or death. Imprisonment must be enforced, instead of a simple charge of careless driving or being released on parole. The offender should show fear of penalties. **In the long term**, if surveillance is increasingly automated, then there must be accurate analysis of data and sharing among relevant agencies, such as driver’s licenses, which would require a link between the Royal Thai Police (issuing traffic tickets) and the Department of Land Transport (implementing point deduction system for traffic violation). An agency should be designated to serve as the main host in oversight and follow-up evaluation, such as the Road Safety Thailand. Guidelines should be established for supervision and monitoring, defining indicators and targets, and evaluation to reduce accidents at crosswalks, and link the work with other agencies at all levels.

3

Creating and social movement and boosting public awareness: When making physical adjustments and implementing law enforcement, the public must first be aware of the law and understand the consequences of violations. This will require a social movement to overcome norms of complacency and disrespect for the law. One of the root causes of the problem in Thailand is that people still do not dare to stand up for the right to be safe on sidewalks and pedestrian crossings because there is no communication channel for them to voice out. Therefore, the public must understand the problem situation. For their part, the relevant agencies must hear the voice of the people and take action. The risk figures and accident incidence for each area should be made publicly available. This will encourage the social sector to pay closer attention and track progress toward a safer city.

After the fatal accident involving Dr. Waraluck, authorities at the policy level ordered all relevant agencies to accelerate inspection and improvement of crosswalks and sidewalks across the country. In Bangkok, surveys were conducted of more than 3,000 crosswalks. Locations had the zebra symbols repainted, and more signal lights were installed. Signals were made clearer, especially at the scene of the incident in front of Bhumirajanagarindra Kidney Institute Hospital. The authorities installed CCTV cameras to detect violators. In the provinces, the Ministry of Interior ordered the Provincial Road Safety Center to conduct campaigns to reduce accidents at crossings to raise awareness during February 21–25, 2022 and more strictly enforce laws. The plan is to designate the 21st of every month to remind the public of the campaign themes.⁶ These actions will generate more data on the accident situation of each locality, and the data can be pooled for further analysis. The Cabinet resolved on January 17, 2023 to set January 21 of every year as Thailand “Road Safety Day,” as proposed by the Road Safety Thailand to raise awareness of the imperative for safety of pedestrians and crosswalks for people of all genders and ages. The aim is to create a culture of road safety and respect for the law. Ultimately, the goal is to put an end to death on zebra crossing.⁷

In regard to campaigning and law enforcement, the Thai Senate has formed the Integrative Committee on the Emergency Rescue and Road Safety Integration in collaboration with the Thai Health Promotion Foundation (ThaiHealth) and affiliated networks. Key activities include the campaign with the slogan “**Stop**

loss, stop motor vehicles to allow people to cross the crosswalk. #GoodDeedsYouCanDo!”⁸ The aim is to raise awareness of the problem for both road crossers and drivers, provide correct knowledge and guidelines when approaching a crosswalk, education about laws, and statistics on the severity of accidents in important crossing areas. The campaign has adopted the symbol of a rabbit to denote safe crossing (since “Rabbit” or “Kratai” in Thai was the nickname of Dr. Waraluck). This allows the campaign to have a wider coverage, awareness and motivation to comply. In addition, more people are asserting their right to use crosswalks and use them safely. Data will show that more cars, buses and motorcycles are slowing down near crosswalks and respecting the right of pedestrians to cross. The Committee and its network have been meeting continuously every month, and are building a coalition with partners in government, the private sector, and all related parties. Information on implementation and progress is linked, and roles between organizations have been defined. Proposals have been submitted to the Bangkok Metropolitan Administration to focus on three areas: Requiring road safety indicators in every district; establishing standards for safe roads and pedestrian crossings; and creating a culture of safety and shared responsibility.⁹

Nevertheless, while the above operations are improving the situation, the campaigns are, at best, short-term measures to boost crosswalk safety. To sustain this progress, all parties must follow up and evaluate the performance of each area continuously over time. At the same time, the efficiency of law enforcement must be strengthened until there is a behavioral norm to comply with speed limits, crosswalk traffic lights, and respecting to pedestrian rights. This problem of traffic accidents is, of course, not just about crosswalks. The campaigns and enforcement must apply to all situations where needless road accidents occur. This includes stricter enforcement of drink-driving laws and checkpoints, speeding controls, etc. No single agency can solve this problem. Success will require all members of society to recognize the right of all people to use pedestrian crossings and sidewalks safely. People can be part of a surveillance network to monitor compliance or violations. Lessons learned must be distilled to inform action to close any remaining risk gaps.

Figure 3 Symbol of a campaign to end loss, slow vehicles down, and ensure that people can safely cross the streets



Summary

Pedestrian and crosswalk safety problems have been a major challenge, given the massive loss Thai society for many decades. It is unknown how much stress is added to urban pedestrians and commuters who have to cross dangerous roads every day. The analysis of factors that lead to accidents shows that there are many root causes of this problem in Thailand. Part of the problem is infrastructure deficiencies. But a much deeper problem is the cultural norms which gives priority of road use to motor vehicles at the expense of pedestrians and cyclists. Disregard for laws and law enforcement is endemic in society, and weakens any regulations that are implemented to make roads safer. However, there now seems to be a social current developing to demand change. The Thai society urgently needs to solve problems in a systematic manner, including infrastructure, law enforcement and awareness raising. It is possible that the measures described above will be a catalyst toward a paradigm shift toward drivers’ behavioral changes and pedestrians’ right to safety. **Every lesson learned will contribute to problem solving efficiently and continuously.**

Right inset: “End Loss.

Stop your vehicle. Let pedestrians cross the street safely.

#GoodDeedsYouCanDo”

Source: www.thaihealth.or.th/
 รณรงค์-หยุดสูญเสีย-หยุดรถ

Amendment of Thai Liquor Law: From the Progressive Liquor Act to Unlocking Community Liquor

“ Amendments to the liquor law that allow people to brew their own liquor for household use, and to encourage small and medium-sized liquor entrepreneurs to enter the liquor business more easily will surely result in the production and consumption of more alcoholic beverage. Therefore, supportive measures must be taken to reduce the impact of alcohol in terms of public health and society at the same time. ”

Introduction

Over the past decade, there have been calls for amendments to laws and regulations related to liquor to allow small-scale producers to produce craft or community liquor. In addition, there has been continuous lobbying from large producers to dismantle the monopoly of the liquor industry. In 2015–2017, there are calls from local liquor producers¹ to delay the enforcement of the law on community liquor production as well as asking for amendments to the law to allow community distillers to use machines of more than five horsepower. Local excise officers and provincial industry representatives reported that many community distilled spirits producers had production capacity exceeding the legal limit (over five horsepower). The claim from producers is that, if their licenses are revoked or suspended, many manufacturers will stop production and that will undermine the economy of the community.

Later, there was a movement of civil society groups who viewed that there were too many limitations in production of liquor in the community compared to the production of liquor by a few large companies that have monopolized the domestic market. They argued that craft-brewed alcoholic beverages are part of the local wisdom and culture of people, especially in north and northeast Thailand. If production is limited to use of machines with no more than five horsepower, then it will be very difficult to economically produce craft beer. The application for a license from the Excise Department is onerous, and there are other conditions according to the 2017 Ministerial Regulations for licensing liquor production.² For example, a distiller must have registered capital of at least ten million baht and, if production includes sale at the production site, the production volume must be at least 100,000 liters per year. If the product is bottled or canned for off-site sales (like the big beer manufacturers) production must be in the amount of not less than ten million liters per year or not less than 33 million bottles per year.

In 2019, a number of community beer producers formed a group, led by Mr. Thanakorn Tuamsageam.³ The group mobilized stakeholders to push for the amendment of the law on alcoholic beverages that was too favorable to large producers and stifles small producers. The group developed a craft beer-making course, and they organized activities in different outlets, with a review of craft beers, and other locally-brewed alcoholic beverages (including beer, spirits, or wine). The group reasoned that, because they are unable to clearly market their product under the 2008 Alcohol Beverage Control Act (Article 32), they felt that they had to organize informal activities as a form of protest. The group aimed to gather a list of more than 10,000 people to support demands to amend the law.

This grassroots movement was picked up as part of the platform of some political parties, especially the Move Forward Party. As a result, a draft Progressive Liquor Act

Community-based liquor distillery project in Krabi Province



Source: thainews.prd.go.th/news/detail/TCATG220314192458784

was pushed through the House of Representatives, and approved in principle in June 2022. However, the draft has not yet been considered in subsequent parliamentary agendas. In addition, in November 2022, the Cabinet approved, in principle, the draft 2022 Ministerial Regulation for Liquor Production Permission as an amendment to the 2017 Ministerial Regulation for Liquor Production Permission to free up the production of community liquor and beer producers. This article discusses the structure of the liquor market in Thailand, recent legal developments, a comparative analysis of the draft Liquor Act and the 2022 Ministerial Regulations for Liquor Production Permission and their possible impacts.

Structure of the Liquor Industry in Thailand

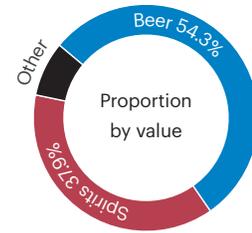
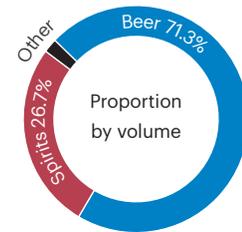
The Krungsri Research’s ‘Business/Industry Trends 2022–2024: Beverage Industry’ report⁴ showed that, as of 2020, the Thai alcoholic beverage market has a production size of 21% of the total beverage production in Thailand. In terms of value, the total value is about 473 billion baht, representing 64% of the total beverage market value. Among alcoholic beverage products with production-consumption volume, the highest market value was for beer, with 71.3% in volume and 54.3% in value of the total alcoholic beverage market, followed by spirits with 26.7% in volume and 37.9% in value in the entire alcohol beverage market. Almost the entire domestic beer industry is owned by two major producers, Boon Rawd Brewery Co., Ltd., Thailand’s earliest brewer (Singha, Leo and My Beer); and Thai Beverage PCL, which came in later but has grown quickly (Chang, Archa, Federbräu). Currently, the two companies together have a combined market share of approximately 95% of beer sales in Thailand with Boon Rawd as the leader.

Regarding distribution market share, which includes brands imported from abroad, data from market research by Euromonitor indicates that the beer market in Thailand in 2020 was worth about 260 billion baht. The market leader is Boon Rawd Brewery Co., Ltd., holding 57.9% of the market, followed by Thai Beverage PCL, which had a market share of 34.3%, and Thai Asia Pacific Brewery Co., Ltd. with 4.7%. If divided by brand, Leo has the highest market share of 44.8%, followed by Chang with 31.2%, Singha with 11.2%, Heineken with 3.8%, and Archa with 2.4%.

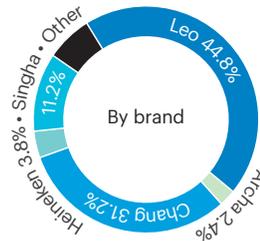
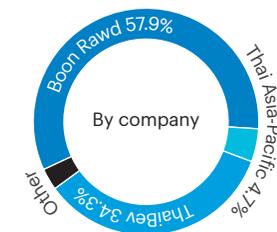
As for the distilled spirits sector of the industry, the competition is even less because the restrictions of the law make it difficult for new producers to enter the market. If they can, they may not survive in the competitive situation. The market is virtually monopolized by Thai Beverage PCL (ThaiBev), which holds more than 80% of the market share and has expanded its full range of products. There are 18 liquor factories in the group and there are affiliated companies that import foreign liquor for sale. As a result, ThaiBev now has more than 30 brands of liquor products for consumers at all levels of the economy. For dark spirits liquor, there are Mekhong, Hong Thong, Mungkorn Thong, Sangsom, Blend and Crown 99. For white spirits, there are Ruang Khao, Phai Thong, Niyom Thai, Sua Khao, Mee Khao, Mungkorn Taijeen, Chaiya, Chao Phraya, Phraya Nak, Phraya Seur, and Bangyikhan. Blended liquors include Sua Dum and Siang Chun.

The distilled spirits sales market in 2020 had a total value of 1.8 billion baht. The market leader is ThaiBev with a share of 59.5%, followed by Diageo Moet Hennessy (Thailand) with 8.0%, Regency Brandy Thai Co., Ltd. with 4.4%, and other companies with 28.1%. If divided by brand, it was found that Ruang Khao community distilled spirits had the highest market share of 30.9% followed by dark spirits ‘Hong Thong’ at 11.4%, dark spirits ‘Blend 285’ at 11.2%, ‘Regency’ at 3.6%, ‘Sangsom’ at 3.0% and refined ‘Mekhong’ at 2.5%.

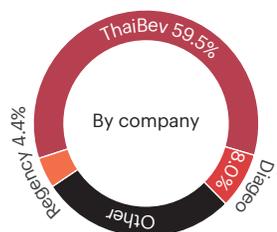
Percent distribution of alcoholic beverages by type and consumption



2020 Market Share: Beer



2020 Market Share: Spirits

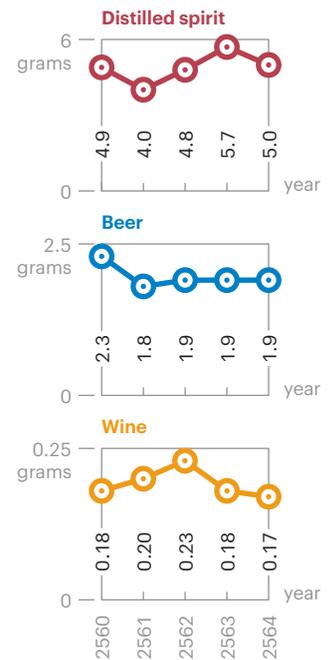


Alcohol Consumption Patterns in Thailand

Information of the Excise Department, Ministry of Finance and the Strategy and Planning Division of the Office of the Permanent Secretary, Ministry of Public Health reports **the statistics of alcohol consumption of Thai people.**⁵ It was found that Thais consumed distilled spirits the most, with an average consumption of 4.9 grams per person per year in 2017, and at a relatively stable level of 4.0, 4.8, 5.7, and 5.0 grams per capita annually until 2021. The next alcoholic beverage that Thais drink the most is beer, with a tendency toward slightly decreasing consumption: 2.3, 1.8, 1.9, and 1.9 grams per capita per year from 2017–2021. As for the drinking of wine, consumption was stable at 0.18, 0.20, 0.23, 0.18, and 0.17 grams per capita annually from 2017–2021.

It is noteworthy that the number of new drinkers in 2021 doubled from 2017 from 3% to 6%. What is more, Thailand’s per capita alcohol consumption is among the highest among ASEAN member countries. That said, the trend in growth rate in 2020 and 2021 was not high, and depressed during the COVID-19 epidemic, and then partially recovering in 2022.

The Road Safety Thailand reported that, during the New Year’s Festival of 2021, alcohol was a major cause of injuries and deaths, totalling up to 5,387 people. This was 17% more than in 2020. Data for 2007–2021 indicate that, among drinkers, 44% of drank regularly. Of these, more than one in three or 36% drank heavily and 31% had drink-driving behavior, which is also one of the top causes of death in Thailand.



Evolution of the Liquor Laws in Thailand

Thai liquor control has existed since ancient times. During the reign of King Phuttha Yodfa Chulalok (Rama I), as written in the Law of Three Seals, the law on liquor was issued in 1786.⁶ People were prohibited from distilling liquor without permission, there had to be revenue collection for the state, and suppression of illegal liquor. This was done by allowing the private sector to bid for concessions to produce and distribute alcoholic beverages. The Bangyikhan Liquor Factory was built, which was the first government liquor distillery. Bidding for concessions continued over time and, since the reign of King Rama II, liquor duty collection has become an important source of income for the country.

After the end of the reign of King Rama V, the government started implementing new liquor policies, namely, the cancellation of the monopoly rights granted to tax officials in 1909 by the state, and collecting the liquor tax on a per-Monthon, and assigning

the governors to collect taxes and issue liquor brewing licenses. The state also encouraged local influential people to become brewing licensees to combat illegal liquor producers. These legal actions greatly increased the state’s revenue from alcohol.

In 1950, the government took a more serious role in liquor production through the Liquor Act B.E. 2493.⁷ With this Act, the government prescribed conditions for the production and distribution of liquor. This Act became the template for subsequent ministerial regulations and the ministry announcements. Large capital groups were allowed to produce liquor. The entire ThaiBev group⁸ and hundreds of other liquor factories sprang up and were required to pay tax by affixing a duty stamp to the container.

More stringent regulations then came to pass, especially in 1999, when the Ministry of Industry issued a notification and the Ministry of Finance set the conditions for production of distilled spirits.⁹ These regulations also had the effect of discouraging new producers from competing freely and fairly with the established producers. For example, the state required producers to have a minimum production capacity of 90,000 liters per day, having an area of not less than 350 rai contiguously, and must be located at a distance of at least two kilometers from the public rivers and canals. These conditions clearly favored the larger enterprises.

1786

1950

1999

1909

Later, in 2017, the Excise Act B.E. 2560 was enacted.¹⁰ This law is overseen by the Excise Department of the Ministry of Finance to consolidate all laws relating to liquor production conditions, including the Liquor Act, into one called the Excise Act B.E. 2560.

2017 Producers had to request permission to produce alcoholic beverages, or have a distiller import permit. All sales were taxed. As for determining the conditions for liquor production, the Minister of Finance set up regulations to make it easier to modify the conditions according to the Ministerial Regulations for Liquor Production Permission B.E. 2560. The Excise Act B.E. 2560 has imposed conditions on beer and spirits production that are unfavorable to community-based and smaller producers. That gave rise to the movement to dismantle the monopoly in liquor production, distribution, and sales.

Taopiphop Limjitrakorn, a member of the Move Forward Party, entered politics to push for the amendment of the liquor law. In 2017, he was prosecuted for making craft beer.¹¹ His Party pushed for the amendment of the Excise Act, known as the draft “Progressive Liquor Bill”, arguing of the need to reduce limitations in the production of community liquor, and increasing choice for consumers and reduce the monopoly from large capitalized groups.

The Move Forward Party presented the bill to the House of Representatives on June 8, 2022,¹² and the House of Representatives approved the bill in principle with 178 votes for and 137 votes against. This made it possible for the draft bill to pass the first term at the committee level. A subsequent vote was scheduled as part of Agenda Items 2 and 3 on November 2, 2022.

Later, there was a change in the stance of various political parties. The ruling political party wanted to attract the support from community liquor producers. Just one day before the House of Representatives considered a resolution, on November 1, 2022, the Cabinet approved a draft ministerial regulation for licensing liquor production, which is the amendment to the details of the restrictions on community liquor production making it unnecessary to amend the Excise Act according to the “Progressive Liquor Act Draft.”¹³ This was a form of “end run” around the Progressive Draft Act that was about to be approved in the House. For this reason, at the House of Representatives meeting on November 2, 2022, the House of Representatives passed a resolution to overturn the Excise Act (No. ...) Act ... (or the Progressive Liquor Act) on Agenda Items 2–3 with a vote of 196 to 194 votes, and 15 abstentions.

The Ministerial Regulations for Liquor Production of 2022 has the following key content:

1 Cancellation of the amount of registered capital for applicants for permission to produce beer-type liquor which is set not less than 10 million baht to support and encourage small and medium-sized spirits entrepreneurs to enter the business of brewing liquor.

2 Abolish the minimum production capacity of beer-type liquor factories between 100,000–1 million liters per year.

3 Community liquor producers who have been licensed to produce liquor for not less than one year are able to apply for permission to be a liquor factory with a capacity of more than five horsepower but not more than fifty horsepower.

4 Improve the procedures and methods for applying for a liquor production license so that entrepreneurs are able to submit an application through various channels, including obtaining permission via electronic system.

5 Prescribe provisional provisions for those who are licensed according to the Ministerial Regulations for Liquor Production (2017) to be able to continue producing liquor in accordance with the conditions permitted.

When comparing the Ministerial Regulations for Liquor Production Permission (2022) with the contents of the draft Progressive Liquor Act proposed by the Move Forward Party, it was found that there were similar parts. For example, no minimum amount of registered capital or production capacity was specified, and this applied to both spirits distilleries and breweries. However, an important condition is the determination of horsepower. The Move Forward Party’s draft bill did not specify the limitation of the horsepower and the number of workers. However, the 2022 Ministerial Regulation for Liquor Production Permission maintained the five

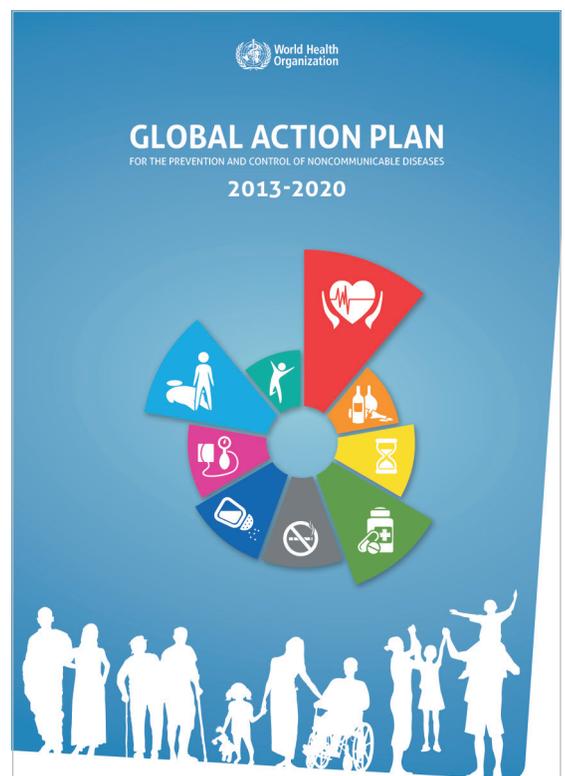
horsepower while adding the fifty horsepower limitation. It also set regulations on environment and public health. It stipulated that (“white lightning”) liquor factories must have a minimum production capacity of 90,000 liters per day and the production of whiskey, brandy and gin still needs to produce 30,000 liters per day. By contrast, the Move Forward Party’s draft Act imposed no production quotas. In addition, in the case of home brewed alcohol for personal consumption (i.e., not for sale) the government set conditions that production must not exceed 200 liters/year, while the Move Forward Party draft bill imposed no limitation.

In this regard, Mr. Pita Limjaroenrat, leader of the Move Forward Party, viewed that the Cabinet resolution does not truly understand the purpose of the Excise Bill or the draft Progressive Liquor Bill.¹⁴ The law does not help small producers by reducing their terms, but adding limitations. When looking at details, actual production capacity is unlocked with more regulatory measures, especially those related to the Department of Industrial Works, for example, in the case of beer-type liquor brewing factories for sale at production sites, or what is called brew pubs. The new ministerial regulations require these sites to be a factory according to Factory Law. That is, there must be a machine with more than 50 horsepower or more than 50 workers. Originally, a small brewpub is not considered a factory, and there is no need to apply for a factory business license. This new requirement causes problems for small brew pubs with a small number of machines, which cannot now get permission to brew.

On the contrary, the amendment to the liquor law has also sustained the objections from civil society, such as those involved in religious worship, who have previously opposed the legalization of marijuana, such as Mr. Khoddari Binsen, President of the Confederation of Private Schools in the Southern Region, and Mr. Sukarno Matha, MP of the Prachachat Party Yala.¹⁵ Their opinions were expressed during the public hearing of the draft Progressive Liquor Act and at the committee level. One argument was that the legalization of community liquor production and marijuana would adversely impact on the people of Islam. The Southern Private School Confederation Association which has about 80,000 personnel, with about 500,000 students. In the words of Mr. Sukarno: “I and MPs from the Prachachat Party have served in the House of Representatives to oppose all these laws. It is well known that the House of Representatives is unable to resist the voice of the majority. However, the Prachachat Party is glad to have acted as a representative of Thais who are Muslims in opposing the law that offends Islamic principles.”¹⁶

Health Impacts

In any case, the amendment to the liquor law now allows anyone to brew their own liquor for household use, and small- and medium-size entrepreneurs can enter the liquor business more easily. This will certainly result in more liquor production and consumption. According to Mr. Chuwit Chantaros, Coordinator of the Alcohol Prevention Campaign Network: Whenever more alcohol is produced, shared and sold, the consumption rate is bound to go up. “Globally, more than three million people die from alcohol every year, while the WHO 2025 NCDs Global Action Plan calls for all states to reduce alcohol use by 10% by setting indicators to help reduce alcohol per capita consumption and alcohol-related deaths. In Thailand, there are many persons with NCDs, which are the top causes of death of Thais including cancer, stroke, ischemic heart disease, and diabetes. They cause more than 150,000 deaths per year. Excess alcohol consumption has a facilitating role in each of these chronic conditions.”¹⁷



Global NCD Plan Action Plan 2013–2020
by the World Health Organization

Source: who.int/publications/i/item/9789241506236

Mr. Khamron Chudecha, coordinator of the liquor business surveillance network, said that there must also be supporting measures to reduce the impact of alcohol in terms of eroding public health and exacerbating social ills. There needs to be a balance, and not only looking at the economic side of the issue of liquor production. In his words: “I propose that once the production rules have been revised, there should be a set of criteria stipulating responsibilities of manufacturers, sellers, and service providers. They need to help protect society. There could be measures, such as increasing the price of manufacturer licenses according to production capacity. This is according to the principle of producing more, paying more, and producing less and paying less. There might be a sales license, with required training of salespeople. There should be certification of a salesperson’s license so that employees have knowledge and understanding of the law and services to consumers to promote responsible drinking and not selling to persons who have over-consumed. In the end, excess alcohol consumption leads to drunk driving, injury, death, disability, and all other illegal and inappropriate conducts that lead to losses.”¹⁸

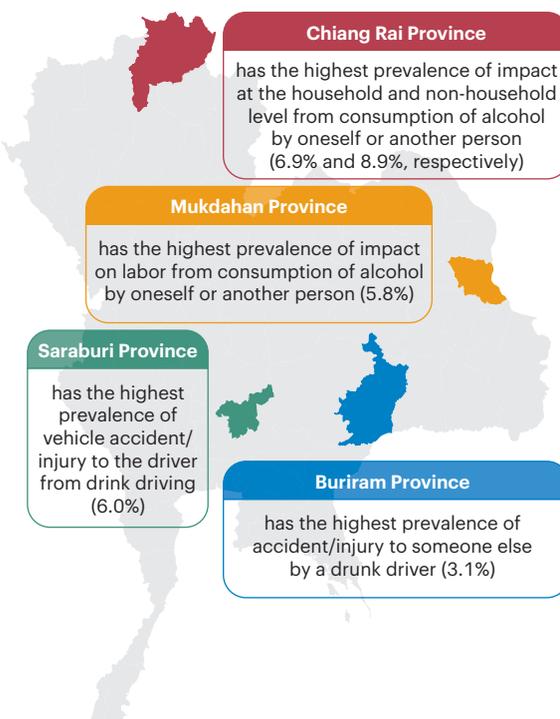
There are also concerns about manufacturing quality that could have health consequences if the production of liquor for personal consumption is not up to standard. Data from the Department of Disease Control found that,¹⁹ from 2008 to 2019, there were 573 persons who were hospitalized from drinking home-made alcohol. These mostly include cases of methanol poisoning since home brewers/distillers rarely care about production standards. A common form is Ya Dong , which is a form of fermented brew. Villages may add reptiles or exotic substances to the brew with claims of enhanced energy or sexual performance, include toxins from poisonous animals such as scorpions, or even herbicides and detergents. If the home brew is mixed with “methyl alcohol” or “methanol” (for low-cost production), that can cause blindness or death and risks to alcohol-related diseases (such as alcohol poisoning, liver disease and cancer). The prevalence of production and consumption of home-brewed alcohol was highest in the north region, and in Phrae Province (43.2%).

Summary

The 2022 Ministerial Regulations for Liquor Production Permission and the Progressive Liquor Act proposed by the Move Forward Party had the objective to liberalize the market for small and local alcohol producers. The aim was to dismantle the monopoly on the production and distribution of liquor by only a few large conglomerates. However, the amendment to the 2017 law places greater emphasis

on economic goals by opening up more space for small producers of spirits and brews at the community level. In addition, in the political dimension, the liberalization of community liquor was also seen as a way of generating political support at the grassroots level in populous regions of the north and northeast. The amendment does not include protective conditions or measures to reduce public health impacts from such liberalization. This is the same trade-off with legalizing marijuana. The State legalized it before issuing the Cannabis Act and imposing various conditions and control measures. Alcohol is a more serious issue, however, because of the high prevalence of drinkers in Thai society already, and the minimal effect of law enforcement to reduce drink driving. It is therefore necessary to raise these concerns and formulate countermeasures, as well as improving laws, regulations, and policies to promote responsible consumption of alcohol. The important thing is to create a body of knowledge and campaigning so that the general public and communities are aware of the dangers of alcohol and reduce alcohol consumption to prevent large and small liquor producers from influencing local consumers, especially the younger generation and students who are vulnerable to the higher experimentation with alcohol.

Report on the Situation of Alcohol Consumption by Province in 2021²⁰ by the Center for Alcohol Studies, Prince of Songkla University



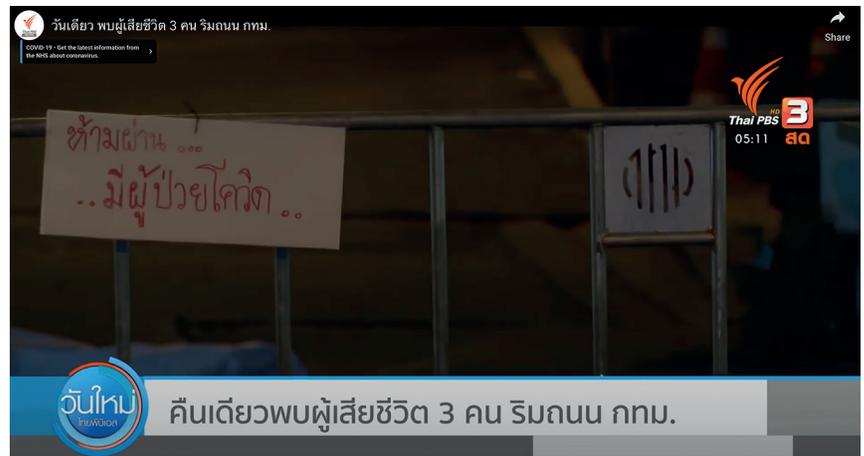
Public Health Service System in Bangkok and Primary System Reform

“ Lessons from the past to the present point out the need to strengthen the primary health service system in Bangkok. It is like strengthening the base to be stable and ready to deal with various health threats that could happen at any time. ”

Introduction

There was the image of a victim of COVID-19 lying dead on the road for about six hours before being picked up in Ban Phan Thom alley opposite Bowonniwet Vihara Temple, Bangkok in July 2021.¹ Then there is the news of too many COVID-19 patients who died at home in the Bangkok area during 2020–2021 due to the lack of timely access to medical services. These tragic stories reflect the problems of Bangkok's public health service system which is inadequate and cannot provide the primary care service in case of health crisis. Bangkok is a prosperous capital city and has the best infrastructure among cities in the country. Unfortunately, the public health service system of Bangkok has not been developed as it should be. This article discusses the service system, the development of Bangkok's public health service system, and reforming the primary care system including policy recommendations.

Bangkok is the capital city of Thailand and the most densely populated province in the country. With a registered population of over 10 million, Bangkok is ranked 13th most populated city and 21st in size among 36 mega-cities in the world. It is a special local administrative unit under the Bangkok Metropolitan



News photo from Thai PBS on the evening of July 20, 2021, showing three fatalities on the side of the road in Bangkok in the vicinity of Wat Bowonniwet Vihara Temple

Source: youtu.be/2hM78T2ssDY

Administration Act B.E. 2528. At the time of this report, Bangkok was divided into 50 administrative districts with 15.4 million population including registered and non-registered residents.² While central Bangkok is heavily urbanized, the periphery also includes semi-rural communities. While people are generally aware of their rights and have high social awareness, Bangkok still has high inequality in terms of economic, social, and educational status, including access to health services. In particular, there is a lack of access to basic health promotion and disease prevention for certain groups of city residents, and this can give rise to outbreaks of communicable disease from time to time. In addition, there are limitations in the health service system that is still inadequate in terms of quality and quantity, especially primary care services. The COVID-19 epidemic shined a spotlight on the deficiencies and inequality of the Thai health care system, especially in Bangkok. Many people were not able to access COVID screening services, treatment at hospitals and vaccination, and there were shortages of personal protective equipment (PPE) and standard medications necessary for treatment. These issues reflect the problem of accessing services, lack of coverage and sub-standard quality of service.^{3,4}

Health Service System in Bangkok

The Bangkok Metropolitan Administration (BMA) operates a public health care system from basic to complex levels. The BMA Medical Service Department oversees clinical care, health promotion, disease prevention, emergency medical service, health education, training, and

nursing. The BMA also has a Department of Health which is responsible for public health, with a focus on basic or primary care. In addition to the government health service system in Bangkok, there are many private service providers. As of January, 2015, there were a total of 31,623 hospital beds, of which more than half were provided by the state health service (56%, all affiliations) with all 42 hospitals owned by the state. There are 11 hospitals under the BMA with only 2,549 patient beds. There is also a Bangkok Emergency Medical Service Center (Erawan Center) that accepts incident reports, directives, and provides advice on emergency medical operations via telephone Hotline #1669.⁵ Bangkok has 4,546 primary care facilities, including 69 public health centers, 73 branch health centers, and private health care facilities, divided into medical clinics, “community caring clinics, specialized medical clinics, dental clinics, Thai traditional medicine, nursing and mid-wifery, medical technology centers, and physical therapy providers which are distributed throughout all administrative districts in Bangkok.⁶

The 2022 annual performance report of the BMA Medical Service Department provides statistics on patient care services of the 11 BMA hospitals. In the most recent year, there were 4,083,449 outpatient services, or an average of 1,018 times per day, and 151,037 inpatient admissions, or an average of 38 per day. The 2021 annual report of the BMA Health Department stated that all 69 BMA public health centers implemented primary care and health promotion services to the public 1,512,337 times, representing an average of 60 service interactions per day.

As a province, Bangkok is unusual in the national health care system. By contrast, the public health system in the other provinces are under the Ministry of Public Health (MOPH). Thus, the BMA is responsible for managing a highly complex public health service system. The medical facilities range from primary to tertiary care. Other public health care facilities in Bangkok are operated by other ministries (e.g., MOPH, Ministry of Defense, Police General Hospital), and there are university hospitals. Therefore, there are clearly challenges in terms of management, coordination, and resource allocation. This system is particularly strained during times of crisis, such as the epidemic spread.

Evolution of the Health Care System in Bangkok

As noted, the health service system in Bangkok faces multiple challenges at the primary level in terms of access, coverage, and quality of service. This makes it difficult for Bangkok to achieve goals of the health service system

according to the principles set by the World Health Organization (WHO).⁷ The challenge includes improving the health of the population, reducing risks, buffering the social and financial impacts of managing a health problem, and providing service efficiency.

Although the BMA is a special form of administrative government (different from all other provinces in Thailand), the development of the public health system in Bangkok has evolved over the past decade in accordance with the country’s public health policy. The main policies that affect the reform of the public health system in Bangkok and Thailand are as follows:⁸

1 The regional health policy calls for developing a seamless service system, with aligned health resources, including personnel, budget, pharmaceuticals, and information technology. This includes the goal of customization of the service model and management within the group of nearby provinces.^{9,10}



Central Hospital: One of the hospitals under the Bangkok Metropolitan Administration

Source: commons.wikimedia.org/wiki/File:โรงพยาบาลกลาง_Klang_Hospita_(9).jpg



#40 Health Center, Bang Khae: One of the community health centers under the Bangkok Metropolitan Administration

Source: webportal.bangkok.go.th/healthcenter40/page/sub/8858

2 The Family Care Team policy: This policy aims to strengthen the primary care system as a front-line holistic public health care process, with processes for patient care and referral to the secondary and tertiary levels as needed.^{11,12,13}

3 The policy to unify the health security system of the country so that the different plans are harmonious. The main government systems are the Universal Health Coverage (Gold Card), the Civil Servants Medical Benefits Scheme, and the Social Security System. The policy calls for using the SAFE (sustainable, adequate, fair, efficient) principle in unifying health security, and with the goal of financial sustainability. The state needs to ensure that the people receive good, efficient, and reasonable health and medical services.^{14,15}

The above policies are having an effect on the public health system in Bangkok and other provinces across the country. The policies affect the rules of management, budget allocations, follow-up and evaluation of services, the structure and management at the individual, organization, and network level, and information systems. This can be seen from the implementation of the Family Care Team policy. This is an important policy of the MOPH in the reform era that has been gaining momentum since 2014.¹⁶ In Bangkok, the Family Care Team policy focuses on three main activities:

Screening risk groups (which includes outreach to every residence in the catchment area);

Providing health advice to all target groups;

Visiting and caring for bedridden patients.

The main operational arm for this service is the network of BMA health centers. However, there is a shortage of personnel in these centers. Therefore, coverage of the policy is less than half of the catchment population. The private sector has been encouraged to join the Family Care Team, but there are issues of financial management, data linkages and service quality benchmarks. In addition, most of population of Bangkok moves a lot each day. There is less engagement between urban health centers and the local communities. A lot of Bangkokians live in gated communities, in contrast to the situation in rural areas of Thailand where people live in areas easily accessible by health staff and community leaders.



March 20 of each year is the National Village Health Volunteer Day

Source: prd.go.th/content/category/detail/id/31/iid/164487

Additionally, the structure of the network of health volunteers (HVs) in Bangkok is different from Village Health Volunteers (VHVs) under the MOPH in all other provinces of the country. Thus, the implementation of primary care services under the Family Care Team policy takes on a different form in Bangkok. For example, there has to be complex multi-lateral cooperation networks with other agencies in the area, including the other government health providers under the military, universities as well as the private clinics.¹⁷ In addition, the population in Bangkok has an array of health care options. Thus, there are different expectations and standards of satisfaction according to socioeconomic status. Providing a standardized public health service system in Bangkok is nearly an impossible challenge. The COVID-19 epidemic dramatically exposed these limitations of sufficiency, accessibility, coverage, and quality.

Bangkok and the Reform of Primary Health Care

The vision is that anyone can access the service thoroughly and on time, receive efficient care and treatment from personnel who are happy and client-friendly, and the service system can respond to the needs and suit the diverse people in society. **To achieve this vision, there will need to be collaboration and integration among key stakeholder groups. This has to happen from the top levels of government, among administrators and personnel in the MOPH and the**

BMA public health system of Bangkok, as well as the other public and private providers with the population in the catchment area to help synthesize and find answers to improve the system to meet everyone’s expectations.

The current health system reform plan **highlights the “Big Rock” concept with the participation of local communities, families, and medical facilities to reduce inequality in access to services. This concept covers the following six main areas:**

Reforming the public health emergency response;

Reforms to increase the effectiveness and efficiency of management of NCDs;

Reforming the service system for the elderly;

Reforming the health insurance system and the health fund;

Reforming regional health management;

Reforming the health information system.¹⁸

Accordingly, Mr. Chadchart Sittipunt, Governor of Bangkok, has advocated for these reforms, with a particular focus on the primary health care system, and linking health information throughout Bangkok. The governor feels that there is no better time than now to reform public health because of the lessons learned from COVID-19. That epidemic exposed the need for integration of information and the more efficient allocation of resources. The primary health care system was the weak link in producing an effective response. There are only 69 public health centers under the BMA, such as Public Health Center 41 in Klong Toey, with only 82 personnel for a catchment population of approximately 100,000 people. If the primary care system is weak, then people will seek care at the secondary and tertiary levels, creating a log jam for service in the hospital network. Thus, fixing the primary care system is critical to solving the problem of Bangkok’s overall public health system. The efficient primary system has a relationship with the efficiency of bed management at secondary and tertiary levels.

Bangkok can start by using technology and strategic information to inform planning and increase the cadres of HV and other community-based technology volunteers. Greater use of technology is appropriate given the familiarity of the new generation of Thais who are already quite fluent with technological platforms and applications across

a range of digital devices. These young people can teach others in the community to use the telemedicine. This application comes with data processing that will feed crucial health information to the central offices so that the management of primary care can become more cost-effective.¹⁹ In addition, the BMA also plans to develop a “sandbox” approach to organize a new service system that will connect primary to tertiary systems of care. Large hospitals will act as a host, with links to client agencies, in both the public and private sector. These include the health centers, the community care clinics, pharmacies, and communities. This approach is being piloted in two locations in Dusit District, with the area under the responsibility of Ratchaphiphat Hospital as host agency.

Policy Recommendations

There are several research studies that have analyzed the problems of health care systems in urban areas, including Bangkok, and all come to similar conclusions.^{20,21} For example, there should be a mechanism to follow up, study, and understand the behavior of the target population. There should be measures to encourage the target population to seek appropriate health care. There is a need to strengthen cooperation with local partners and promote primary health care services to the public, such as making the community care clinic a part of the official primary care network. People should be able to receive standard, quality services, no matter where they are. There should be adjustments to the disbursement regulations for all health insurance funds so that people can receive service from any provider, whether it is a hospital or clinic. Based on these studies and other relevant information, the following are the core recommendations for improving the public health service system in Bangkok:

1 Allocate sufficient and quality resources of the public health service system by conducting annual performance assessments and district evaluation as a basis for the allocation of resources.

2 Distribute activity plans to balance development of all elements of the health service system, in terms of manpower, budget, pharmaceuticals, medical technology, information system, service models, and management models based on the annual performance report of BMA and each district.

3 Develop the service system by focusing on three key areas: service accessibility, service quality, and coverage. All three issues were identified as the main topics in the BMA Public Health Strategic Plan. This should be used for operational planning with clear indicators such as the availability of services, medical supplies, necessary technologies in every area, etc.

4 Identify desirable outcomes in the development of the public health service system. This is based on the conceptual framework of WHO to achieving optimal health status. The key is to create and maintain the value of the service, respond to problems or needs of target groups, preventing risks, and buffering the social and financial impacts of a health crisis.

5 In addressing the shortcomings of the primary health care system in Bangkok, the focus must not be limited to Bangkok alone. Instead, the perspective should include the overall picture of the primary care system, and gather input from all relevant agencies. The collaboration should include clinics, pharmacies, and other service points as well, with the BMA acting as the “backbone” of a multilateral primary care network system that is concrete and sustainable.

6 Encourage the participation of all stakeholder groups in situation awareness, assessment, analysis, planning, and problem solving to improve the public health system and share responsibility. This will also require improvements to laws and regulations to facilitate operations, for example, making the community clinic a part of the main service unit in the public health system in Bangkok. Another example is the need to revise the budget disbursement regulations across all health insurance funds by using the same criteria as government hospitals and public health service centers so that people can conveniently access essential basic services wherever they are.

Summary

“... When health is at risk, everything is at risk ...” is the message from the WHO Director-General.²² That message reflects the reality that the public health service system is very important for any society. That is because it relates to the welfare and safety in the lives of people in society, and leads to the stability of the country. Therefore, it is imperative to develop the health care system to be strong, sufficient, efficient, and timely. Thorough access will inevitably lead to good health outcomes, and reduce loss in times of crisis. The service system across the primary, secondary and tertiary levels are equally important. It is well-known that Bangkok has faced the challenge of rectifying its insufficient public health service system, making it more understandable, and reducing inefficiency. Otherwise, when the next health emergency arises, the result could be worse. Therefore, it is urgent and imperative to strengthen Bangkok’s primary health care system to be ready to cope with potential health threats. This requires cooperation and integration of key stakeholder groups, including the MOPH, other government healthcare providers, the BMA, and the myriad private providers, with help from the host communities. The goal is to create **a multilateral primary care system and network**. Currently in Bangkok, the emphasis is placed on the development of HV and community-based technology volunteers to bridge the gaps. This includes telemedicine and experimental development of models that connect primary care networks with secondary and tertiary care. However, there should also be a clear approach to reform in other areas, such as the allocation of adequate and quality resources in the health care system, focusing on access to services, boosting service quality and coverage, and improving laws and regulations to facilitate the operation of the community care clinic as part of the main service unit, among other reforms.

Source: unsplash.com/photos/BvNNxnzds4U

“ Even though the overall picture of Thailand indicates good food security, there are weaknesses among farmers and small entrepreneurs which lack a strong and sustainable group, lack knowledge, information, and technology in production and marketing. In addition, the cost of agricultural and food production goes higher due to inefficient logistic management while there is no integration of various agencies and partners. The law lacks flexibility and, thus, it cannot adapt to the changes in technology, society, and modern trade. ”

Introduction

People standing in line in the heat or rain to receive packaged food or dry food from donors, as well as the establishment of alms-houses (food pantries) at temples across the country to help those who lacked food are a reflection of the food security problem that has become more serious over the past few years in the wake of COVID-19 crisis and the war in Ukraine. These events have had a huge impact on the world’s food supply, including production factors such as fertilizers, pesticides, etc. They have pushed up the price of production cost of agricultural products, including the price of food. One indicator of the worsening situation in Thailand is the number of people who meet the criteria for a “State Welfare Card”, which had as many as 20 million card holders in 2022, or equivalent to one in three Thais. Among the lower income, food can account for at least half of the household expenses. This article discusses food security and reviews the concept of food security internationally and in Thailand, and propose solutions to problems.

Food security is a term that originated during the various historical crises of food shortages. Since the 1970s, the Food and Agriculture Organization of the United Nations (FAO) has defined “food security” as a condition in which everyone, at all times, has the physical and economic capacity to access adequate, safe, and nutritious food to meet food needs and satisfaction, in order to enjoy an energetic and healthy life.

One of the punishing aspects of the COVID-19 pandemic was how it triggered governments around the world to restrict travel between countries and even between cities or provinces within countries. This greatly disrupted cargo transportation (by land, water, and air transport). In addition, labor movement and migration was severely curtailed, and the slump in international trade affected food exports of countries. COVID also caused labor shortages in the agricultural sector and the closure of food processing factories. Countries that rely on food imports were especially vulnerable, especially the lower-income nations. Any country, city or province which depended on tourism income had to close down. In addition to the scarce food supply, the depressed income of the population made it impossible to buy some food at higher prices.

The World Bank estimates that COVID-19 pushed an estimated 88–115 million people into extreme poverty in 2020 and 150 million in 2021, the first such increase in 20 years. According to the FAO, the number of malnourished around the world is estimated to have increased to between 83 and 132 million people. Due to these crises, food producing countries imposed “export restriction” on some food temporarily to keep the balance of domestic food system.¹ Food insecurity inevitably leads to higher health expenditures for both households and the public sector, and it continues to result in human resources not being able to develop their skills to the fullest due to weak physical health due to malnutrition.²

Source: unsplash.com/photos/Wf4LHJwAvT8





One of the Sustainable Development Goals (SDG) of the UN is to eradicate poverty (SDG# 2).

Source: un.org/en/sustainable-development-goals

Conceptual Thinking About Food Security

Food security is a state in which everyone at every moment can access adequate food, whether by physical or economic capacity. In addition, the food must be safe and have nutritional value for the body. There are four dimensions of food security:

- 1 Obtaining sufficient food to meet the needs of domestic consumers
- 2 Providing access to food: every citizen has the opportunity to access food that is suitable for them and on the basis of good nutrition
- 3 Utilization of food is according to the principles of safety and hygiene
- 4 Maintaining food stability by managing resources and systems to ensure that all people have access to food as appropriate, despite occasional emergencies and crises³

Food security initially focused on the food production process. The goal was to produce enough food to meet the needs of consumers worldwide. That gave rise to the ‘Green Revolution’ (or the Agricultural Revolution’) by

marshalling technology and machinery to produce large quantities of agricultural products. Even with those great advances in production, the problem of world hunger did not disappear. Studies showed that other conditions undermined food security other than production alone. There are issues such as access to food, regularity of food production, food safety, community context, and other factors in the realm of development, poverty reduction, self-reliance, etc.⁴

Food Security at the Global Level

The World Economic Forum (WEF) produced the 2022 Global Risk Report, which identified five key threats to food security: Economic, environmental, geopolitical, social, and technological. The report estimates that half of the risk is natural and environmental. There are other related hazards, such as the loss of biodiversity, erosion of the natural resource base, etc. The loss of food security will have profound social, economic, and health implications.⁵ The UN has stated that the world’s population faces more risk of famine than ever before. Now, in the wake of COVID-19, the SDG target of eliminating hunger by 2030 may be less attainable.⁶

The report of the State of Food Security and Nutrition in the World 2021⁷ indicates that there is an increasing problem of malnutrition around the world. In Africa, around one in five people are suffering from severe malnutrition. An estimated 720–811 million people worldwide suffered from hunger in 2020, 161 million more than in 2019. At the same time, more than 2.3 billion people in the world, or about 30% of the world’s population, suffer from

year-round insufficient access to adequate food. This reflects moderate or severe global food insecurity despite the increase in global food production capacity.⁸

Thus, the FAO has compiled the HLPE Global Narrative report, proposing four urgent policy changes to achieve food safety, adequate nutrition, and sustained food rights, as follows:



Fundamental changes in the food system as a whole by shifting the focus from just increasing the amount of food produced and exported toward diversifying the food system, increasing potential in vulnerable and marginalized groups, and promoting sustainability in all aspects of the food supply chain from production to consumption



Formulation of food policy in a way that recognizes the interconnectedness of systems to ensure that food systems, ecosystems, and the economy work together in a positive way, and to prevent the incidence of zoonoses



Compiling knowledge and understanding of the complex interactions of various forms of malnutrition—it is not just hunger and undernutrition, but also obesity and consumption of non-nutritious food



Formulate and implement flexible and diverse food policies which take into account the specificity of each context, the impact of the pandemic on food security and nutrition in various locations and for different population groups.⁹

Thailand and Food Security

The report of the Office of Agricultural Economics (OAE) and data from the Thai National Statistical Office (NSO) show that Thailand is a fertile country. It is an

important source of cultivation and production of many foods. As a result, food security is at a high level. The Economist Intelligence assessment in 2019 found that Thailand's food security score was 65.1 out of 100, and was ranked 52nd out of 113 countries that have been assessed. The OAE has calculated the rank order of production and food consumption in the country between 2015 and 2019. It was found that the main foods that Thai people consume are rice, chicken eggs, chicken meat, pork, and shrimp (Table 1). The food with the top five export values are



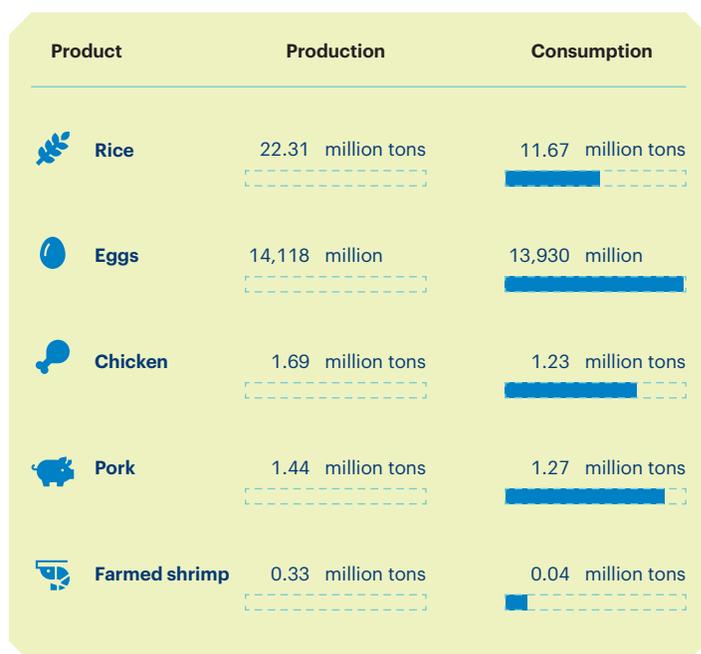
The top five imported agricultural and food products are



However, COVID-19 is affecting food security in Thailand across the following four dimensions:

1 Not having enough food: In the early stages of the COVID-19 crisis, people were shocked and angry that there would be a shortage of food. As a result, there was food hoarding. Later, food supply chain problems occurred, including transportation, distribution of produce, purchasing, and export of agricultural and food products.

Table 1 Top foods by consumption in Thailand in 2015–2019



Source: Office of Agricultural Economics, Ministry of Agriculture and Cooperatives

2 Impact on access to food: At the beginning of the COVID-19 crisis, some people could not access the food they needed because it could not be bought or the food was too expensive. Some businesses had to close temporarily or permanently. Workers were laid off or their salaries reduced. The urban poor who used to have access to food became food inaccessible.

3 Effects on food utilization: The people had to adapt to the new way of life experienced profound changes in food consumption behavior. For example, more food items are ordered online, and they may be insufficient in nutritional value.

4 Impact on food stability: People did not have access to adequate food when they needed it. For the first time, many people were at risk of not accessing the food they were accustomed to, and that affected overall food stability, especially in the early and middle stages of the COVID-19 crisis.

Domestically, Thailand faces food security problems in many locations, such as Bangkok, which has an average agricultural area of 24%, making food production in the area less viable. Bangkok was, therefore, particularly vulnerable

in terms of food security when COVID-19 erupted. This resulted in many members of “the urban poor” experiencing lack of access to a subsistence food supply.¹⁰ A 2020 study was conducted on the impact of COVID-19 and social measures on food security of low-income people in slums in Bangkok. The study included a sample of 900 people from nine communities. The study found that the majority of the population (85.4%), experienced food insecurity, primarily caused by not having enough money and rising price of food staples. They also had difficulty leaving their community to buy food. About 8.9% had to rely mainly on donations of free food, and 21.9% had to cut down on one meal per day.¹¹

During periods of lockdown, middle class families hoarded food to the point of causing food shortages in stores and markets. This aggravated the hardship of the vulnerable groups who were daily income earners. They were unable to make a living and this led to a shortage of income and, then, food inaccessibility. This situation occurred in both Bangkok and other provinces. There was also a shortage of children’s food due to measures to keep schools closed for an extended period. Normally, children from lower-income families had been dependent on the subsidized meals through the school lunch program.¹² The study also found that too many Thai children consumed an unbalanced diet, and that threatens to impair physical and mental development.

In sum, the group with the most risk of food insecurity is the lower-income segment of the population. Many workers lost their jobs or received less salary as factories and worksites had to close or reduce hours of operation. Informal workers such as independent entrepreneurs, street vendors, market stall workers and day laborers were severely hit by the economic decline. The tourism and export sectors were the profoundly affected. At the same time, people had to cook meals for themselves more than ever before, as the number of people cooking at home increased by 75.8%.¹³

Addressing the Problem of Food Security in Thailand

The development of a food security plan begins with a discussion of the conceptual framework and definition of the term “food security” based on the concepts at the World Food Summit in 1966 in Rome, Italy. Subsequently, food security became a key framework of the UN SDGs and Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Thailand started a series of reports on food security and nutritional status of Thai people (2005–2011), and the OAE is responsible for overseeing and setting policies to cover both production, development and protection of agricultural areas, etc. In addition, laws related to food security have been integrated to be consistent and suitable for the situation, such as the National Food Committee Act, Intellectual Property Law in plants and organisms, Community Forest Law, and laws protecting food for agriculture, among others.

In 2012, Thailand drafted a food management strategy framework under the supervision of the National Food Committee with principles for Thailand to have sustainable food security, manage resources for food production efficiently, and mobilize participation of all sectors. The framework includes strategies such as land tenure reforms,

water and soil management, food development by increasing incentives for farming, promoting access to food at community and household levels, logistics improvements, strengthened collaboration between government/private sector/communities, research and development of innovations throughout the food chain, and organizing a system to support food security in times of crisis.

Later, in 2017, the National Food Committee drafted the 2nd Strategic Framework for Food Management in Thailand (2017–2036), which is a 20-year plan. Food security is still the number one strategy of that framework, and the strategy also connects to SDGs. The strategy calls for

“Thailand to be a sustainable source of high-quality, safe, and nutritious food for Thais and the world.”

It implies that Thailand will not only be a food producing country, but will also be a significant supplier. The aim is to increase national income through food exports, while ensuring that all Thailand eat well, enjoy happiness, prosperity, and sustainable livelihoods.

In addition, in 2022, the National Food Committee drafted a food management action plan for Thailand Phase 1 (2023–2027), as

a five-year plan, so that relevant agencies can start implementing the strategy under a unified vision. The plan calls for linkages across all dimensions of food from upstream, midstream, and downstream components, and be in line with the relevant SDGs.

Overall, Thailand has excellent potential to achieve good food security and, nutritional self-reliance, with measures and mechanisms to promote food production, marketing, and service development. However, in terms of vulnerabilities, studies show that Thai farmers and small entrepreneurs still lacked a strong and sustainable group or network. There is a lack of knowledge, information, and technology in production, processing, marketing, and providing high-quality services. Cost of food is also rising due to inefficient logistics and lack of unity and integration of various agencies and partners at the central, provincial, and local levels. The relevant laws and government regulations lack flexibility and, thus, it is harder for the country to adapt to changes in technology, society, and modern trade/ Finally, too many consumers opt for poor quality food, which is already contributing increases in preventable non-communicable disease.

The “Provincial Health Assembly” in 66 provinces of Thailand represented a collaboration to strengthen the public policy process in issues of “Food security - safe agriculture.” Based on that brainstorming, the following are some recommendations for addressing food insecurity:¹⁴



Source: unsplash.com/photos/nd2P5OkWkMs

1

There should be markets for food which is produced according to food safety methods, such as food for hospital patients, or school lunch programs. There should be promotion of these types of markets both at the community level and products destined for the international market. The aim is to address weaknesses of Thai farmers who still lack access to clear and high-quality markets and services.

2

Farmers must adapt to alternatives to produce food that has shifted from commodity markets with low unit prices, to penetrate the local market or high quality market to get a higher unit price. The aim is to address the weaknesses of farmers and small entrepreneurs who still lack knowledge, information, and technology in production, processing, and marketing with higher safety and quality.

3

It is necessary to review various master plans in order to adjust the approaches/methods and tools so that they are in line with the current crisis environment. There should be more attention to the “right to food,” which is rooted in international law, and used in the formulation of relevant policies.

There is a need to revise policy to promote competitiveness and increase the role of entrepreneurs in small- and medium-sized food businesses in rural areas. There should be more effort to connect small farmers with supply chains and consumer needs, as well as creating fairness and sustainability of food distribution to create food security.

There is a need to adapt from the era of eating out in food shops or restaurants to buying food or food stuffs to take back home to eat. Families should practice more home cooking. Online commerce should be promoted and supported to achieve more secure distribution of food, especially if it increases access to healthy food for more people.

There should be more support for green markets in the community to achieve self-reliant agriculture by focusing on buying things from the community market near the house. Buying local food and shopping at farmers’ markets should become a norm to increase access to healthy food for all population groups.

There is a need to encourage the sale of food in the form of the “Phum Phuang car” or a mobile food peddler which uses a van or pick-up to bring fresh products for sale in communities. The aim is to create food security for vulnerable groups such as the elderly, people with disabilities, or people in remote areas to increase access to healthy food for all population groups.

Promote the cultivation of vegetables and fruits in households and communities in both urban and rural areas to reduce food expenses and become more self-reliant in food.

4

5

6

7

8

Summary

Food security is becoming more of a global issue due to food shortages and malnutrition caused by the COVID-19 pandemic and chronic problems in the production and transport of food products. Food importing countries are adversely affected by reduced supply of products and increasing prices of staple goods. This situation is exacerbated by the reduced income of many people due to the economic slump. The present challenges threaten the ability of countries to achieve the UN SDGs on food security by 2030. Thailand has already prepared two Strategic Frameworks for Food Management aiming for food security and nutrition. The aim is for the country to be a source of high quality and safe food. However, many Thai farmers and small entrepreneurs still lack strong and sustainable associations/networks, including a lack of knowledge, information and technology in production, processing and marketing. Thus, all sectors should have guidelines for promotion and development in various areas such as developing a market for safe food and high-quality food with higher unit prices increase the competitiveness of farmers and promoting green markets in the community to increase access to quality and safe food in the locality.

“ The scandal of “Phra Bida” showed how too many Thais are fooled by fake healers. However, the problem is exacerbated by the fact Thailand has excessive prevalence of chronic disease and patients in the emergency room. Thais still refrain from going for medical services only until the point when they are severely ill. This reflects the limitations in health literacy that will help many Thais to change poor health behaviors and restore a healthy balance in their lifestyles, occupation, and daily life. ”

Introduction

In May 2022, the police arrested a man claiming to be “Phra Bida,” or a bogus healer, in Chaiyaphum Province. He instructed his disciples to consume human urine, feces, sputum, and scurf to cure disease. The police discovered 11 human bodies stored in the area of “Phra Bida’s” workshop. A large number of people from all over Thailand had been going to this sham healer dating back to 2010. Complaints of patients who were not healed (or made worse off) started to accumulate. **There is the story of another patient who went to Aunt Cheng (another sham healer) for treatment for an inflamed eye.** The eyedrops she received made the condition much worse, resulting in the need to remove the eyeball entirely. **Such incidents have continued to be reported as hearsay over the past several years.** If more Thais had a better understanding of health, and developed a trust of modern medicine, then these types of con artists would go out of business. People could save their money and improve their health simply by being better informed. This article discusses the issue of health literacy which is one of the factors affecting the health behavior of Thai people. The article considers the dimension of meaning, concepts, and development guidelines to promote health literacy for Thai society.

The cases of “Aunt Cheng” and “Phra Bida” reflect that better information and communication of the medical and public health system is necessary to help change health behaviors of Thais. **Thailand needs to change the way it is implementing health education and health promotion into health literacy.**



Picture of field assessment by the Region 9 Health Center in the vicinity of the area which the local people call the “Office of Father Joseph” in Khon San District, Chaiyaphum Province. The inspection revealed many unsanitary practices and breeding places for disease.

Source: hpc9.anamai.moph.go.th/th/news-anamai-2/211141

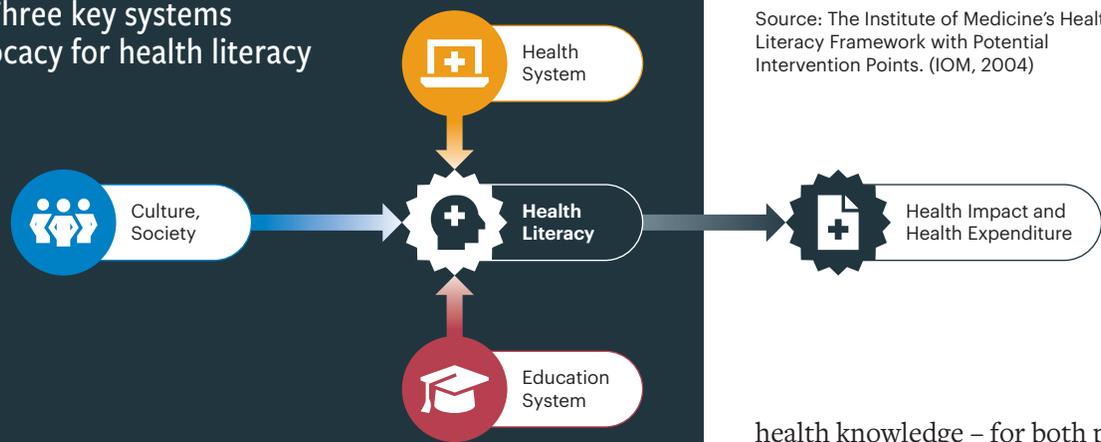
People need to be able to inquire, access information online, and to assess what are reliable sources. That way, health consumers can make informed decisions and planning for self-management toward better health outcomes. **The goal is to accelerate the development of all Thais to be health literate individuals and the Thai society to be a health literate society.**

In addition, low or inadequate health literacy in Thais is also one factor that contributes to excess morbidity and mortality from chronic disease. If people with chronic conditions do not practice prevention and health maintenance, then the result will be an overuse of the emergency department or the outpatient department when the symptoms become acute or severe. This situation is a regular feature of the Thai medical service system, partly due to the fact that a number of people are unable to follow health advice or unable/unwilling to modify their lifestyle. Therefore, it is imperative to help all Thais to have health knowledge and developing their own potential to manage their health, so that they can access, understand, and use information to make correct health and medical care decisions.

Health Ecology Concept

In 2004, academics from the Institute of Medicine¹ explained that health literacy is caused by two main factors:

Figure 1 Three key systems in the advocacy for health literacy



Source: The Institute of Medicine's Health Literacy Framework with Potential Intervention Points. (IOM, 2004)

health knowledge – for both practitioners and patients. Leaders in organizations or social systems

(1) The individual; and (2) The society. People who are well-versed in health are people who have the potential to access information, understand it, and use it to make accurate decisions. They can make a self-management plan in the context of their own life or environment to achieve health and happiness. For the part of society, this refers to a society that has organized conducive factors, such as a physical structure, technology, system, peaceful coexistence agreement, and services that enable individuals to develop their potential for health literacy in line with social changes and the real economy.

For a person to have appropriate health knowledge, it is their duty to learn and develop themselves. However, various systems in the society also have roles to create well-informed health. There is **the family system** where individuals have been nurtured and educated birth, such as living together in the family, and absorbing ethnic practices and culture which also includes ways of thinking, beliefs, religion, and values that affect decision-making. When reaching the age of entering the education system, the goal of **the education system** is to help students acquire the ability to read and write, use numbers, and use language to communicate. Students engage in activities that focus on reading, writing, analytical thinking, and interpretation, which help learners acquire the ability to access, understand, and make informed decisions. Another important system is **the medical and public health service system** or, that is to say, the hospital. This system must provide services with the concept of

need to have a development plan that covers the provision of information in a simple, structured, and mechanistic way to enable people in society to access information and use it to skillfully manage their lives toward achieving optimum health and fewer illnesses, thus reducing the cost of treatment (Figure 1).

In the cases of “Aunt Cheng” or “Phra Bida”, using the conceptual framework of the Institute of Medicine, it can be explained that such problems (of bogus healers who con patients) are only a problem in a society where people have limited literacy or analytical ability. People who are thought leaders have a relationship and bond with people in the community, and that can build trust and easy understanding among them. That way, learners share information by word of mouth and personal experience in a network of people who share a common culture, rather than obtaining information from a technical source that would be difficult to understand. Therefore, the solution to the health literacy problem in both cases **is to develop the health knowledge of society, based on science of public health and medicine. This is a form of empowering people, society/communities, by providing information that is easy to understand and creating a sound, decision-making culture with shared, accurate and factual information among service recipients, families, and service providers or hospitals and education systems, both in the formal and informal systems or lifelong educational process.** The minimum goal is literacy and the final goal is a Thai population with self-determined optimum health. In other words, the health literacy conceptual framework aims to change behavior at various levels, with connections at the individual level and the level of the social environment also known as **Health Ecology Concept**.^{2,3} That conceptual framework has been used as a basis for developing health literacy in the European Union, with the aim to develop the health of the individual and population or society as a whole.

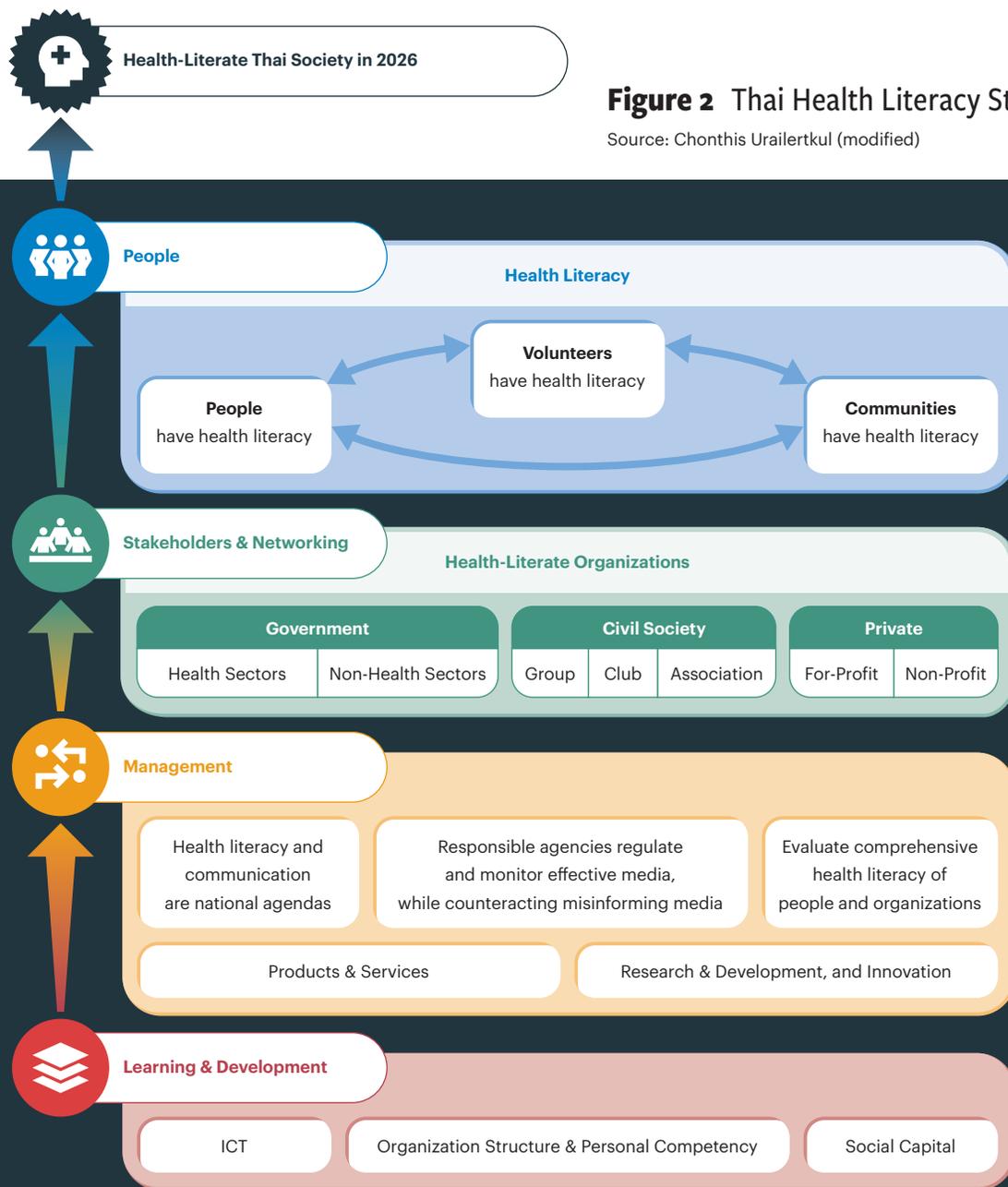


Figure 2 Thai Health Literacy Strategy

Source: Chonthis Uraierkul (modified)

Improving Health Knowledge for Thais

Advocacy for the development of health literacy in Thailand started to gain traction when “Health literacy” was inserted into Thailand’s public health reform plan in 2016.⁴ This inclusion ensured that there would be a national plan and indicators for health literacy reform and health communication as part of the strategic plan of the Ministry of Public Health (MOPH). The Department of Health of the MOPH is the main agency with the mandate to promote health literacy in the general population.⁵ All Thai people should have the potential to access health and health services, understand information, and be able to make informed decisions about the health of themselves and their families. Thus, it is not just health/

medical agencies and entities that need to be improved. Various civil society organizations also need to participate in the development effort to create a society and an environment that allows people to access, understand, make decisions, and apply appropriate information for health care.

The MOPH has made health literacy a part of its 20-year strategy. The goal is to make Thai society a society of health literacy.⁶ Every organization needs to organize systems, processes, and services that focus on information and communications that enable their personnel to have the ability to communicate accurately about health and health care. So, service

recipients and network partners both within and outside the health system can gain access, understanding, and application of the relevant information in their lives. This strategy has four components:

- 1 **Basic aspects:** Developing information technology and communication and social capital, including the restructuring of agencies and building the capacity of personnel
- 2 **Process:** Producing goods and services that promote access, understanding, knowledge and communication, supervision, monitoring, assessment of knowledge of both people and organizations including research and development of various innovations
- 3 **Network Partners:** Developing various organizations in the public, private and civil society sectors to be health literate organizations
- 4 **People:** Making people and communities aware of health literacy by connecting with health literacy volunteers. (See Figure 2.)

For the advocacy movement, there is a joint operation between the main agencies, i.e., the MOPH, with the Department of Health as the main driver, in conjunction with the Thai Health Literacy Promotion Association and the

Faculty of Public Health of Mahidol University. The Department of Health has proposed a conceptual framework for health literacy operations in Thailand and a conceptual framework for developing personal health literacy.⁷ The framework consists of four aspects:

- Health promotion
- Disease prevention
- Arrangement of health services
- Screening and selecting health products

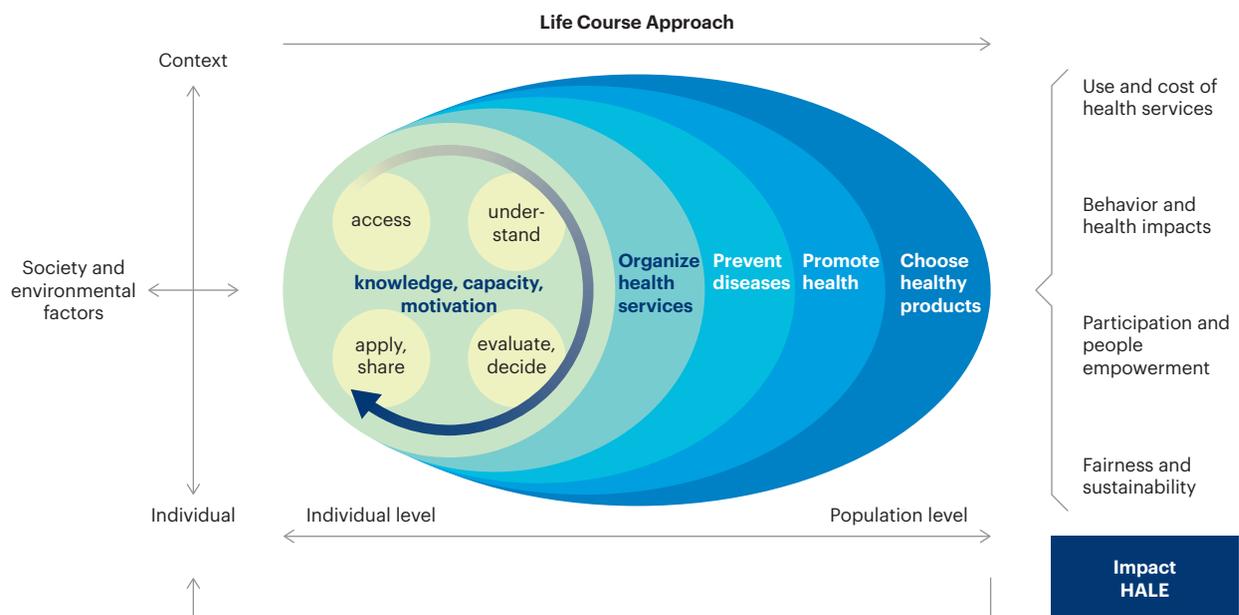
This is in addition to the conceptual framework for health literacy development in the European Union. The EU framework has three aspects (health promotion, disease prevention, and health service provision), and uses the V health literacy dimension. The V-shape consists of

- Assessing
- Making decision
- Understanding
- Changing behavior
- Asking
- Telling

with development throughout all ages in various environmental contexts according to the life course approach to health (Figure 3).

Figure 3 Conceptual Framework for Health Literacy in Thailand

Source: Chonthis Uraierkul (modified)



The Department of Health has carried out various advocacy activities.⁷ These activities include organizing a platform to drive health literacy at all levels (e.g., national, regional, provincial, etc.); and supporting policy adjustments of various sectors in both public and private sectors. The aim is to enable use of information related to health, including determinants of health. The Department prepared 66 main communication issues for health literacy which cover information, knowledge, and basic health skills for all age groups. There was collaboration with other parties in the development of a health information system. Partners worked on an assessment of health literacy of Thais age 15 years or over, which was first conducted in 2019. The Department helped develop a measurement tool based on the aforementioned Thai health literacy conceptual framework, and developed a health literacy organization (HLO), which is being piloted in many organizations and place of service, especially health facilities. The providers need to develop or adjust the service system to facilitate access and understanding of service recipients to be able to assess information and lead to informed and accurate decision-making for their own health care.

Developing Communities That Are Health-Literate

Promoting health literacy and health behaviors of people in localities is critical to the success of the Thai health literacy strategy. The process can be driven by a health literate community which focuses on giving the community the ability to solve the problems of the community itself with the participation of network partners in both the public and private sectors. That way, people will see the importance of health in all age groups by participating in planning, developing, and promoting health literacy. Chanuanthong Thanasukan et al⁸ introduced the process of developing public health knowledge as follows:

Learn about the community and people in the community, which is a study of human capital, social capital, information on the context of the area, public health status, health literacy information and health behaviors that cause health problems. This includes information on the needs of each target group by age.⁹ In this regard, a program for collecting and processing data may be developed so that communities can use it to design and plan operations more easily.

Search for human capital, social capital. Human capital is a person/persons who will help drive or work successfully through natural talent or prowess. This includes leaders and youth in various fields. Social capital is a network partner who works together to support or help communities in various fields.



Public relations image of the activity: “Health–Warmth” conducted by the Department of Health to upgrade health facilities to be health-literate organizations.

Source: oec.anamai.moph.go.th/kpw-2566/download/?did=211559&id=97965



Training workshop for personnel with direct care and communication responsibilities for patients, e.g., nurses and pharmacists, in providing comprehensive health information to the public by the Faculty of Medicine, Siriraj Hospital, Mahidol University

Source: https://www.si.mahidol.ac.th/hotnewsdetail.asp?hn_id=2370



Region 12 Health Center, Yala: Upgrading to boost to be health literacy of the population and sanitation facilities.

Source: maekreecity.go.th/?p=15015

Search for knowledgeable people in different groups of health, such as people who like to ask questions, data-driven decision-makers, a person who can tell about the success of self-transformation, etc., to bring knowledge or as a supporter or reinforcer in operations, such as being a role model and conveying success and help peers who have the same problem.

Encourage participation with the information obtained from the above community learning, such as information on illness, occupation or health literacy level to communicate with the network and people of all age groups. The aim is to find ways to plan the development of a health literate community.

Make decisions together in planning and setting goals or indicators of action by emphasizing the collaborative learning process with information and deciding together, using communication that is easy to understand, such as pictures, maps, tables, charts or stories.

A collaborative mechanism is established with division of roles to help each other to operate.

Organize activities to increase community health literacy. There are both learning and health communication, including developing or providing an environment that is conducive to increasing knowledge in various ways.

Compile lessons learned and produce evaluation results to lead to further development of the success of the past operations as well as being an example for the development of other communities in the future.

Implement continuous improvement



The Department of Health trains novice monks to have comprehensive health knowledge and engage in appropriate physical activity to promote health and prevent non-communicable chronic disease.

Source: anamai.moph.go.th/th/news-anamai/43308

based on the results from the evaluation, and replicate the successful components with other groups or organizations.

Summary

Health literacy is essential to enable people in society to have the skills to access health and wellness services, and acquire the understanding and choose reliable information until they can make better decisions about health for themselves and their families. In addition, the concept of health literacy aims to change behavior at various levels, such as the personal and social-environment level. This includes health organizations such as agencies, and civil society who contribute to the creation of an ecosystem that is conducive to a health literate society. In the pursuit of personal health literacy, Thailand has focused on four areas:

Health promotion

Disease prevention

Arrangement of health services

Screening and selecting health products

At the community and social levels, various network partners play an important role in the process of developing public health knowledge, such as understanding the context of each area, searching for human and social capital that will help drive the work successfully, encouraging public participation, creating mechanisms for participation and joint decision-making of people in the community, and preparation of projects and activities to enhance knowledge and skills as well as distilling lessons for continuous operational improvement and replicating the results to other communities.

Wising Up to the “Call Center Gang”

“ In 2021, there were over 6.4 million scam calls from call center gangs in Thailand, a 270% increase from the same period in 2020, and a 57% increase in financial fraudulent SMS messages. There are limitations in terms of law to prevent these scams, and there is a lack of coordination among agencies and “immunity” for people in society. ”

Introduction

Nowadays, Thai people have adopted a lifestyle that is inevitably dependent on smartphones. The smart phone is ubiquitous, whether doing business, ordering goods or services online, teaching, banking, or even medical and public health services. Of course, the convenience that comes with the cell phone comes with a down side. For example, scammers are developing new strategies to con and deceive all the time. We are now talking about a so-called “Call center gang” which operates a scam that is not just about making phone calls to deceive people. The gang uses fraudulent SMS messages with enticements, such as receiving rewards, or getting a bank loan. The gang may create a fake website with fake application forms that imitate various organizations to deceive the victim into revealing personal information. With this initial hook, the gangs can eventually penetrate a victim’s bank account. These call center fraudsters often operate as a network, and set up “ghost” accounts who act as middlemen to open accounts to receive money from victims, which is then passed on to the call center gang. That makes it very difficult for law enforcement to identify the gang. Solving the call center gang problem is complicated because there are many agencies involved. Moreover, existing Thai law cannot keep up with the changing technology and scams. Most importantly, the public needs to be more “immune” to these types of come-ons and not give in to their greed impulses.

Knowing the Call Center Gang

The ‘call center’ scam operation is an economic crime that feeds on fear, greed, and

relationships with the victim. The call center approach to this scam can be traced to Taiwan. At first, the word “call center” was not used; instead, the word “ATM game” was used to characterize this scam. The gang preys on gullible people by calling someone at random and pretending to be someone the victim knows. Next, the victim is persuaded to go to an ATM and transfer money to the scammer. There are two forms of deceiving victims: Deception with greed and fraud with fear.

1 Deception with greed: In this strategy, the victim is promised free money, such as a tax refund, winning a prize, etc. Once the victim takes the bait, they are then told they need to pay service fees to access the promised windfall. Transfers from the victim will go to ghost accounts.

2 Fraud with fear: In this strategy, the scammer will use threats, for example, that the victim is told they owe a phone bill, or bank card debt or the victim’s bank account has some involvement with drugs and their account will be frozen and checked . As with the first strategy, the victim is then given instructions on how to make the payment (to the gang) to clear the fictitious debt such as withdrawing money from an ATM and depositing the money to the scammer’s bank account.

Call center gangs have a formal structure. There is usually a foreign mastermind and a team of operators with different functions. For example, there is a unit which creates new forms of scams or scenarios so that a single scam does not become too familiar. This can involve writing a script and clever dialogue techniques to entice victims through a phone call. The phone operators are trained in how to speak in persuasive ways. Another unit recruits people to set up the “ghost” accounts (for transactions between the victim and the scammer and for illegal trading). Holders of these accounts will transfer money to the gangs. Their bases are in other countries where the laws open for their investments.



Source: unsplash.com/photos/pb_IF8VWaPU

Call Center Operations in Thailand

Call center gangs have spread widely in Thailand, dating as far back to, at least, since 2007 and have expanded rapidly in recent years. The victims are usually elderly people and retired civil servants with savings. Often, many victims are woman who are often frightened by the threats by the caller. The Bank of Thailand (BOT) issued its Bi-monthly Payment Insight No. 14/2565¹ on Financial Fraud: Financial Fraud Is Closer to You Than You Think. That report presented statistics on financial fraud in 2021 by stating that, in total, there were 6.4 million scam calls from call center gangs in that year, or a 270% increase from the same period in 2020, and a 57% increase in fraudulent SMS messages during the same period. The report also references the results of the Suan Dusit Poll by Suan Dusit University in February 2022. Out of 1,221 people sampled, 21% of Thais had personally encountered a call center gang contact, while 32.9% said someone they knew had been contacted by a call center gang, and 40.2% had read or heard about call center gangs from various media channels.

In addition, the BOT has disclosed the value of payment transaction fraud. Financial institutions are able to

estimate the amount of fraudulent transactions. During 2018–2021, the value of these transactions has been constantly increasing. Most of the scams start through the use of telephone and/or Internet to deceive.

2018	600–700 million baht
2019	1,200 million baht
2020	700 million baht
2021	1,500 million baht

This increasing trend in Thailand mirrors the experience of scam calls and texts all over the world.²

For Thailand, online crime prosecution statistics from January to November 2022 show that the main forms of scams can be classified into five groups:³

1 Blocking fraudulent SMS/calls	94,043 numbers
Call center gang prosecution	46 cases
Arrest warrants	60 persons
2 Seizure of ghost accounts	47,245 accounts
Closing social media trading groups for said accounts	8 groups
3 Investment deception prosecution (online fundraising and financial scams)	562 cases
Arresting suspects	578 suspects
4 Prosecution of online gambling	287 cases
The accused	430 persons
Blocking gambling websites	1,691 websites
5 Online fraud prosecution	246 cases
Arresting suspects	253 suspects

Data from the Information Technology Crime Suppression Center of the Thai Royal Police (Cyber Police) summarized 18 forms of online scams of call center gangs afflicting Thai victims, as follows:⁴

- Deceived to buy a product online** but did not receive the product after making payment/or received the product but not as advertised;
- Tricked into doing work online** for cash for jobs do not exist by referring to reliable platforms such as TikTok, YouTube, Lazada, etc. In one scam, victims were enticed to press *Like* and *Share* to increase views and orders. They were finally told to pay money as a guarantee.

3. **Online loan (“Thip loan”):** Victims are guaranteed money, but must first pay fees or divulge bank account numbers. In one scam, the caller claims to be collecting debt for a close acquaintance whose identity they were able to locate through phone contact lists.
4. **Intimidate through fear arousal.** The caller claims that the victim was involved in illegal parcel delivery offense or other offenses, and the victim’s bank account was seized. The caller claimed to be police or a government official. The victim is threatened that they have committed a money laundering offense and need to make an online payment to clear the matter up.
5. **Promoting scam investments in various forms** by claiming to be a financial expert and persuading the victim to invest in businesses with high interest rates but, which of course, do not exist. The caller is able to present a credible image, such as experience in investing in oil, energy, gold, digital currency, Forex stock market, foreign stock market, online games, etc.
6. **Deceive out of professing love and into investing** by disguising one’s profile as a good-looking person. This scam is usually perpetrated through dating websites/ investment applications. The scammer persuades the victim to trust and invest in fake investment applications or programs such as stock trading, digital money, counterfeit currency, gold trading, etc.
7. **A variation of the online romance scam** is that the perpetrator will send fake photos of a good-looking person and seduce a victim to love. The scammer will tell about money transfer from overseas and, at the end, deceive the victim into transferring money for non-existent returns.
8. **Fake or hack** a LINE app account of Facebook account and then requesting to borrow money by posing as a friend of the victim.
9. **Ponzi scheme** by selling various fake investments and urging the victim to set up a network. This scheme generates money by augmenting the number of members.
10. **Online gambling:** The scammers use various methods to rein in the victim, either by covering the cost of the initial wage, and then soliciting bets that will never return any actual winnings.
11. **Some scams trick people into loading** a remote computer control program (to steal personal information) by pretending to be a government official to withdraw money from the victim’s account.⁵
12. **Scammers might send a QR Code to trick the victim to make a money transfer.** In some cases, the victim is persuaded to scan a QR code so that the victim will receive a return of money. Sometimes, the victim is told to provide their bank account information and password to allow the scammer to transfer funds out of the victim’s account.
13. **Other forms of fraud** involve deception by promising a prize for being a lucky draw winner. The promised gifts might be a free hotel room, or other special privileges, etc., but the victim must first pay a fee to the perpetrator who impersonates a banks, post office, the Customs Department, etc. by sending fake account links.
14. **Some scams invite people to work abroad,** but are then trafficked into forced labor or to work illegally.
15. **Some scams persuade the victim to take photos** that are nude. The victim is then blackmailed to make payments to the scammer who threatens to share the photos.
16. **Some victims are recruited into creating “ghost” accounts** and become entangled in fraud and money laundering.
17. **Scammers will send fake news,** as chain messages from unreliable sources that are forwarded through the LINE application.
18. **Ransomware** locks files and folders on computers of individuals or companies who then have to pay the perpetrator to unlock the files.

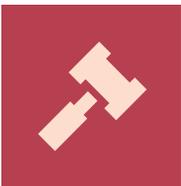


Factors Which Are Exacerbating the Problem



[1] Ghost accounts: This tactic is becoming more sophisticated as the gangs are continually changing their ruses. Investigating and arresting members of these gangs requires cooperation from many domestic agencies and, sometimes, international cooperation. This is because these operations are often based in neighboring countries. The sources of funding to establish these gangs also is hard to trace or may actually have support from the host country where the gang operates. To trace or obtain a search warrant for phone numbers or websites used by scammers usually requires a court order. It is also difficult to track down the ghost accounts and close them.

What is more, the law is not keeping pace with these illegal activities and, thus, it is not always possible to identify an action as a crime that can be prosecuted. This is true of any con game in which gullible victims are sometimes viewed as complicit in the scam. In Thailand, the current law has not specifically defined the offense of opening a bank account that is used as a ghost account. Thus, other laws must be used in the prosecution. In addition, there can be multiple layers of ghost accounts through which the scammed money is laundered. Mobile banking or mobile application makes it very easy for transfers to these accounts. The bank's official process to suspend the victim's bank account takes too much time. As a result, the withdrawal of money from the bank account cannot be suspended in a timely manner, and it takes time to trace the money back to the victims. More and more Thais are being hired to open a ghost account, and this is considered the upstream problem of this movement. The gangs are generally operating with impunity, and that means the problem will only get worse.



[2] Legal constraints: Currently, in Thailand, there are several laws which can be used to prosecute call center gang crimes. But these are still too general and not tailored to the nature of the crimes. The following is a brief summary of those laws and punishments:



The offense of importing false information into the computer system causing damage to the public under the Computer Crimes Act B.E. 2550 and its amendments, Article 14 (1) in conjunction with paragraph two which has the rate of imprisonment not exceeding three years or a fine not exceeding 60,000 baht or both.



Offense of fraud to deceive people according to the Criminal Code, Article 342, paragraph two, with imprisonment from six months to seven years and a fine from 10,000 to 140,000 baht.



An offense under the Anti-Money Laundering Act B.E. 2542 whereby a person commits the offense or is conspired to do so will be guilty of money laundering or being an accomplice, with a high penalty, i.e. imprisonment ranging from one year to ten years or a fine of 20,000 to 200,000 baht, and the seizure of assets as well.

Even though the laws have strong penalties, they are not always commensurate with the damage caused. In addition, each law is specific to a certain offense. The law may not cover all behaviors and actions of call center gangs. Therefore, it is necessary to have a specific law to facilitate the crack down on online and phone call scams. Ministry of Digital Economy and Society has joined forces with various agencies such as the Anti-Money Laundering Office (AMLO), the Royal Thai Police, the Bank of Thailand, the Thai Bankers' Association, and the National Broadcasting and Telecommunication Commission (NBTC) to prepare a draft Decree on Preventive Measures and Suppression of Online Fraud B.E. ... This draft has been submitted to the Cabinet for consideration. This draft law will have penalties for trading and creating ghost accounts, and enable banks to exchange information with each other when there is suspicious behavior and suspend such behavior. This draft Decree should help fill the loopholes in the law to suppress call center gangs, from upstream to downstream. On January 24, 2022, the Cabinet approved the draft bill.⁶

Social Advocacy to Address the Problem

Call center gangs and online scams are becoming a serious problem in Thai society at all levels. Victims stand to lose life savings and unrecoverable property. So far, the government and law enforcement have only been able to address the problem after the fact. This lack of progress is mobilizing civil society to call on network operators and the public themselves to be aware of this problem and act to prevent it. There is an online forum called “Digital Thinker: Let’s find a solution to solve the problem of criminals in the 5G era” moderated by the **Thailand Consumers Council** and **Cofact Thailand**.⁷ Ms. Saree Ongsomwang, Secretary-General of the Thailand Consumers Council, stated that the worsening problem of call center gangs is prompting the Council advocate for adding this crime to the “National Agenda” because the ease of scamming is a sign that reflects that Thailand has reached a critical level of personal data leakage.

In the words of Ms. Saree: “In 2021, the Thailand Consumers Council gathered more than 4,000 people to petition the relevant departments to investigate and resolve the issue. The Council has continued to petition this year in order to mitigate the problems of consumers being deceived in the telecommunication system. Any solution requires the cooperation of many sectors. However, the scams are always one step ahead of the consumer’s awareness. Therefore, it is the main duty of the Council to help consumers become more aware of these issues until there is a one-stop solution. So far, the problem has persisted and is getting worse, without any concrete solution from the relevant agencies. Therefore, the Council believes this is an urgent matter that needs a comprehensive solution as soon as possible.”

In the past, the Thailand Consumers Council has tried to publicize the number of frauds and scams that should be monitored over time. However, at present, the scammer gangs operate internationally and in ways that are very difficult to trace or apprehend. The victims’ money can be laundered in a matter of only 15 seconds, and through multiple ghost accounts. Some gangs convert the cash transfers into cryptocurrency, making it much harder to get the money back. The public is being warned to always check the destination bank account at the website Blacklistseller Online fraud detection hub. If consumers have already been scammed and lost funds or property, then they can file a complaint with the local police or proceed through the online system of technological crime of the Royal Thai Police. However, speed of three hours after a scam is of the essence in order to close the ghost accounts.

Assoc. Prof. Dr. Sumonthip Jitsawang, Lecturer, Depart-



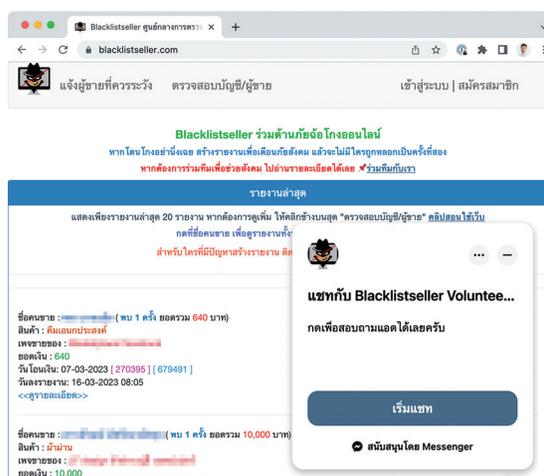
Promotional image for the online seminar on “Digital thinkers collaborate to fight crime in the 5G era”, convened by the Thai Consumers’ Federation and Cofact Thailand.

Source: facebook.com/tccthailand/posts/pfbid02rAp16nszQaWkvvDhmxXUhePo4CfRtNbzV8E1C7K3hycmgoyud3ZkqeUwf48cztzl



Ms. Sari Ongsomwang, Executive Secretary, Thai Consumers’ Federation, during the online seminar on “Digital thinkers collaborate to fight crime in the 5G era”, convened by the Thai Consumers’ Federation and Cofact Thailand.

Source: tcc.or.th/01042565_article-sms



The website blacklistseller.com

ment of Sociology and Anthropology, Faculty of Political Science, Chulalongkorn University⁸ proposed that there should be a specific center for the prevention and suppression of call center gangs in the form of a War Room, with the Prime Minister ordering related agencies to assign staff to work in the center, such as the Department of Special Investigation, the Ministry of Digital Economy and Society, financial institutions, NBTC, AMLO, the Revenue Department, etc. Officers at the director level must also be involved to ensure efficiency of operations and flexibility in the implementation of prevention and suppression and policy both in Thailand and abroad. This includes providing assistance to victims. Establishment of this center is highly essential as fraud-related crimes are complicated with involvement of transnational criminal organizations that utilize advanced technologies.

In addition, various sectors have played both reactive and proactive roles against the operation of call center gangs. For example, the Thai Media Fund provides opportunities for agencies, groups of people, and the media to come together to carry out projects that are of the public interest, especially in the area of communication. They create tools and campaigns to build social immunity for the public to know about call center gangs, fake news, and cyber-bullying. Among good examples, the Sure and Share Program is broadcasted on MCOT HD station and a media project is collaborated by media outlets to carry out campaigns to educate youth and media people to be immunized. They will be aware of the problem of call center gangs and serve as an important intermediary voice in communicating to the public. There is also a project to shield from social media threats⁹ and use “social media” accurately, and constructively.

The problem of call center gangs has also created awareness for many agencies of the need to cooperate to drive solutions.¹⁰ For example, the Multilateral Working Group on Troubleshooting Phone and Short Message (SMS) Scams was led by Dr. Pravit Leesathapornwongsa, Chair of the Subcommittee on Consumer Protection in Broadcasting and Telecommunications at that time. The

Subcommittee had a working group with representatives from 11 agencies working together as a multilateral effort.¹¹ The said working group proposed that holders of telecommunication licensees Type 1 (without their own network) and Type 3 (with their own network) collaborate to find a way to add a “+” sign in front of all calls coming from abroad, and proposed that people can opt out of incoming calls from abroad on their own.¹² At the Multilateral Working Group Meeting on July 19, 2022,¹³ the members proposed that the NBTC consider the terms and conditions attached to the license for all mobile phone operators. There should be a system or application that allows people to choose to subscribe to a service to reject calls from abroad. That would help shield the public to some extent from these scams and frauds. In addition, the NBTC and the police have set up measures in cooperation with international direct dialing providers (IDD), for example, by suspending incoming calls from abroad with national telephone codes (Country Code) unlisted by the International Telecommunication Union (ITU). There would also need to be investigations of illegal incoming calls from abroad, among other measures.¹⁴

Summary

Call center gang fraud is an economic crime that causes enormous damage to Thai people and society. In the past, the solution was not as effective as it should have been due to legal limitations, lack of coordination between agencies, and verifying the offender’s information. Control and prosecution require cooperation across a large number of state institutions, banks, telecommunications, and private entities. The Bank of Thailand has continued to address the problem by requiring banks to verify the name of the owner of the phone number and the name of the deposit account so that they match. In addition, mobile banking should be limited to one phone number per device, with a system to prevent fraudulent transfers and constantly alerting customers via mobile banking. It seems that cooperation from all concerned parties is not serious enough. However, there is a sign of progress, by virtue of the Draft Decree on Preventive Measures and Suppression of Online Fraud. This can address the problem of ghost accounts, and facilitate the exchange of bank information and filling loopholes in the law across many areas. Ultimately, however, the public needs to be aware of the call center gang, and be more astute in processing the information they receive on their phones and other electronic devices. Public awareness, combined with the expanding multilateral cooperation with the public and private sectors should lead to sustainable progress against this scourge.

“ In 2022, the proportion of the Thai population that is older persons surpassed 20%. That makes Thailand a ‘Complete Aged Society.’ In 2040, or less than 20 years from now, the number of older Thais will increase to 20.5 million, or 31.4% of the total population. Thus, it is urgent and imperative that Thailand prepares for its rapidly aging population at the individual, family, community, society, and country levels. ”

Introduction

The United Nations defines “older persons” as the population of both males and females age 60 years or older. For Thailand, the definition of “older persons” according to Article 3 of the Elderly Person Act B.E. 2546 means a person who is over sixty years of age. Thailand first reached the classification as an Ageing Society in 2005 because, at that time, the population age 60 years old or over was 10.4% of the total. It was projected that, in the next two decades, the population age 60 years or over would exceed 20%. That would mean that the Thai population would transition from an Ageing Society to an Aged Society in just over 20 years—or one of the fastest transitions in the world. By contrast, developed countries such as France, took 115 years to make that transition, or Sweden, which took 85 years, etc.¹ This situation means that Thailand, which is still a developing country, must accelerate preparations to support its exploding population of senior citizens. Being an increasingly aged society will have impacts in various areas, such as labor shortages, lack of survival income of older persons, the allocation of limited resources to increase the welfare of older persons, etc. All these dynamics are leading to urgent policies and strategies for accommodating the older person generation.

In 2022, Thailand had a total resident population of 66.8 million people, with 13 million older persons, or 19.5% of the total.² This is a very rapid increase. In 2040, the number of older Thais is projected to increase to 20.5 million, or 31.4% of the total, and that would classify Thailand as a “Super-Aged Society.”³ Currently, various policies and measures are aimed towards “healthy ageing”⁴ and “active ageing.”⁵ This article discusses the aging society of Thailand, the impact in various fields, policies and strategies for entering an aging society, and suggestions for preparing for the aging society.

An Aged Society and Impacts

The transition toward an aged population is already affecting many aspects of Thailand, including the economy, society, health and environment, labor shortages, importing millions of workers from neighboring countries, resource allocation, and welfare for senior citizens. This phenomenon is presenting challenges for organizing health services and caring for older persons which depends on producing an increasing number of geriatric care personnel and aides. This is also impacting on the development of infrastructure and urban planning that facilitate the

living of older persons, etc. The following are some of the most salient impacts:⁶

Economic Impact

An aging society changes the population structure by increasing the proportion who are older persons. At the same time, the proportion of the working-age group steadily shrinks. As a result, there is a labor shortage in the agricultural, industrial, and service sectors. In addition, labor wages and production costs are rising. As a result, economic growth slows down in the long run, forcing Thailand to import more workers. Despite the use of machines and robots to replace more workers, many types of jobs still require manual labor. This is especially true for geriatric care. In addition, an aging society is one where the number of consumers has not grown and the economic growth has decreased. This inevitably affects investment and savings. The opportunity to earn extra income of the older persons dwindle, and older persons in retirement tend to rely more on extra income from their children or younger relatives. Revenue from income tax of the working-age population also declines, making it difficult for government to subsidize care and services for senior citizens. As for the government sector,

there is an overall increasing burden of social welfare expenses. As a result, the country's investment budget and savings decrease as well. If Thailand is unable to elevate the development of the country to have greatly increased labor productivity, the older population may depend on the welfare of the state, and this could lead to a budget deficit and affect the country's economic stability in the long-run.

Social Impact

Having a larger proportion of older persons causes a higher dependency rate for the working-age group. This group work hard for their old age dependents. The young generation pays the higher tax as the government will sustain a larger budget deficit. At the same time, the social welfare cost of supporting more older persons will further strain the state budget. More older persons will be living alone, and suffer from lack of interaction with younger family members or peers. Some may feel abandoned and lonely, and that can rapidly erode their mental health. Some may feel they are a burden to their children. This causes feelings of resentment and depression, and worsen health problems such as chronic diseases and conditions of older age. Deteriorating health usually requires closer supervision and higher medical expenses that go against the shrinking income. Many Thai older persons fail to prepare savings and investment in their working years. Lack of discipline in savings and lack of financial literacy, may result in the lack of opportunities to earn income from investments, both domestic and overseas.

Impact on the Environment and Housing

The project to review, synthesize and prepare proposals for strategies for Thai older persons was produced by Prof. Dr. Worawet Suwanrada et al. (2022).⁷ The project report concluded that environmental and housing dimensions are important to the health and safety of older persons, with 5% of the elderly having accidental falls inside and around the house. Therefore, the environment and home design need to install equipment to facilitate the older residents. In addition, 3% of Thai older persons are home-bound and/or bed-ridden, and 1% are unmarried and living alone. About 17% of Thai older persons have less than 40,000 baht per year income from all sources, and have no savings at all. Thus, if they have an acute health crisis and need to hire a caregiver, it may be unaffordable for them. Therefore, the care and welfare system for these vulnerable

persons has to be massively expanding in the coming years and decades. Ideally, older persons will be able to remain in the family home and home community for as long as possible, and be able to manage activities in daily living (ADL) by themselves for as long as possible. The challenges will be especially large in the big cities of Thailand. There are bottlenecks in primary health care, and there is a lack of a comprehensive public health volunteer system. Since the aging of the population has come so fast, there has been little preparation or attention to the design of ecosystems and architecture to support an aged society. In the future, environmental and habitat concepts will need to be modified, and there will need to be various products for supporting older persons.

Health Impact

An aging society has implications for the country's health care system. The main health problems of older persons are chronic, non-communicable diseases or conditions, such as cancer, cardiovascular disease, respiratory disease, diseases related to disorders of the sense organs, loss of vision and hearing, and neurological disorders such as dementia. Therefore, the public health service system must be continuously adjusted. This will entail a very high budget expenditure. Therefore, it is necessary to focus on enabling the population to take care of themselves in old age for as long as possible, and reduce health risk factors while still in the working age groups, such as smoking, excess alcohol consumption, unsafe sex, high blood pressure, high body mass index, etc.⁸

Policy and Strategies for Older Persons

From the changes in the population structure that are occurring in Thailand, the country's leaders and policymakers are becoming increasingly aware of the challenges the country faces by being a rapidly aging society.

The first national plan for older persons was developed in 1982, largely influenced by the World Assembly on Aging in Vienna, Austria in 1982. Thailand produced its 1st National Plan for Older Persons (1982–2001), followed by the 2nd Plan (2002–2022), and currently in the 3rd Plan period (2023–2037).

On May 17, 2022, the Cabinet approved the draft population development plan for long-term national development 2022–2037. The plan focuses on three dimensions: **Quality births; quality of life and participation in the development of the country; and quality aging and death.** The overall plan has similar strategies and calls for action as the 3rd National Plan for Older Persons, but with an added section addressing the development of medical and social care systems for older people, and end-of-life care.

The following is a synopsis of these plans:

1st National Plan for Older Persons (1982–2001)

Thailand has established a “National Committee for the Elderly” in 1982, and designated April 13 of every year as Day of Older Persons. The 1st national plan for older persons covered the period from 1982–2001, and addressed the development of older persons in various aspects, including education, society, culture, health, income security, gainful employment, housing, environment, rules and regulations. Ministry of Interior called for provinces to set up Senior Citizens’ Clubs in every province. The main objective of this plan was to make society aware that older persons are an integral and valued part of society. The plan called for the society to recognize their responsibilities towards older persons to ensure the allocation of resources and welfare arrangements for older persons. The focus of this plan is as follows:

- 1 Older persons should be able to live in a happy family environment, and have a reduced role as a breadwinner for the household.
- 2 Older persons who are not self-sufficient in ADL should receive assistance from society.
- 3 Older persons should receive information on self-care in various dimensions to be able to adapt to a changing society.
- 4 Older persons should be encouraged to participate in activities with the family, community, and society.

2nd National Plan for Older Persons (2002–2022)

This plan was revised twice. The 1st revision was in 2009 and the 2nd revision was in 2020. The 2nd Plan was prepared to support the increasing growth the Thai older population. The emphasis is on proactive operations, giving importance to the “life cycle” approach of everyone in society that is related to older persons, emphasizing the value and potential of older persons, rather than seeing them as dependents. The 2nd Plan is divided into five strategies:

- 1 **Preparedness Strategy:** It consists of income insurance, education, and lifelong learning.
- 2 **Promotion Strategy:** It covers health promotion, strengthening organizations of older persons, promoting gainful employment and those with potential, and promoting suitable and safe housing and environment.
- 3 **Social Protection Strategy:** This includes protection for income, quality living, family, and protection of the service system and support network.
- 4 **Management Strategy:** This consists of management of programs for older persons, and promote and support the development of personnel involved in care and support for older persons.
- 5 **Strategies for compiling and developing knowledge on older persons:** They support and encourage research agencies to process and develop knowledge of older persons, and develop up-to-date information systems for older persons.

3rd National Plan for Older Persons (2023–2037)

This plan was prepared in collaboration with the Department of Older Persons, Ministry of Social Development and Human Security, and with Chulalongkorn University in its Interdisciplinary Project for the Aging Society. This plan has a vision that older persons have a good quality of life which is stable and secure, and are a force for social development. There are four important objectives:

- 1 To have a framework and guidelines for working on older persons continuously as well as being in line with strategies and master plans. This will lead to the integration of plans at all levels
- 2 Increase the value and prestige of older persons by encouraging older to fulfill their potential
- 3 To enable older persons to have a good quality of life in all dimensions whether in terms of economy, society, health, environment, access to and utilization of technology and innovation thoroughly with equality and fairness
- 4 Proactively support an aging society by encouraging the population to become quality senior citizens, especially those now age 25–59, so they can adequately prepare to have a quality life in retirement and continue to be a positive social driving force.

Long-Term Plan for Population Development (2022–2037)

This strategic plan is aimed at enhancing population security, from birth until death. This plan is in line with the Sustainable Development Goals and the 20-year national

strategy (2018–2037) with the following specific goals:

- 1 Thai population is supported to attain their full potential and quality of life in line with the country's development context on the basis of 21st century skills.
- 2 Thai population has sufficient income and property security throughout their lifetime.
- 3 There is a social protection system that creates stability in life and does not affect long-term fiscal sustainability of the state.

The development strategy is divided into the following six main strategies, namely:

- 1 Creating a quality family and developing a system that facilitates having and raising children
- 2 Development of population productivity
- 3 Improving financial security
- 4 Health promotion to reduce premature mortality, and establishing long-term and end-of-life care systems
- 5 Creating an environment conducive to quality life for all age groups
- 6 Migration management

In the past, policies and plans regarding older persons in Thailand as a whole were found to have significant vulnerabilities. For example, the plans ignored the importance of “death” as part of the care of older persons. Instead, the Population Development Plan for National Long-Term Development (2022–2037) mentions a long-term care system which includes end-of-life care that corresponds to the context of urban and rural areas, including older persons who are socially-attached, homebound, or bedbound. This vision includes the development of medium- and long-term care systems as well as palliative care and taking care of patients in the end of life stage, such as developing a system for protecting assets of older persons, making a will, including preparing statements of the willingness to receive or forego medical treatment at the end of life.⁹

Recommendations for Preparing for the Growing Population of Older Thais

Due to the limited preparedness of the speedy transition toward an Aged Society, the Sub-Committee for Monitoring Social Reforms, Older Persons Affairs, and Aging Society under the Commission on Social Development, Children, Youth, Women, Older Persons, Persons with Disabilities and Vulnerable Groups, the Thai Senate, has prepared recommendations to accommodate the aging society across four dimensions as follows:

Economic Dimension

Accelerate the development of the capacity of the labor market to be ready in terms of skills, quality, and quantity in line with the new economic structure, and create security and financial stability for older persons



Preparing for the Silver Economy: This consists of promoting innovation and business in line with consumer needs, such as food and nutrition for older persons, medical workforce for older persons, financial products for older persons, etc. There is a need for distribution of infrastructure development and public services in various community areas in order to reduce migration and allow people in the community to take care of older persons. The country will need to attract quality foreigners to live and work in Thailand permanently. This includes the need to boost productivity among latent workers who are outside the formal labor system to enhance their career potential.



Policy to promote working longer: This consists of building skills and attitudes necessary for gainful employment by promoting courses that meet the needs of the labor market in the future. This includes lifelong learning and skill development (reskill/upskill) with easy access to an extended working life by adjusting the retirement age to be based on performance and voluntary principles. This includes a restructuring of the labor market to be more flexible and which gives the working-age group flexibility in moving jobs, and allowing older persons to work longer.



Policy to promote savings and universal pension: This consists of building financial literacy, planning expenditures, savings and investment, development of welfare and pension systems and Social Security System to be sustainable. This involves determining a mechanism for compulsory savings that are appropriate to the income and

expenditure of each occupation, and alternative savings such as planting economic trees, etc.

Environmental Dimension

This focuses on creating environmental sustainability and alleviating global warming problems.

Creating a healthy environment: This refers to planning the city to be conducive to promoting the health of the residents.

For example, by creating a safe and conducive environment for physical activity. Cities should be developed for the long-term to reduce dependence on personal cars, promote access to quality public transport, and conserve and develop green areas.



Creating a people-friendly environment for all age groups:

This refers to personal places, public places, and public transportation. The aim is to create an environment that is suitable for independent travel for people of all ages, especially the older persons and people with disabilities in order to achieve “well-being” (universal design).



Health Dimension

Give people of all ages the ability to take maintain their own health status and receive care through a health service system that is effectively connected across home, community, and hospital as follows:

Promote healthy lifestyles:

The formulation of policy across all aspects must take into account the health promotion dimension, so that every policy has a dimension of health concern (health-in-all policies) and encourage people of all ages to have appropriate health care (healthy lifestyle). This includes both convenient and inexpensive access to healthy food, encouraging physical



activity anywhere, having good mental health, and convenient access to quality health services.



Upgrade health services: This refers to upgrading primary care services and capacity development of Sub-district Health Promoting Hospitals to be able to support elder care and geriatric medicine for increasing numbers.

This requires the production of trained public health personnel to provide elder care, and integrate referrals from the community to middle- and long-term care facilities or programs. There is a network of management of people, tools, resources and technologies to take care of older persons.



Using technology for health promotion by integrating health information to provide government information in digital format of the same standard, and empower people to have the ability to manage their own health with personal digital devices, including promoting tech startups in this field.

Social Dimension

It is social system development including



Creating an inclusive society: This consists of promoting the creation of good attitudes towards coexistence across generations. Each age group needs to have a positive attitude towards each other, and there should be expanding opportunities for multi-generational activities. This involves building life planning skills appropriate for each age group, and encouraging child care services and elder care in various forms. The government cooperates with the private sector and social enterprises.



Creation of social integration mechanisms: This consists of building strong local communities by developing the potential of communities and local administrative organizations such as communities, temples, religious places, elderly clubs, and the private sector to participate in the development of care systems for older persons. There is a special need to focus on older persons in the urban society. There should be stronger urban support networks. For example, juristic mechanisms of condominiums and gated housing estates should encourage social activities that lead to caring for each other. This includes building a strong virtual community and proper use of online space, respect for others, and social immunity.



Population policy adaptation: This refers to building the availability of relevant information and knowledge by linking the population database with the Civil Registration and other welfare systems. There should be welfare and incentives for those who are ready to have children, such as tax measures. Additional benefits from the Social Security System should provide

financial assistance in raising children, etc., and integrating the work of government agencies to support the ageing society.

Summary

Thailand has now become a Complete Aged Society with population of older persons that is more than 20% of the total population. Thailand is destined to become a Super-Aged Society in less than two decades, when nearly one in three Thais will be elderly. This has profound implications for the economy, society, environment, and health. In the past, Thailand was aware of such phenomena, and policies and strategies have been developed for more than four decades. The plans currently focus on the development of capacity and skills of older persons in order to be healthy aging and active aging. However, the speed with which the Thai population is aging is unprecedented. Therefore, it is necessary to accelerate the adjustment and preparedness for structure and the transition into a new economic structure and create financial security for older persons. This involves creating an environment that promotes health and is friendly to all age groups. People of all ages need to have the ability to take care of their own health, and receive essential care through an efficient, connected health service system. The vision is of a society that welcomes all groups of people, including mechanisms for social integration to allow all sectors to participate in the development of the care system for older persons in the long-run.

Promotion of Thai Herbal Products: Past to Present

“ The Thai traditional herb market is growing steadily. In 2022, the consumption of herbal products in the country was worth over 52,104 million baht. In addition, Thailand is the number 1 exporter of herbs and herb products in the ASEAN region, equivalent to more than 10 billion baht. Thailand aims to be the leader in herbal products for health of the region and becoming one of the world’s major herbal innovation centers. ”

Madhuca pierrei



Source: npic-surat.com/web/index.php/2013-07-23-06-43-31/-prs/sapotaceae-/174-sapotaceae

Ricinus communis



Source: commons.wikimedia.org/wiki/File:Ricinus_March_2010-1.jpg

Terminalia chebula



Source: flickr.com/photos/wwwsncomphotos/14454399611

Canarium album



Source: en.wikipedia.org/wiki/Canarium_album

Introduction

The Thai herbal market is growing steadily. In 2022, the consumption of herbal products in the country was worth over 52,104.3 million baht, compared to 48,108 million baht in 2021.¹ In part, the market has been stimulated by the consumption of *Andrographis paniculata* and other medicinal herbs during the COVID-19 epidemic in Thailand. The Department of International Trade Promotion expects the market for Thai herbal products will be worth up to 59,500 million baht by 2026.² **Thailand aims to become a leader in standardized herbal health products in the ASEAN region, and eventually become one of the world’s herbal innovation centers.**

The commercialization of Thai herbs is a result of Thai traditional medicine and Thai herbal products that are rooted in local wisdom and the exchange of knowledge between civilizations in Southeast Asia. Many Thai herbal concoctions have been documented and passed down through the generations, perhaps peaking during the Rattanakosin period. Then, there was a period of decline in the importance of Thai traditional medicine about one century ago as Thailand began to embrace modern medicine. However, recently there has been a revival of Thai traditional medicine with the development of herbal products and state policies to promote the production of Thai herbs. Subsequently, a national master plan was prepared on the development of Thai herbs. The 1st plan covered the period of 2017–2022. The 2nd plan covers the period of 2023–2027 promoting Thai herbal industry to become the leader in ASEAN. This article discusses the development of Thai herbs and the promotion of the Thai herbal industry,

Terminalia citrina



Source: abdul.dtam.moph.go.th/thaiherbs/herb_pdf/0193.pdf

Terminalia bellirica



Source: flickr.com/photos/wwwsncomphotos/18923840633

Piper retrofractum



Source: flickr.com/photos/tony_rodd/6508988473

Euphorbia antiquorum



Source: flickr.com/photos/89906643@N06/11883665134

Wurfbainia vera



Source: apps.phar.ubu.ac.th/thaicrudedrug/main.php?action=viewpage&pid=11

Mesua ferrea



Source: apps.phar.ubu.ac.th/phargarden/main.php?action=viewpage&pid=67

Myristica fragrans



Source: commons.wikimedia.org/wiki/File:Nutmeg_on_Tree.jpg

Camphora officinarum



Source: commons.wikimedia.org/wiki/File:Cinnamomum_camphora_Turramurra_railway.jpg

including Thai traditional medicine in the past and present, Thai herbal medicinal products and policies on Thai herbal promotion.

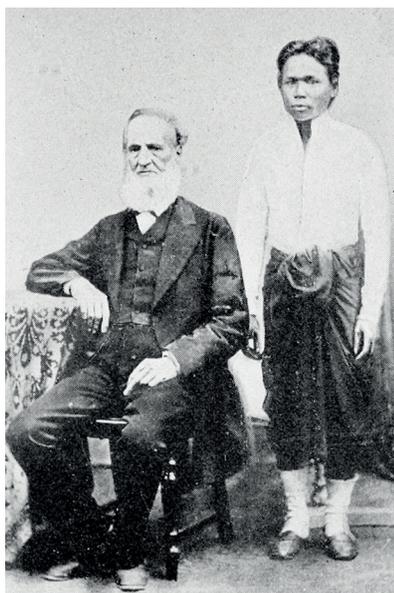
Thai Traditional Medicine in the Past

Archaeologists have found evidence of prehistoric medicines in many areas of Thailand, such as Ban Chiang Archaeological Site. Various species of grains were found, such as

betel nut	pepper	gourd
Piper betle	<i>Terminalia citrina</i>	lotus
<i>Madhuca pierrei</i>	Chinese olive	melon
castor bean	myrobalan	legume
Deepli	<i>Terminalia bellirica</i>	wild lettuce
chestnut		

These plants may be used as food or herbal medicine. From the evidence, it may be assumed that prehistoric humans had a process of learning through experience, observation, and guesswork, and that way discovered certain (apparent) medicinal properties.³

Dr. Dan Beech Bradley (left)



Source: [gutenberg.org/files/63818/63818-h/63818-h.htm](https://www.gutenberg.org/files/63818/63818-h/63818-h.htm)

The discovery of stone altars and crushed stone, dating to the Dvaravati Era, provided evidence showing herbal medical treatment. These vestiges were found at archaeological sites Nakhon Pathom and U Thong.⁴ Later in the reign of King Jayavarman 7 (1182–1218) of the Khmer civilization, evidence of the construction of hospitals or medical stations was found scattered throughout the kingdom, in a total of 102 places, 22 of which were found in the territory of present-day Thailand. Evidence from the stone inscriptions recorded treatment protocols, including a list of herbal medicines used in the treatment of diseases such as

honey	asafetida	ironwood
white pepper	cardamom	ginger
nutmeg	camphor	

along with rituals and worshiping sacred things or gods.

In the era of the Sukhothai Kingdom, settlements consisted of clusters of households in what are called villages today. There was no conventional medical system yet in that era. Instead, each village or community would have a folk healer called Mor Chaloeysak. This person would use herbal medicine mixed with Buddhist incantations and superstitious ceremonies, some of which have survived until the present. For example, some protocols are a form of ritual to the spirits by using a puppet doll to be placed on a three-way crossroads or floating on water. The purpose is to prevent evil spirits from taking the sick person’s spirit away or warding off evil spirits from pregnant women who are about to give birth.⁵

The subsequent Ayutthaya Era was a time when medicine was prosperous and more organized. There was a classification of doctors according to specialty, and a position was created for a doctor serving in the Royal Court of Siam. There is evidence that in Ayutthaya there were drugstores scattered at various points to provide access to medicines and treatments for the general public.⁶ In the reign of King Narai the Great, Ayutthaya began to have more trade with Western nations. This mixing resulted in the acceptance of concepts, religions, arts, and sciences in various fields including the medical field. The Siamese Royal Court took interest, and opted for a variety of medical treatment methods as shown in the “Phra Narai Dispensary Textbook.” That text records how multi-national teams collaborated to concoct medicines, including Thai, Chinese, Indian, and Western physicians.⁷ Even today, some of the drug formulas appearing in “Phra Narai Medicine Textbook” have been used for patients by Thai traditional medicine practitioners. In addition, researchers

continue to study the effectiveness and safety of historical herbal treatments in various forms.⁸

Later in 1835, during the Rattanakosin Era, Dr. Dan Beach Bradley traveled to the Kingdom of Siam, and brought science, medicine, surgical equipment and textbooks on Western medicine. This tangible evidence of a new way to approach disease made Western medicine more influential. However, Thai traditional medicine still played an important role. Krom Luang Wongsathirat Sanit, who studied medicine from Doctor Bradley, wrote a “Textbook of medicinal properties” which serves as a reference manual of modern Thai traditional medicine in that era.⁹ In the reign of King Chulalongkorn, many more Thai traditional medicine textbooks were published. As a result, five royal textbooks were announced, including two royal textbooks on medicine (Paetsart Songkrau), and three textbooks on general medicine or medical education. In that era, Thai traditional medicine practitioners had the right to prepare medicines from such textbooks without having to register another Thai medicinal formula.¹⁰

Later, modern medicine gained more popularity. In 1901, the government sponsored the establishment of Osotsala or Osotspa within the Medical Department. Later, in 1908, Krom Luang Damrong Rajanubhab and foreign medical groups began to concoct Osotspa’s eight standard medicines.

Antipyretics (quinine)	Anti-dysentery drugs
Laxatives	Blood tonic
Anti-diarrhea drugs	Yaws medication
Medicine for hernia	Anti-colic (soda mint)

During the reign of King Rama VI, the 1923 Medical Act was announced to control the practice of medicine. This



action caused the general public to begin to have more confidence in modern medicine, until full adoption in the medical education in Thailand as in the present day.

Under the reign of King Rama IX, Thai traditional medicine was promoted once again as a part of the Thai public health. This renaissance was manifested by the establishment of the Association of the School of Traditional Medicine at Wat Pho in 1957. In 1982, the Ayurveda College was established, leading the Thai government to fund research and production of more herbal medicines for domestic consumption. This period marked the return of herbal medicine and traditional medicine as the nation’s original medicine.¹¹

Thai Herbal Medicines

In 1935, Dr. Tua Lapanukrom, Director-General of the Department of Science of the Ministry of Commerce considered that Thailand should have its own pharmaceutical factory because Thailand has the herbs and raw materials to make medicines. This would also help Thailand have a reserve of medicines to use in times of emergency. In 1939, such a pharmaceutical factory was built.¹² Later, in 1981, Dr. Sem Pringpuangkaew, Minister of the Ministry of Public Health (MOPH), promulgated a national drug policy, i.e., an essential drugs list, with the goal of becoming self-reliant for these medicines which safe, of good quality, at reasonable prices, and evenly distributed throughout the country, especially drugs for primary health care.

In terms of herbal products, the MOPH assigned the Thai Food and Drug Administration (FDA) to conduct research on the therapeutic potential of Thai traditional medicines. The MOPH also instructed the Office of the Primary Health Care Committee to develop a project on herbs and primary health care, with

Top:
Ayurveda College, during 1982 to 1998

Bottom:
At present, Ayurveda College has become Ayurveda Thamrong College as part of the Thailand Traditional and Applied Medicine of the Faculty of Medicine, Siriraj Hospital, Mahidol University.

Source: www2.si.mahidol.ac.th/en/center-of-applied-thai-traditional-medicine/about

assistance from the World Health Organization (WHO) and UNICEF. This measure significantly boosted awareness of the use of herbal medicines, and was included as a component of the 5th National Economic and Social Development Plan, (1982–1986). The plan emphasizes having the following sub-plans:

- 1 The National Drug Development Plan consisting of three projects, namely drug production, drug distribution and drug and herbal research projects
- 2 The Primary Health Care Plan, to supply essential medicines for villagers
- 3 The Consumer Protection Plan on Food, Drugs, Cosmetics and Poisonous Substances

In 1993, the 2nd National Policy on Drugs was promulgated to support education and research to assess potential for disease prevention, health promotion, and cures or healing. This measure focused on herbal medicines and traditional medicine. As a result, in 1999 a list of herbal medicines was codified for the first time, and was later updated to the “Medicine List of Herbs 2006.” The list is divided into 11 medicinal formulas.

Ya Ha Rak	Ya Pra Sa Kan Plu
Ya Kieow	Ya Pra Sa Plai
Ya Learng Pid Samud	Ya Pra Sa Ma Waeng
Ya Chan Leela	Ya Hom Thep Chit
Ya Dee Kluea Farang	Ya Hom Nawakoth
Ya Dhat Ban Job	

The medicines in the list are developed from eight herbs.

turmeric	<i>Clinacanthus nutans</i>
ginger	chili
<i>Senna alata</i>	<i>Zingiber cassumunar</i>
Asiatic pennywort	<i>Andrographis paniculata</i>

This list of approved Thai herbal therapies caused the value of the use of herbal medicines to increase in 2010. The MOPH was promoting Thai traditional medicine in

parallel with modern medicine in the public health service system, and promoting the production of herbal medicines in hospitals. As a result, the list of herbal drugs increased to 71 items (from 19 items) and a hospital pharmacopoeia of herbal medicines was created for the first time.¹³

In 2019, the Herbal Products Act B.E. 2562 was promulgated because there was no specific law controlling and regulating herbal products. This was done since the drug law and the food law were not really applicable to herbal products. The National Herb Policy Committee was responsible for formulating policies and strategic plans for national herbal products. As a result, Thailand now had separated laws for controlling, supervising and developing the production, import and sale of traditional medicines. In addition, the name “traditional medicine” was changed to “Thai traditional medicine” and “medicine developed from herbs.”¹⁴ Later, when the law was amended to allow hemp plants, marijuana, and kratom to be possessed for research studies, as well as selling and importing for use in the treatment of diseases, this made Thai traditional medicine recipes that contain such medicinal plants more popular.

In 2020, Thailand was hit with its own COVID-19 epidemic. The MOPH promoted the use of Thai traditional medicine as

Senna alata



Source: commons.wikimedia.org/wiki/File:BungaGelenggang.jpg

Clinacanthus nutans



Source: pharmacy.su.ac.th/herbmed/herb/text/herb_detail.php?herbID=149

Zingiber cassumunar



Source: thaicam.go.th/wp-content/uploads/2021/08/5.พืชสมุนไพรเศรษฐกิจ-2564.pdf

Andrographis paniculata



Source: commons.wikimedia.org/wiki/File:Andrographis_paniculata_001.JPG

palliative treatment for symptoms of COVID. Medicines developed from many herbs, such as *Andrographis paniculata* (extract form) along with modern medicine to relieve cold, cough, and sore throat were prescribed. However, this caused many Thais to rely more on herbal medicine than ever before.¹⁵ This movement led to the addition of *Andrographis Paniculata* and marijuana-containing drug formulations into the National List of Essential Medicines according to the 2021 Announcement of the National Drug System Development Committee on the National List of Essential Medicines of Herbs and the National List of Essential Medicines of Herbs (2nd Edition). The list categorized herbal medicines into three lists, with a total of 96 items (with eight items of herbal medicines containing marijuana). During the 3rd–4th waves of the COVID-19 epidemic, the sales of *Andrographis paniculata* herbal products increased five-fold, and the price of the leaves of that herb increased by about ten-fold.¹⁶

■ National Policy to Develop Herbal Health Products

The development of Thai traditional medicine and Thai herbal products has spurred national herbal development policies. This category was included in the 11th National Health Development Plan (2012–2016) as part of the national health development framework to achieve national self-sufficiency based on good governance, building immunity against external threats, and fostering participation of all sectors. This plan prescribed the use of Thai traditional wisdom by specifying strategies for Thai traditional medicine as part of the Plan's **Strategy #1: To strengthen the health partners in creating health as well as health self-reliance based on Thai wisdom.**

Later, the government prepared its 1st National Master Plan on the Development of Thai Herbs, 2017–2021 (extending the implementation period until 2022 to be in line with the national strategy). The aim was to promote and preserve the wisdom related to Thai herbs, and to develop the production and utilization of Thai herbs with quality and completeness. A budget was allocated for Plan implementation in the amount of 18,499.95 million baht for the period of 2017–2019. The growth rate of the herbal products market in Thailand has reached as high as 10.3% in one

year, helping to push Thailand to be one of the leading herbal producers in Asia. In addition, in the wake of the COVID-19 pandemic, the government has promoted the use of *Andrographis paniculata* and Fingerroot in conjunction with modern medicine. Drug laws were amended to re-classify the medicinal plants that are Class 5 (hemp, kratom, marijuana) to be used legally to treat diseases.¹⁷

The National Committee on Herb Policy reported on the performance of advocacy of Thai herbs for the last six years¹⁸ (2017–2022) showing that Thailand has become the number 1 exporter of quality herbal raw materials and herbal products in Southeast Asia. The value of these products was estimated at over 12,211 million baht. The development of the Thai herbal industry continued at pace, with the government upgrading more than 377 enterprises, expanding herbal marketing channels both domestically and internationally, and increasing funding support to 2,048.8 million baht for investment, research and innovation. At the time of this report, there were about 1,295 comprehensive research and development projects for herbs in 14 provinces to become a fully integrated herb hub for both growing and processing.

In 2023, Thailand began its 2nd National Herb Action Plan (2023–2027), which the Cabinet Approved on January 31, 2023.¹⁹ There are five strategies and 61 projects according to the action plan, implemented by 53 integrated agencies with a total budget of 14,160 million baht. The five strategies consist of the following:



Andrographis paniculata
flower

Source: flickr.com/photos/dinesh_valke/6256892648



Source: commons.wikimedia.org/wiki/
File:Centella_asiatica_-_large.jpg

Asiatic pennywort • *Centella asiatica*

Strategy 1 Promotion of the production and processing of herbal raw materials with quality and standards

Strategy 2 Development and enhancement of the potential of entrepreneurs and herbal industries throughout the supply chain

Strategy 3 Marketing promotion of herbal products

Strategy 4 Promoting the consumption of herbal products appropriately

Strategy 5 Development of an ecosystem that supports the efficient and sustainable development of Thai herbs

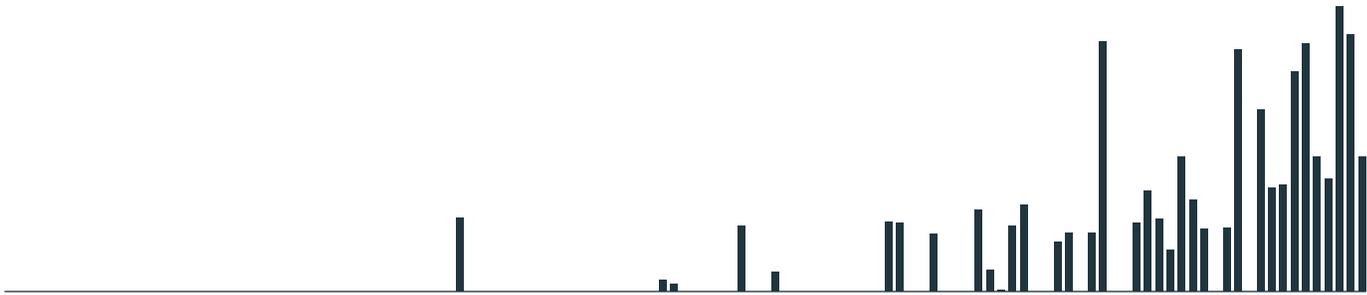
It can be seen that the 1st National Master Plan on the Development of Thai Herbs focuses mainly on economic benefits from both exporting and upgrading production potential rather than developing Thai herbs to replace imported drugs from abroad. This is partly because Thailand aims to compete in the world herbal market with a combined value of about \$9.18 billion.²⁰ The Plan calls for raising the level of herbs that are specific products only, i.e., it is not yet an upgrade of Thai herbs directly for use as hospital-based treatment. This is despite the fact that many herbs have been included in the essential medicines list.

The 2nd National Herb Action Plan (2023–2027) focuses on the development of extracts to reduce imports and enable the country to fully grow as a leader in the regional herbal industry. The growth of the advanced industrial extract industry is set to increase by at least 5% by 2027. However, if there are no effective

protective measures, industrial growth may adversely affect community-level producers, or producers at the level of local wisdom. In addition to promoting production, there is still the challenge of bringing Thai traditional medicine as complementary to modern medicine. This is partly due to the lack of full confidence in traditional medicines in the eyes of Thai medical personnel themselves.²¹ Therefore, systematic research on medicinal herbs must be promoted, and this knowledge of the effectiveness of Thai traditional medicine must be communicated to Thai medical personnel.

Summary

Thai traditional medicine and Thai herbs are part of the Thai cultural heritage. Herbal treatment has been part of the way of life and local wisdom for millennia. Thailand has prepared 2 editions of a national master plan on the development of Thai herbs. The 1st plan has just concluded, and focused on the production and development of herbal products for consumption and export. The 2nd plan, starting in 2023, focuses on the growth of herbs and herbal extract industry and ecosystems throughout the supply chain. After the outbreak of COVID-19, there has been a trend in popularity of many Thai herbal products such as *Andrographis Paniculata* and Fingerroot. Accordingly, the government amended the drug laws to make some medicinal recipes that contain marijuana, hemp and kratom to be legal. Therefore, the present time is an important opportunity for Thailand to seriously promote medical research on herbal extracts. There should be clinical research on various herbal extracts to further the development of the pharmaceutical industry and herbal medical products, and build trust among medical professionals and consumers. This will help promote the use of herbal medicines to be part of the mainstream medicinal menu, as well as training medical personnel to have more knowledge in herbal medicine treatment. In addition, the supply chain for the production of herbal plants should be developed for local communities so that they can take part in the production of quality and safe raw materials.



4 Outstanding Accomplishments for Health



UNESCO Praises Her Royal Highness Princess Galyani Vadhana

On May 6, 2023, it will be the 100th anniversary of the birth of Her Royal Highness Princess Galyani Vadhana Krom Luang Naradhiwas Rajanagarindra. Accordingly, Thailand proposed that UNESCO consider declaring the Princess to be an “Eminent Personalities of the World” by virtue of her patronage of educational affairs, applied science, medical and public health, social work, foreign affairs, religion, and the arts and culture. At the 41st General Conference of UNESCO held at the UNESCO headquarters in Paris, France between November 9–24, 2021, a total of 67 proposed items were approved to name important people and historical events of the world in 2022–2023. There will be a celebration of the 100th anniversary of the birth of Her Royal Highness (Centenary Celebration of Her Royal Highness Princess Galyani Vadhana) in 2023, both in Thailand and abroad.¹

Her Royal Highness Princess Galyani Vadhana Krom Luang Naradhiwas Rajanagarindra performed many duties. There are hundreds of projects under her royal patronage, for example, in education, social work, medical and public health, foreign affairs, religion and others² as highlighted below:

Education: The Princess founded the Association Thaïlandaise des Professeurs de Français in 1977 and performed royal duties in education, social work and public health. Academic circles, universities, and international organizations awarded the Princess honorary doctoral degrees and medals of honor. In addition, she was also a teacher of foreign languages at various universities. She was the head of the Department of Foreign Languages at the Faculty of Arts of Thammasat University, and developed the Bachelor’s Degree Program in French and Literature. The Princess received a royal command appointed as special professor at the Faculty of Liberal Arts of Thammasat University. She also donated personal funds and funds from the Princess Mother’s Foundation to send Thai youth to participate in the Academic Olympics.



Social work: The Princess devoted herself to local, rural development and education, especially in poor areas. Her Highness cared for children and families in slum communities. She supported the Foundation for Slum Child Care under royal patronage and supported several child development programs, such as the Community Child Development Program, the Primary Health Care Program for Mothers and Children, and the Milk and Supplements Fund. In addition, she helped villagers who suffered from fires, accidents, and chemical disasters. She was also a patron of social organizations such as the Foundation for the Promotion of the Welfare for Women and Youth, the Foundation for the Development of Young Women of the North, the Life Development Foundation, the Green World Foundation, etc.



Medicine and public health: Her Highness served as the chairperson of various foundations, especially the Princess Mother’s Medical Volunteer Foundation, the Kidney Foundation, and the Princess Boonjirathorn (Chumpon) Juthatuch Foundation. Her Highness sponsored scholarships for doctors under the program for rural doctors and nursing students. She supported the Prostheses Foundation, and helped oversee various foundations and charitable funds in public health under the patronage, such as the Kidney Foundation of Thailand, the Siriraj Foundation, the Cardiac Children Foundation of Thailand, the Foundation for the Promotion of the Welfare for Women and Youth, the Thai Public Health Nurses Association, the Foundation for Rajanukul Hospital, the Welfare Foundation for Mentally Disabled Children, the Hospital for Tropical Diseases, etc.



Arts and culture: Her Highness promoted cultural performances such as classical music and opera, and was also a patron of annual performances and musical ensembles such as the Thai Youth Orchestra, the Chulalongkorn University Symphony Orchestra and “Natayasala Foundation.”



WHO Presents the Prestigious World-Class Award to Two Thai Doctors: Dr. Prakrit & Dr. Paisan

At the 150th World Health Organization Executive Board meeting on January 29, 2022, Thailand nominated two of its outstanding public health personnel to be considered for the global award, namely,

Prof. Dr. Prakrit Vatheesatogkit, President of the Action on Smoking and Health Foundation (ASH) Thailand, to receive the Dr LEE Jong-wook Memorial Prize for Public Health

Dr. Paisan Ruamviboonsuk, Ophthalmologist, Rajavithi Hospital, Dept. of Medical Services, to receive the Sasakawa Health Prize

Dr LEE Jong-wook Memorial Prize for Public Health, established in 2008, is given to individuals, institutions, or NGOs for outstanding innovation in primary care development. The Sasakawa Health Prize, established in 1984, is for individuals, institutions, or NGOs for notable advances in primary health care.

It is gratifying that the WHO Executive Board has bestowed these awards on both Thais. Dr. Prakrit has made outstanding contributions to the public health sector as well as the civil society sector in the area of health promotion, particularly non-smoking campaigns. Dr. Paisan specializes in the treatment of retinal diseases, and is committed to solving the blindness problem in Thailand, especially diabetic retinopathy, which used to be the second leading cause of blindness in the country.¹

Dr. Prakrit has been the Secretary-General of ASH Thailand since 1986 and is a member of the National Tobacco Products Control Board of Thailand. Dr. Prakrit is a former Dean of the Faculty of Medicine Ramathibodi Hospital, Mahidol University. Throughout his life, Dr. Prakrit has devoted his life to tobacco control. He is regarded as a pioneer who can work effectively across with multiple sectors. He has helped to develop and enhance the capacity of networks to implement effective tobacco control measures, such as the Teachers Network for Smoke-Free Schools, the Network of Health Professionals for Tobacco Control, among others. Thus, Dr. Prakrit is helping to reduce the prevalence of lung disease and other diseases arising from the consumption of tobacco. He played a key role in pushing for a tobacco tax increase and restrictions on where tobacco products can be advertised or used for smoking. Dr. Prakrit advocated for increasing the quality of patient care through the Tobacco Products Control Act, the Non-Smokers' Health Protection Act B.E. 2535, and the Tobacco Products Control Act B.E. 2560. He is also a national and international consultant in the context of the WHO Framework Convention on Tobacco Control.²

Dr. Paisan is an ophthalmologist specializing in the treatment of retinal diseases, and is committed to solving the challenge of treatable blindness in Thailand, especially diabetic retinopathy. Dr. Paisan developed a screening method using retinal images, and initiated a training program for non-ophthalmologists to screen patients with retinopathy. This is especially important in remote areas where ophthalmologists



Source: (left) commons.wikimedia.org/wiki/File:หมอประสิทธิ์.jpg, (right) thaigov.go.th/news/contents/details/51489

are scarce. His innovations led to the policy of the Thai Ministry of Public Health to screen patients with diabetic retinopathy nationwide free of charge. This policy also increased access to diabetic retinopathy medication around the country. As a result, the number of people who go blind due to diabetic retinopathy has been greatly reduced.

In 2022, there were six awards bestowed by the WHO in this category: ^[1] The İhsan Doğramacı Family Health Foundation Prize was given to Prof. Mehmet Haberal from Turkey; ^[2] The Sasakawa Health Prize was given to Dr. Paisan; ^[3] The UAE Health Foundation Prize was given to the National Malaria Center of the Ministry of Health of Nicaragua; ^[4] The His Highness Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah Prize for Research in Health Care for the Elderly and in Health Promotion was given to Dr. Hanadi Khamis Mubarak Al Hamad from Qatar; ^[5] The Dr. LEE Jong-wook Memorial Prize for Public Health was given to Dr. Prakrit, and to the Severe Hypothermia Treatment Centre in Poland; and ^[6] The Nelson Mandela Award for Health Promotion was given to Dr. Wu Zunyou from the People's Republic of China.³

Siriraj Hospital Receives the Highest Accolade: Thailand Lean Award 2022



Group photo on stage, with Mr. Chlapong Taweessri, Deputy Permanent Secretary, Ministry of Industry, and representatives from organizations receiving the Thailand Lean Award 2022.

Source: thaigov.go.th/news/contents/ministry_details/56340

On June 29, 2022, Siriraj Hospital, Faculty of Medicine, Mahidol University received the Thailand Lean Award (Diamond Level) and the Popular Vote Award. The award was announced at an event organized by Technology Promotion Association (Thailand-Japan) at the Bangkok International Trade & Exhibition Centre, Bangna, Bangkok. Siriraj Hospital has applied the concept of “Lean” since 2008, combined with the use of technology in order to convert waste into value in the view of service users in terms of convenient access to services, reducing unnecessary travel, reducing waiting time for laboratory results, reducing congestion at the front of the examination room, organizing inventory, receiving accurate and fast treatment services, increasing the convenience of receiving appointments and taking medicines, and postponement

of appointments outside the hospital. As a result, the cost of patients receiving services is reduced. In addition, using 5G technology helps communicate and transmit data quickly and accurately (Telemedicine).¹

It has been more than ten years that Siriraj Hospital has implemented the concept of Lean to respond to the needs of clients. In 2021, Siriraj Hospital served

2,528,408 outpatients

70,476 inpatients.²

Siriraj Hospital also aims to become a Smart Hospital by using digital technology and artificial intelligence to process patient data. It is creating an internet system that can connect all units of the hospital, and will use an automated system to deliver drugs and medical supplies to speed up and reduce the work of personnel. Siriraj will be

regarded as a model hospital in applying the Lean concept in the health service sector, and which can be replicated in other hospitals

The Thailand Lean Award is given to organizations that have successfully applied a lean management approach to reduce waste across the organization, effectively and efficiently, including promoting awareness of the importance of eliminating waste, create innovations in management that affect the level of competitiveness, and elevate the productivity of products in both the manufacturing and service sectors of Thai industry. In 2022, the recipient of the Diamond Award was Siriraj Hospital. The winner of the Silver Award were CPRAM Co., Ltd. (Lat Krabang Factory) and the Bronze Award winner was Surat Thani Beverage Co., Ltd.³

UNESCO Inducted Phraya Srisundaravohara

UNESCO has declared the Phraya Srisundaravohara (Noi Acharyankura) as an eminent person in education and culture of the Year 2022. This coincides with the 200th anniversary of the birth of Phraya Srisundaravohara. During the 41st General Session of UNESCO held at UNESCO headquarters in Paris, France between November 9–24, 2021, a total of 67 items were approved to celebrate eminent personages and historical events of the world in the year 2022–2023, including the celebration of the 200th anniversary of the birth of Phraya Srisundaravohara who promoted literacy as the author of the first Thai textbook. That document is considered the first royal primer to be used as an introductory text for students which is also composed of 12 other supplementary books, including Verses for Paying Homage, such as chants in praise of the Lord Buddha, the Ramayana poems, the verse for the Temple of the Emerald Buddha and eight lullabies for elephants.

Phraya Srisundaravohara Chanpreechamat Borommanatnittayapakdee Phiriyaphaha, formerly known as Noi, was from Chachoengsao Province. He was born on Friday, July 5, 1822 at Ban Klong Sothon. Later, he received a surname from King Rama VI in the Order of 1457 as “Acharyankura” in 1914. He died on October 16, 1891, at the age of 69. He was a scholar, linguist, and documentarian. He was a Privy Councilor and the first “principal” of the Royal School. As a Thai teacher, he taught members of the Royal Family in the Chakri Dynasty, especially to Crown Prince Maha Vajirunhis, Crown Prince Vajiravudh and many other royal descendants.

Phraya Srisundaravohara composed a large number of valuable prose poems, odes, dedications, lilit (in Thai), and, especially, textbooks about the Thai language. The most important product is the six royal textbooks, namely

Moonbot Banphakit

Sangyokpithan

Wahanit Nikorn

Wipojpijarn

Aksornprayok

Pisarnkarun

and 12 other Thai textbooks. There are also works in the genre of books such as Proverbs, Literature, Khamchan, Lilit, Chapters, Religious books, and other miscellaneous works, including 15 sagas. He is the author of the lyrics of the Royal Anthem, in which he was hailed as “The Supreme Court on Thai Books” as well.¹

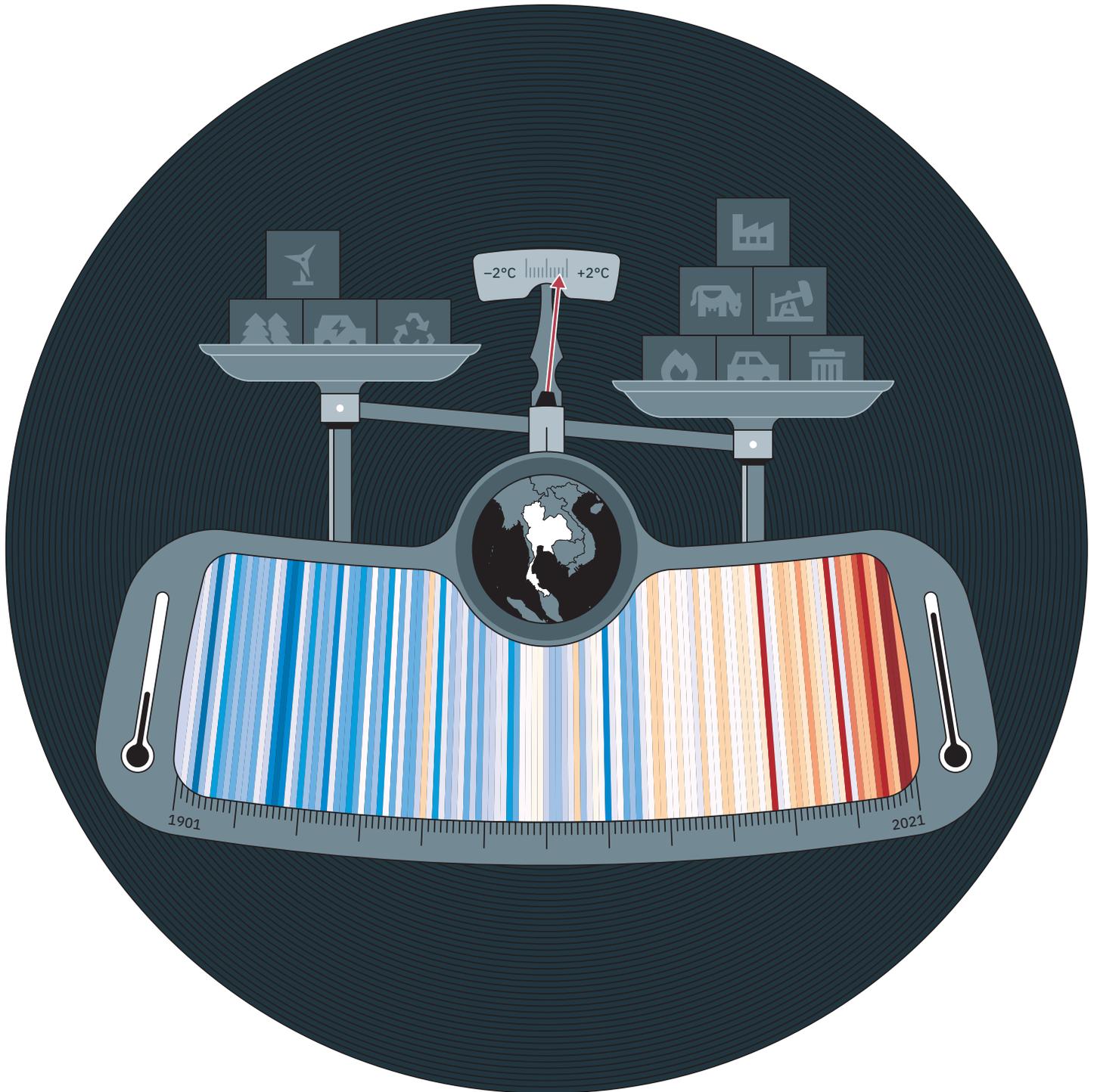


Paintings and sculptures of Phraya Srisunthorn Vihara, at the Chert Chukiat Phraya Srisunthorn Vihara Museum in Chachoengsao Province.

Source: region2.prd.go.th/th/content/category/detail/id/1169/iid/101561

To celebrate the 200th anniversary of the birth of Phraya Srisundaravohara, many organizations joined together to organize various commemorations. For example, Chachoengsao Province, the province of his birth, invited the public to review his biography and works on the topic of “Thai Language Philosopher of the Land” every Wednesday - Sunday at the Hall of Honor “Phraya Srisundaravohara (Noi Acharyankura)” in the Chachoengsao City Museum including public relations celebrations on July 5, 2022 at the monument of Phraya Srisundaravohara.² Chachoengsao Province built a monument to him by modifying the original Chachoengsao house. Chulalongkorn University Alumni Association coordinated with libraries across the country to announce and honor Phraya Srisundaravohara. The Chulalongkorn University Alumni Association compiled the history and works of Phraya Srisundaravohara at the Chachoengsao City Museum Hall of Honor “Phraya Srisundaravohara (Noi Acharyankura)” and the website Phraya Srisundaravohara (พระยาศรีสุนทรโวหารน้อยอาจารย์ยางกูร.com). There, interested persons can study the history of this outstanding personage and achievements that are evident.³ In addition, Thailand Post Co. also made 500,000 commemorative postage stamps for the 200th anniversary of Phraya Srisundaravohara (Noi Acharyankura), 200,000 of which were given to Chachoengsao Province to be sold in celebration of the 200th anniversary of the birth of Phraya Srisundaravohara. The rest will also be sold together nationwide at all post offices.

Feature Article



THAILAND'S COMMITMENT IN **COP** (CONFERENCE OF PARTIES) & RESPONSES TO **CLIMATE CHANGE**

THAILAND'S COMMITMENT IN COP (CONFERENCE OF PARTIES) & RESPONSES TO CLIMATE CHANGE

COP Forum for Hope: Phang Nga Boats Flee the Ice Mountain

“Climate change,” refers to the current phenomena that are resulting from the Earth’s temperature rise, causing changes to land, water, oceans, weather, and seasons that people once understood and knew about, but which are now going haywire in unpredictable ways.

The plight of “climate change” that people around the world are facing and trying to adapt to, is becoming an enormous catastrophe that is on the horizon. It might appear no different from the image of the “Titanic” awkwardly steered away from the iceberg, yet in vain.

However, fast the helm was turned, the clash is inescapable because of the momentum and magnitude of the problem. The problem has been festering for so long that the entire world cannot make a due change.

The Conference of Parties (COP), the United Nations Framework Convention on Climate Change (UNFCCC) currently governs and drives various measures including the collaboration of partners around the world. The COP is effectively the only hope for the world to survive the impending disaster of climate change and global warming.

Source: showyourstripes.info/s/asia/thailand



Image depicts differences in average temperature of Thailand by year during 1901–2021 (left to right) compared with the average temperature over the 121 years.

Blue color denotes years in which the temperature was below the 121-year average. **Red** color denotes years in which the temperature was higher than the 121-year average. The darker the color, the bigger the difference.

COP is an environment-driven platform to address global climate change that has been discussed for quite some time. More than 70 years have passed since the first United Nations Scientific Conference on the Conservation and Use of Resources in 1949. The latest conference is the 27th (COP27), which was held in Sharm El Sheikh, Egypt during November 6–18, 2022, with leaders from 92 countries, representatives from more than 190 countries, and more than 35,000 people attending the conference.

Gen. Prayut Chan-o-cha greeted Antonio Guterres, Secretary General of the UN, during the COP26 Meeting.

Source: climate.onep.go.th/th/พล-อ-ประยุทธ์-ให้คำมั่น



Reflecting back to the COP21 Conference in 2015, the Leaders of the 196-member countries jointly signed the “Paris Agreement” which set a common goal of trying to limit global average temperature rise to no more than 2°C by 2100. Actually, the optimal target would have been a rise of no more than 1.5°C. **By COP26, which was held from October 31 to November 12, 2021, countries presented their own action plans to explain how they would achieve the COP goals. COP26 is the first time that each country’s work plan has been reviewed.** This gave the meeting a lot of weight in creating momentum for global climate recovery plans.

In addition, at the COP26 meeting, the forum warned that if mankind “did nothing,” the world will be unable to cope with the climate crisis. According to the report of the Intergovernmental Panel on Climate Change (IPCC), released in August 2021, **global temperatures are rising faster than expected, and governments and societies have little time left to protect themselves from the disaster that will surely occur.** More and more people around the world

are starting to accept the truth of these dire predictions, and they are ready to take action.

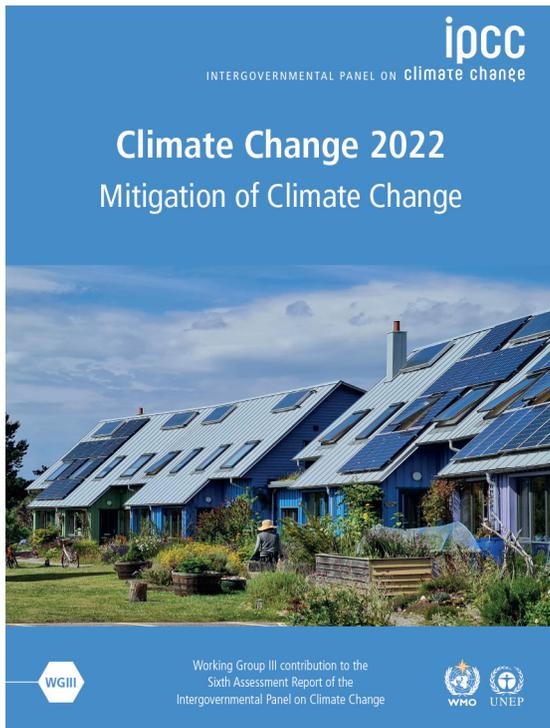
Countries have made commitments to solving environmental problems. For example, the United States announced that by 2030, or in the next eight years, it aims to reduce greenhouse gas emissions by 50–52% with the goal to emit zero greenhouse gases (Net Zero) by 2050 or in the next 30 years. The estimated budget to achieve these goals is \$550 billion.¹ India is the world’s third largest carbon emitter after China and the United States. India announced for the first time that it will reduce carbon emissions to zero by 2070 and, by 2030, 50% of the country’s energy will be clean, and it will reduce carbon emissions by at least 1 billion tons of carbon equivalent (Mt-CO₂-eq).²

At the COP26 forum, Thailand announced higher priority to address climate change, and pledged to achieve carbon neutrality by 2050, achieve the goal of zero greenhouse gas emissions by 2065, and will raise the target of Nationally Determined Contributions (NDC) to reduce greenhouse gas emissions between 2021 and 2030 from 20–25% to 40%. Thailand has embraced the principle of the green economy, or Bio-Circular-Green Economy (BCG), to safeguard the ecosystem from economic development.³

However, COP commitments are voluntary and governed by individual countries. There is no follow-up or sanctioning process in place against countries that do not comply with a pledge. Whether or not the goal will be achieved depends on the seriousness of the policy. At the end of each COP, the world waits with hope for sincerity and seriousness in delivering on the promises of nations, including Thailand.

Thailand’s goals at the COP are both challenges and pressures on the government, private sector, and civil society because, if they do not work together strategically and earnestly, there would leave little chance to achieve the goals.

This Special Topic of the 2023 Thai Health report focuses on the “turbulence” of the world and Thailand today in the wake of climate change. This article reviews the background of global warming discovery, targets and measures, and the various plans and the advocacy by various sectors in Thailand to achieve the goals of carbon neutrality and zero greenhouse gas emissions.



Assessment Report 6: AR6, Part 3, prepared by Intergovernmental Panel on Climate Change : IPCC)

Source: ipcc.ch/report/ar6/wg3

Reaching a Breaking Point: The Catastrophe of the Deterioration of the Environment

On April 4, 2022, the Intergovernmental Panel on Climate Change (IPCC) published its Assessment Report 6: AR6, Part 3, which compiles data and synthesizes research related to the latest situation of global climate change.

The 3,675-page monograph undisputedly affirms **that the aberrations of climate change the world is facing is human-made** (i.e., anthropologic climate change). The report also sends strong signals to all parties to acknowledge that the world is now approaching a critical point of no return, i.e., beyond which it may be **too late to stall or reverse the catastrophic effects. That dire prediction may be true even if global temperature rise is kept below 1.5°C by 2040**, as promised by the international community at COP26 in November 2021.

Despite the current efforts to preserve and restore the environment, mankind must redouble the response with all its strength to minimize damage. One can only hope that, by 2100, or in the next 80 years, the global temperature will have increased by no more than 1.5°C.

Degradation of Plant and Animal Life

From its first report in 1990 to its fifth report in 2021, the IPCC has collected and studied over 12,000 terrestrial species and, in this sixth report, further studies show that more than 4,000 species have adapted and changed in various ways due to climate change.

More than half of the species studied migrated to higher elevations, and two-thirds of plants had altered phenology (seasonal variation), e.g., premature budburst, leaf-out, and flowering. Ecosystem composition, especially in northern latitudes, was found to be different from the original, and an increasing number of invasive species were presented.

In tracking 976 animal and plant species, 47% were found to have gone extinct due to rising temperatures. These extinctions accounted for 55% of tropical species, 39% of temperate species, 74% of fresh water, 51% of marine life, 50% of animals and 39% of plants.

The golden toad in Costa Rica, for example, is feared to have gone extinct in 1990. The possum (lemuroid ring-tail possum) in Australia went extinct in 2005. The mosaic-tailed rat (Bramble Cays Melomys) ceased breeding in 2016, and all these extinctions are related to climate change.

Variations in the Water Cycle and Changes in Water Resources

There are also reports of genetic variation within the breed, and even if it is a modification to survive, most reports suggest that it would not have survived extinction if climate spaces that are suitable for those species are exhausted, rendering the ability to adapt for survival to be exceeded.

Data from 1984–2017 indicate that in the western United States, on average, man-made fires are twice as prevalent as natural fires. In some years, the ratio may be as high as 11-fold. **Globally, these fires generate one-third of the world’s carbon dioxide emissions and reduces the quality of agricultural land, damages biodiversity and destroys natural water sources.**

In addition, higher temperatures are responsible for more outbreaks of disease. The emergence of new disease vectors increases the likelihood that the disease will spread into areas which it has never spread before. For example, on May 19, 2022, the World Health Organization (WHO)⁴ and many media channels issued warnings about **an outbreak of Monkey Pox, a zoonotic disease that originated and spread in central and southern Africa, including tropical forests. Alarmingly, subsequent cases were found in the UK, Spain, Portugal, Sweden, Canada, the US and many other countries.**

Climate change is disrupting the hydrological cycle, and this is affecting water security and related socio-economic factors.

Currently, more than **500 million people in the world live in areas with higher precipitation than usual. On the other hand, more than 163 million people report experiencing lower precipitation than ever before.** The data also indicates that about 4–7.8 billion people are intermittently short of water for at least one month per year due to climate change.

The Drought Conditions Report states that during 1970–2019, human-caused climate change was the cause of global catastrophes related to drought conditions. Man-made climate change accounts for about 7% of drought-related deaths and 34% of disaster-related deaths, particularly in Africa.

Higher temperatures are causing the shrinkage of glaciers by melting and landslides, such as the collapse of the Himalayan ice sheet in India on February 7, 2021, causing both ice blockages and flash floods to destroy dams in Uttarakhand State and the enormous mass of flooding of people’s homes, killing nearly 200 people.⁵



Source: commons.wikimedia.org/wiki/File:Bufo_periglenes2.jpg

Scientific name	<i>Bufo periglenes</i>
Common name	Golden toad
Country	Costa Rica
Extinction year	1990



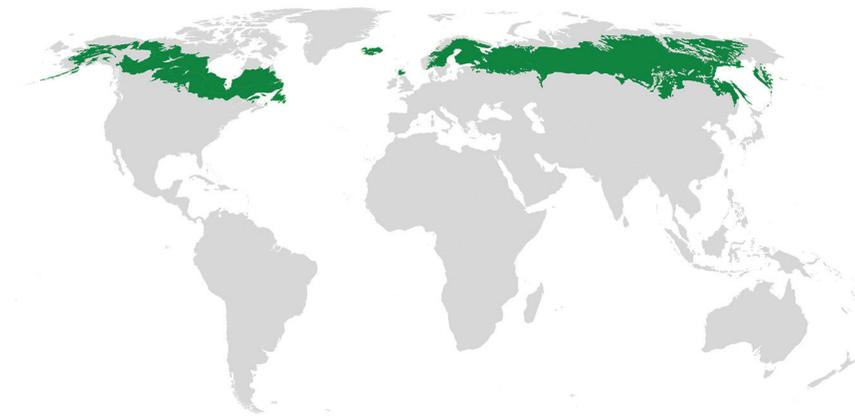
Source: inaturalist.org/photos/16115160

Scientific Name	<i>Hemibelideus lemuroides</i>
Common name	Lemuroid ringtail possum
Country	Australia
Extinction year	2005



Source: commons.wikimedia.org/wiki/File:Bramble-cay-melomys.jpg

Scientific Name	<i>Melomys rubicola</i>
Common name	Bramble Cays Melomys
Country	Australia
Extinction year	2016



Boreal forest spreads throughout the northern hemisphere in the taiga eco-region (green in the image).

Source: commons.wikimedia.org/wiki/File:Taiga_ecoregion.png, created from biome data at worldwildlife.org/publications/terrestrial-ecoregions-of-the-world

Over the past 20 years, the ice sheet has decreased by more than 0.5 meters. From 2000 to 2019, the total net melt of polar ice is over 267±6 gigatons per year. Sea level has risen around 21±3. The polar ice caps are melting 48±16 gigatons per year, causing the higher sea level of 6–19 inches per year.⁶ There is also evidence that the amount of water in rivers in northern latitudes is increasing, and it is expected that, before the end of the 21st century, sea levels will rise another 30 centimeters.⁷

It has also been reported that the temperature in rivers has risen an average of about 1°C and freshwater lakes by about 0.45°C. **This increase in temperature and of the river volume is causing the change in river morphology, whether its route or connections. As oxygen concentration decreases, the thermal regime in the lake changes. As a result, primary productivity in the water source increased.** Studies have reported that fresh water in the boreal forest (Boreal freshwater), one of the most abundant forests in the world, that there is a decrease in water quality.

Abnormally heavy rainfall in recent years in Western Europe, China, Japan, the United States, Peru, Brazil, and Australia have caused heavy flooding. These aberrations have been confirmed to be related to climate change. In addition, the study also confirms with high confidence that the ‘spring flood’ phenomenon, which occurred ten days earlier in the past 40–60 years, is a result of climate change. The economic damage due to flooding is as high as 31%.

In addition, heat wave events are occurring more frequently. Some of these unusual high temperatures have and intensified into extreme heat waves, as in Uttar Pradesh, India with lethal temperatures of 47.2°C and Pakistan at 49°C in April 2022.⁸ In addition to threatening human well-being, these heat waves have also caused mass fish deaths in lakes. **The drought has intensified the drying up of local ponds and reservoirs that housed many creatures which have now disappeared permanently.**

Turbulence of the Marine Ecosystem

Ocean and coastal ecosystems account for two-thirds of the earth’s surface and are the source of biodiversity. These sub-systems help balance the global climate system by controlling the amount of heat, water, and minerals.

With both enormous depth and breadth, the world’s oceans absorb more of the excess heat in the atmosphere caused by greenhouse gases than land does. By absorbing more than 90% of the heat, the ocean requires longer time to cool than land.⁹

Human-caused climate change is having an unprecedented impact on the general health of the oceans, both chemical and physical. This affects changes in the timing of seasons, and the distribution and abundance of organisms ranging from microbes to mammals in all regions.

Every decade since the 1950s, marine life has migrated approximately 59.2±15.5 km upward in the polar direction, with different species in different regions having different migratory distances. The pace is accelerating: For planktonic organisms, it is about 4.3±1.8 to 7.5±1.5 days faster, and for fish it is about 3±2.1 days faster.

Higher temperature leads to more acidity (acidification) and a decrease in the amount of oxygen (deoxygenation) of the ocean. This causes the body (physiological conditions) of marine fish and invertebrates to change and decrease in numbers, affecting the food web in the seas and oceans.

Heat waves that occur in the oceans, lasting weeks or months, expose marine organisms and ecosystems to extreme levels of adaptation. Reports confirm that heatwaves are becoming more frequent, more intense and lasting longer. These events destroy living organisms and ecosystems in the open-ocean, coastal areas, and continental shelf such as coral reefs, rocky shores, kelp forests, sea-grasses, and mangroves. Biological effects are significant, e.g., for fisheries and aquaculture.

Global Warming Effects in Thailand

The report on the Global Climate Risk Index (CRI) 2021¹⁰ by German Watch compiled information about deaths, economic damage and disasters related to climate change. Data compiled by Munich Re NatCat-SERVICE between 2000–2019 indicates that **Thailand is the country with the 9th highest risk of being affected by climate change among countries in the world.** Thailand has 146 adverse climate-change events, but this is a better situation, helping move up one rank compared to the previous year.

It is also worth noting that the countries in the top 10 are all developing countries. Among them are three South Asian countries: Bangladesh (7th), Pakistan (8th) and Nepal (10th); North America has three: Puerto Rico (1st), Haiti (3rd) and Bahamas (6th); Africa has one country—Mozambique (5th); and Southeast Asian countries besides Thailand, which is ranked (9th), include Myanmar (2nd) and the Philippines (4th). According to the 2020 report on Climate Risk and Response in Asia 2020,¹¹ **countries in the Asia-Pacific region will be at the forefront of the impacts of climate change. Indeed, Southeast Asian countries will be affected more than any other region in the world** due to their high dependence on natural resources and agriculture, dense population in the coastal area, and the fact that management of natural resources and the environment still lacks strength. Southeast Asian countries also have a relatively higher proportion of the population living in poverty than other regions.¹²

In the “**Variability and Change 2019**” report, issued by the Climatological Center, Meteorological Development Division of the Thai Meteorological Department, Thailand had the highest average temperature in 69 years, with an average temperature about 1.1°C higher than normal. The north and northeast regions had higher average temperatures than other regions, and where the temperature was 1.49°C and 1.42°C higher than normal, followed by the central region 1.07°C, the east region 1.0°C, the southwest coast 0.79°C, and the southeast coast 0.66°C.

The temperature forecasting results using the Conformal Cubic Atmospheric Model (CCAM) by the Southeast Asia START Regional Center report that, although the mean temperature in Thailand will not change much from earlier periods. However, the number of cold days in the year will decrease significantly, and the number of hot days of the year will also increase.¹³ This will cause the summer to last longer and the winter to shrink significantly, including season-to-season year-to-year variability.¹⁴

Top 10 countries most affected by extreme weather events

Climate Risk Index Ranking		Country	Climate Risk Index
(1999–2018)	2000–2019		
(1)	1	 Puerto Rico	7.17
(2)	2	 Myanmar	10.00
(3)	3	 Haiti	13.67
(4)	4	 Philippines	18.17
(14)	▲ 5	 Mozambique	25.83
(20)	▲ 6	 Bahamas	27.67
(7)	7	 Bangladesh	28.33
(5)	▼ 8	 Pakistan	29.00
(8)	▼ 9	 Thailand	29.83
(9)	▼ 10	 Nepal	31.33

Source: Global Climate Risk Index 2021

According to weather statistics for the past six years, Thailand has always faced alternating flood and drought situations.¹⁵ Meteorologists have observed that Thailand is in the midst of many natural phenomena, and this will be a major factor in causing abnormal rainfall, especially the monsoon troughs that cause rain over a wide area and tropical cyclones that bring more rain.

From tracking sea surface temperatures and central atmospheric circulation system, as well as the eastern side of the Pacific Ocean around the equator during 2017–2021, it can be that that Thailand experienced the El Niño phenomenon during that time (El Niño occurs where sea surface temperatures in the equator in the central and eastern Pacific Ocean are unusually warm; La Niña occurs where sea surface temperatures at the equator in the central and eastern Pacific Oceans are unusually cool).¹⁶ In some years, the El Niño phenomenon occurs in the beginning of the year while La Nina occurs at the end of the year, and this is called the **El Niño-Southern Oscillation**, or **ENSO**.

All this contributes to fluctuations in climate, especially the amount of rain and the drought in Thailand, and that is wreaking havoc on both the way of life and the country’s economy.

In 2011, Thailand suffered one of the worst floods in its recorded history. It was caused by more than five storms in the same year at the end of the rainy season when the water in most dams was almost full. These storms combined with the effects of La Niña (e.g., rain coming sooner with the higher rainfall) that caused more than 24 billion baht of damage, loss of life, property, agricultural products, and various sectors of commerce.

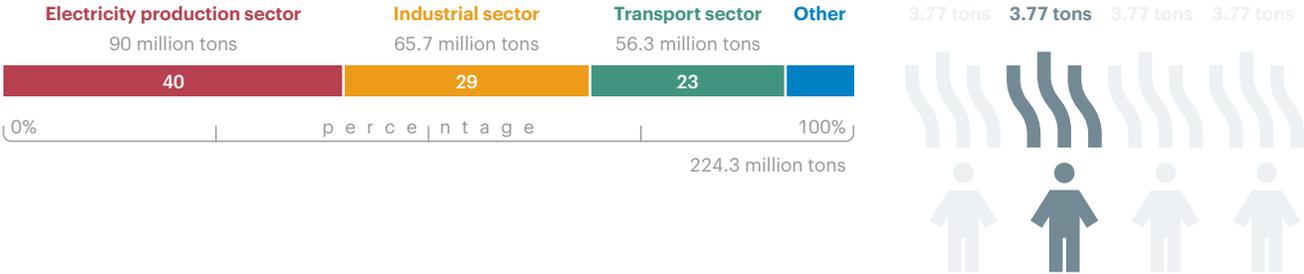
Only two years later, in 2013, Thailand was affected by the El Niño, producing a severe drought causing more than 3 billion baht in damage. The Thai Meteorological Department reported that 2020 was the second driest year in the past 40 years, causing economic damage of more than 10 billion baht.¹⁷

The Office of Natural Resources and Environmental Policy and Planning of the Ministry of Natural Resources and Environment issued

a report on Thailand’s greenhouse gas emissions progress to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. The report said that Thailand emits approximately 354 million tons of CO₂-equivalent of greenhouse gases. Forestry and land used for agriculture can absorb approximately 91 million tons of CO₂-equivalent of greenhouse gases. This makes Thailand’s net greenhouse gas emissions at 263 million tons of CO₂ equivalent.¹⁸

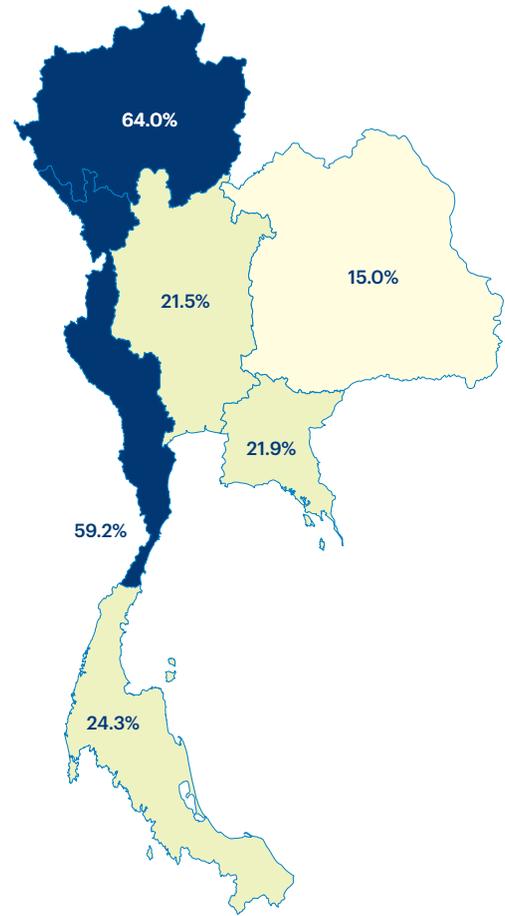
According to the Ministry of Energy, from 2016 to 2020, Thailand had a decreasing trend in CO₂ emissions. In 2020, Thailand emitted 224.3 million tons of CO₂, a decrease of 10.2% from the previous year, equivalent to 3.77 tons of CO₂ emissions per capita. The generation of electricity accounted for 90 million tons, or 40% of total carbon emissions, followed by the industrial sector, 65.7 million tons, representing 29%, and the transportation sector, 56.3 million tons, representing 23%.¹⁹ In 2021, Thailand ranked 26th in CO₂ emissions among countries in the world.²⁰

Thailand’s CO₂ emissions in 2020 _____ per capita



However, what is worrying is the area of forests in Thailand that can help absorb greenhouse gases has been found to be continuously decreasing.

Thailand has tried to preserve forested areas through the declaration of the national forest policy. The aim is to increase forest area, both for conservation and for the economy, so that it covers not less than 40% of the land area. However, at present, only the northern and western regions can attain that level of forest cover. The forest area in the north covers for 64.0% of the area, while the value for the western region is 59.2%, the central region is 21.5%, and the northeast had only 15.0% forest cover. One of the problems is forest encroachment. For example, encroachment into National Forest Reserve at Kaeng Krachan, which has a forest area of approximately 2.2 million rai, has led to a decrease in forest of 2,000 rai as of 2020.²¹ Kaeng Krachan is classified as a watershed forest and has high biodiversity. It is the origin of rivers, and has an abundance of nature. Once damaged, it is difficult to repair.



Global Cooperation to Tackle Environmental Issues

165 Years from Eunice Foote's Glass Cylinder to COP26

It took the world at least 165 years to realize and accept that human actions could change the temperature of the planet. In order to return the situation to the previous equilibrium, the entire world must work together for at least the next 100 years.

However, Will the World Return to Its Original Balance? Or Is This Just a Fading Dream?

The study of climate change began with the experiments of scientist and women's rights activist Eunice Newton Foote. In the 1850s, this American woman used a glass cylinder to test the reaction of solar rays to heat various gases. It was found that CO₂ could be heated to higher temperatures by sunlight than other gases. The more humid the air the higher temperature that is achieved. The results of this study were published in the American Journal of Science and Arts in 1856.²²

382 *On the Heat in the Sun's Rays.* 383 *Maroon's Geological Map of the United States.*

ART. XXXI.—*Circumstances affecting the Heat of the Sun's Rays;* by EUNICE FOOTE.
(Read before the American Association, August 23d, 1856.)

My investigations have had for their object to determine the different circumstances that affect the thermal action of the rays of light that proceed from the sun.

Several results have been obtained.

First. The action increases with the density of the air, and is diminished as it becomes more rarefied.

The experiments were made with an air-pump and two cylindrical receivers of the same size, about four inches in diameter and thirty in length. In each were placed two thermometers, and the air was exhausted from one and condensed in the other. After both had acquired the same temperature they were placed in the sun, side by side, and while the action of the sun's rays rose to 110° in the condensed tube, it attained only 85° in the other. I had no means at hand of measuring the degree of condensation or rarefaction.

The observations taken once in two or three minutes, were as follows:

Exhausted Tube.		Condensed Tube.	
In shade.	In sun.	In shade.	In sun.
75	80	75	80
76	82	75	85
80	82	80	100
82	86	82	105
84	88	85	110

This circumstance must affect the power of the sun's rays in different places, and contribute to produce their feeble action on the summits of lofty mountains.

Secondly. The action of the sun's rays was found to be greater in moist than in dry air.

In one of the receivers the air was saturated with moisture—in the other it was dried by the use of chloride of calcium. Both were placed in the sun as before and the result was as follows:

Dry Air.		Damp Air.	
In shade.	In sun.	In shade.	In sun.
75	75	75	75
78	88	76	90
82	102	80	108
82	104	82	110
82	105	82	114
85	105	82	120

ART. XXXII.—*Review of a portion of the Geological Map of the United States and British Provinces by Julius Maroon,* by WILLIAM P. BLAKE.

GEOLOGICAL maps of the United States published in Europe and widely circulated among European geologists, are necessarily regarded by us with no small degree of attention and curiosity. This is more especially true, when such maps embrace regions of which the geography has only recently been made known and the geology has never before been laid down on a map with any approach to accuracy.

The recent geological map and profile by M. J. Maroon, which has appeared in the *Annales des Mines* and in the *Bulletin de la Carte Géologique des États-Unis et des Provinces Anglaises de l'Amérique du Nord* par Jules Maroon. *Annales des Mines*, 5e série, T. 16, p. 375. Published also with the following:

Études explicatives d'une carte géologique des États-Unis et des provinces anglaises de l'Amérique du Nord, avec un profil géologique allant de la vallée du Mississippi aux côtes du Pacifique, et une planche de faunes, par M. Jules Maroon. *Bulletin de la Société Géologique de France*, Mai, 1855, p. 815.

"Circumstances affecting the heat of the sun's rays" by Eunice Newton Foote in the American Journal of Science and Arts in 1856

Source: geographyrealm.com/earliest-published-research-linking-carbon-dioxide-with-global-warming

Previously, Joseph Fourier, a French mathematician and physicist interested in heat circulation, had proposed that heat reflected from the Earth's surface would be absorbed in the atmosphere, which would increase the temperature of the Earth. However, Fourier never did the same experiment as Foote.

It cannot be said that the results of Foote's study at that time caused people around the world to rise up in a frenzy and launch a movement to keep global temperatures from rising by curbing CO₂. **At that time the concept of global warming or even the idea that human action would change the temperature of the entire planet was too far-fetched.**

But Foote's experiment led other scientists, such as Irish scientist John Tyndall, to build upon her conclusions in 1859.²³ This led to the concept of greenhouse gases (GHGs) and the amount of infrared radiation that these gases can absorb to generate heat and raise the Earth's temperature.

Later, in 1895, the Swedish scientist Svante Arrhenius studied the changes in the amount of CO₂ and found that, **if CO₂ emissions can be reduced by half, the global temperature would drop about 5°C.** Conversely, if the amount of CO₂ increased one-fold, it would raise the global temperature by 5°C.

These findings provided the basis for a number of mathematical models for predicting global temperature changes. One example is the model of British scientist Guy Stewart Callendar, developed in 1938.²⁴ It was found that **doubling the amount of CO₂ will raise global temperatures by about 2°C** (Callendar effect). This was later called **climate sensitivity** and provided the motivation for the United Nations Framework Convention on Climate Change (UNFCCC), a milestone in global warming control.

At that time, Callendar further concluded that the Industrial Revolution was a major contributor to the ever-increasing global temperature.

Callendar's discovery faced considerable suspicion and controversy from the scientific community. Skeptics questioned the accuracy and reliability of the conclusions and **argued that the links to temperatures at the global level were greatly exaggerated.**

However, research on global temperature changes continues. Another very important discovery was made by Charles David Keeling, an American scientist from the Scripps Institute of Oceanography, one of the earliest research institutes studying global temperature changes.²⁵ Keeling had been recording CO₂ emissions from the Mauna Loa station on the island of Hawaii starting in 1958, and has found **seasonal increases and decreases in CO₂ emissions each year. But the long-term overall trend was constantly increasing (Keeling curve).**²⁶ That data also confirmed Arrhenius' theory **that man is the cause of these rising temperatures (anthropogenic contribution) via the increasing amount of CO₂ and other greenhouse gases being deposited into atmosphere.**

Increase and decrease of carbon dioxide by season by year. However, the overall trend is an increase (Keeling curve).

Source: keelingcurve.ucsd.edu





Source: flickr.com/photos/worldmeteorologicalorganization/albums/72157652020108895

World Meteorological Organization (WMO)
in Geneva, Switzerland

Global Partnership to Tackle Climate Change

Before it became a movement to tackle climate change, the global community was initially focused on preserving the environment. In particular, the movement was concerned about the imbalance use of natural resources, and how this was depriving parts of the worlds and certain population groups of the natural resources need for their socio-economic activities. Thus, in the beginning, this movement was not really related to global warming, which was mostly driven by the World Meteorological Organization (WMO).

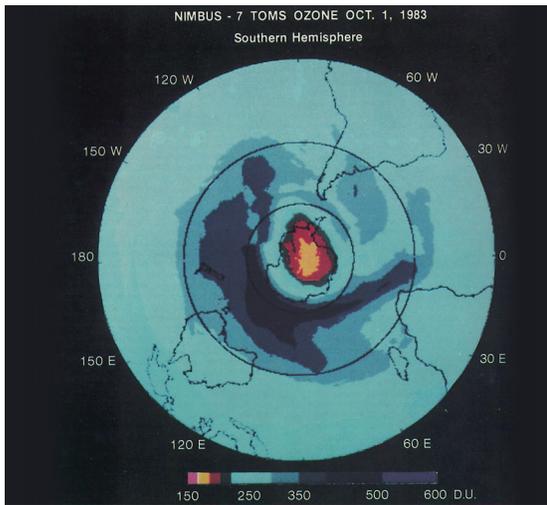
At the UN Scientific Conference on the Conservation and Use of Resources from August 17 to September 6, 1949, **for the first time, the UN raised the issue of natural resource degradation and how that would adversely affect economic development, the global economy, and society at large.**

After more than 20 years, the UN General Assembly recognized the issue of natural resources and the environment, which made the major UN agencies turn its attention to the issue.

Global climate change was on the agenda of the UN Scientific Conference for the first time in 1972.²⁷ The meeting, held in Stockholm, Sweden, later known as the 1st Earth Summit, sent a warning to member states to watch out for trends in climate change, including various activities that could lead to undesirable climate change. At the meeting, it was proposed to establish a station to monitor atmospheric conditions that may affect meteorological conditions including climate change. The participants recommended various projects, to be under the coordination and monitoring of the WMO. One aim was to achieve a consensus **“whether climate change is a natural phenomenon or largely driven by human action.”**

The Stockholm forum also called for a second meeting on environmental concerns, particularly establishing the United Nations Environment Program (UNEP) as a Governing Council dedicated to the environment. There would be a secretariat in Nairobi, Kenya. In this forum, countries also considered establishing the Environment Fund and the Environment Coordinating Committee.

However, the issue remained concerning natural resources, whether it was water, renewable energy, marine mammals, forest areas, desert areas. **At that time, the issue of global climate change did not receive as much attention.**



Satellite images presented by Pawan Bhartia (atmospheric scientist) presented at a technical conference in Prague in 1985. The image shows the degradation of the ozone layer over time over Antarctica and led eventually to the Montreal Protocol.

Source: flickr.com/photos/gsfc/8006648994

However, progress was made concerning surveillance of the surrounding environment. This included tracking pollution from long distance transport by aircraft in 1979, which led to the establishment of the Convention on Long-Range Transboundary Air Pollution which addressed the issue of ozone layer damage and limits on consumption of chlorofluorocarbons F-11 and F-12, which led to the Vienna Convention for the Protection of the Ozone Layer in 1985 and the conclusion of the Transboundary Air Pollution Convention for a 30% reduction in sulfur emissions.

It took another 16 years for climate change to be fully addressed and put on the urgent global agenda in the UNEP seminar in January 1988. Climate became a sensitive issue and deserved to be kept at the forefront of vigilance. The Intergovernmental Panel on Climate Change (IPCC) was formed as a forum for exchanging scientific information on global climate change and greenhouse gases. The first meeting was held in November of the same year.

The UN General Assembly also called climate change an urgent issue and urged WMO and UNEP to study the information thoroughly and provide strategic recommendations to slow down, mitigate and resolve the issues related to climate change to protect the climate.

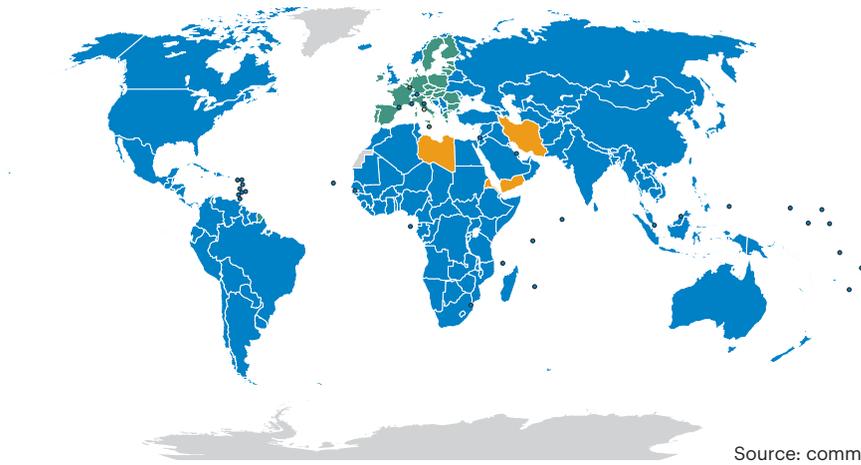
The move prompted the UN General Assembly to adopt a resolution (Resolution 44/207) in 1989 **endorsing the UNEP proposal to prepare with the WMO a framework for negotiations to reach conclusions on measures jointly between member countries.** In addition, the meeting also approved the Malé Declaration on Global Warming and Sea Level Rise and the Helsinki Declaration on the Protection of the Ozone Layer, as well as the Montreal Protocol on Substances that Deplete the Ozone Layer to advance the preservation of the ozone layer.

In 1990, the 2nd World Climate Conference was held between October 29 and November 7, and the Ministerial Declaration made climate change a global problem that required cooperation of the community in responding and solving problems and need to accelerate programs, including **calling for a global treaty.**²⁸ This was a clarion call for urgent action.

Later in 1992, the UN General Assembly scheduled the UN Conference on Environment and Development, or Earth Summit, in Rio de Janeiro, Brazil. At the meeting, several agreements were made on environments and climate change, such as a referendum on joint action for environmental development, protection of the atmosphere, interlinking between scientific knowledge sustainable development, use of energy, transportation, industrial development, stratospheric ozone depletion situation, and atmospheric pollution caused by aircraft.

However, the development that is regarded as an important milestone of the meeting is **the signing of the United Nations Framework Convention on Climate Change (UNFCCC)** by 158 countries.

The key goal of the framework is **to balance the amount of greenhouse gases in the atmosphere to a level that is not harmful to humanity.** Operations were started in 1994, which later resulted in the first COP: Conference of the Parties in 1995 in Berlin to create an obligation to jointly solve the problem of climate change.



Paris Agreement



Source: commons.wikimedia.org/wiki/File:ParisAgreement.svg

Another milestone of the UNFCCC **was the adoption of the Kyoto Protocol in December 1997, which called on industrialized nations to jointly reduce CO₂ emissions and other greenhouse gases at least 5% from 1990** with a time frame of 2008–2012. This Protocol took seven years to negotiate before it officially started on February 16, 2005, with 160 countries signing the pledge.

At the COP21 held in December 2015, **the Paris Agreement** was forged which leverages joint efforts among 196 countries to intensify efforts to tackle climate change, such as **requiring each country to report a five-year plan to reduce greenhouse gas emissions. These are the so-called Nationally Determined Contributions (NDCs)**, in which each country must intensify measures and targets to reduce greenhouse gas emissions every five years.

On April 22, 2016, representatives from 175 countries including Thailand’s Minister of Natural Resources and Environment attended the signing ceremony of the Paris Agreement in New York. Thailand submitted its instruments of ratification as a party to the Paris Agreement on September 21, 2016, during the 71st session of the United Nations General Assembly. At present, there are 184 countries that have approved the instruments of ratification out of 197 member countries. The UNFCCC²⁹ action, if successful, accounts for more than 55% of the world’s greenhouse gases (as of December 21, 2018). The Paris Agreement has been effective since November 4, 2016.

Signatories also agreed to **jointly reduce global temperatures from the target of 2°C to no more than 1.5°C**, along with other supporting mechanisms to help member countries build the capacity of personnel and arrange financial mechanisms.

However, these international cooperation frameworks have always faced political issues. For example, **the attitude and cooperation of the United States, one of the world’s top greenhouse gas producers, changes according to the direction of each president.** Thus, the US has jumped into and out of these global treaties. The first time was in 2001 when President George W. Bush announced that the United States would not implement the Kyoto Protocol, claiming that the protocol was fatally flawed (without clear evidence). In fact, the US was more concerned about the detrimental effect of the Protocol on the US economy.³⁰

Although the United States, under President Barack Obama, supported the work of the UNFCCC, it had not yet signed the Paris Agreement. After the relatively enlightened administration of Obama, the US entered the dark era of President Donald Trump, who made a promise that, if elected, he would withdraw the United States from the Paris Agreement; and so he did in 2016—**reasoning that he would never accept any agreements that looked like a punishment on the US.**³¹

After Trump was soundly defeated in the next presidential election, the US swung back to be in harmony with the rest of the world regarding climate change, with the administration of Joe Biden, who took office in January 2021. Accordingly, the US re-joined Paris Agreement on February 19, 2021.

Cooperation on Climate Change and Health

The impacts of climate change on human health are both direct and indirect, with the direct effects being extreme weather conditions, and either extreme heat or cold, which can be fatal. There are the increasing frequency and intensity of natural disasters triggered by global warming that threaten human well-being. As for the indirect effects, there is a lack of food due to the destruction of agricultural production, inadequate drinking water due to drought conditions as well as changes in ecosystems that affect the expansion of disease vectors and pathogens.

The seriousness and complexity of climate change's impact on health requires a multi-faceted response, leading to **the Climate and Health Summit in 2011** in Durban, South Africa during the 17th COP Conference (COP17)

The Climate and Health Summit at that time resolved to establish **the Global Climate and Health Alliance (GCHA)**, a global consortium of health and development organizations, which aims to bring together policy advocacy (globally, regionally, nationally) related to climate change taking into account health issues, as well as **encouraging the health sector to be a role model in tackling climate change and working to raise awareness about the impacts of climate change on human health.**

The GCHA organizes the Climate and Health Summit almost every year, and that forum is often held in parallel with COP meetings. There are currently more than 100 members of the Alliance.³² Most of GCHA's activities are webinars to exchange

information and raise awareness of health issues related to climate change.

In addition, GCHA has partnered with WHO to form **the WHO Civil Society Working Group to Advance on Climate Change and Health.**³³ On May 24, 2019, Dr. Tedros Adhanom Ghebreyesus, Director General of the WHO, at the 72nd World Health Assembly, called on members to strengthen collaboration with non-governmental organizations (NGOs) whose missions are related to health and climate change. WHO submitted an open letter to the leaders of the G20 countries calling for economic recovery to take into account health issues.³⁴ The Health Climate Prescription was published at COP 26 to highlight health as an urgent dimension of tackling climate change.

Appeal for the Acceleration and Increase in the Intensity of Measures at the COP26 Meeting

The 26th COP meeting held from October 31 to November 12, 2021 in Glasgow, Scotland (previously scheduled in 2020, but postponed to 2021 due to the COVID-19). The meeting was closely watched because it required each country **to present a clearer and more rigorous goal to reduce greenhouse gas emissions**, with the ultimate goal to achieve net zero greenhouse gas emissions³⁵ by 2050.³⁶ This pressure was important because, in the past, even though the world has tried to reduce greenhouse gases, it has failed to meet the targets of the Paris Agreement.³⁷ The key target is to keep the global average temperature rising below 1.5°C, and there are several important agreements that are worth watching to assess progress.

Important Issues That Countries Agree on in the COP26 Forum³⁸

Around the world, people are increasingly realizing that the weather is in a state of emergency. Thus, the countries at COP26 reaffirmed the goal of the Paris Agreement to limit the global average temperature rise to below 2°C relative to pre-industrial times, and will aim to limit the temperature rise to 1.5°C. “Human activity” has warmed the planet by about 1.1°C to date, broadly affecting all regions. However, the budget for carbon reductions to meet the Paris climate targets is insufficient. Still, most of the countries around the world now accept that the impact of climate change would be far worse financially if temperatures cannot be kept below 1.5°C.



There is still a need to mobilize more funding for climate action. Developed countries have failed to pledge to deliver \$100 billion per year to developing countries. However, COP 26 was confident that it will reach its fundraising goal of \$100 billion by 2023.



Countries agreed to implement the Paris Agreement, especially about the carbon market, which will help countries trade their shortfalls to reduce greenhouse gas emissions from other countries that have already exceeded the target. Negotiations also concluded on a common time frame and model agreement for the countries to report progress on a regular basis. This is designed to build trust and confidence that every country is contributing to the global effort.



Every country must act fast to reduce CO₂ emissions by 45% by mid-century. However, the current climate action plans of various countries are not aggressive enough to achieve that. Other greenhouse gases must also be addressed. The Glasgow Climate Pact called on all countries to submit a more definitive national action plan in 2022 instead of 2025 as originally scheduled. It also called on the UNFCCC to produce an annual report on the synthesis of NDCs to measure progress.



COP26 delegates are **aware of the disaster and loss** attributable to the impact of climate change on people, especially in developing and least-developed countries. The countries agreed to strengthen a network known as the **Santiago Network**.³⁹ The network will connect countries in need with those who provide technical assistance, knowledge, and resources to address climate risks.

The need to wean countries off from dependence on fossil fuels. Countries have finally agreed to call for a reduction in the use of coal and an end to inefficient subsidies on fossil fuels. This is an important issue that has never been explicitly addressed in UN decisions before now. Although coal, oil, and gas are the main drivers of global warming, many countries are still against the ban on coal. In the past, the solution to this issue was unclear.



COP26 also launched the **“Glasgow Dialogue”** to discuss arrangements for funding activities to avoid and reduce the intensity of damages and loss from climate change. Many developing countries hope that COP26 will help lead to the establishment of mechanisms to deliver aid in the event of climate-related disasters. Although this has yet to happen as of this report, this issue will be discussed further in 2023.⁴⁰



Agreements and Important Notices



Forest: The 137 countries that have prioritized and committed to restoring forests and land degradation by 2030 will receive US\$12 billion in government support and US\$7.2 billion in such country funds. Counterpart investments from more than 30 financial institutions worth more than \$8.7 trillion is pledged for activities to discourage deforestation.



Methane: 103 countries, including 15 major emitters, have signed the Global Methane Pledge.⁴¹ The pledge aims to limit methane emissions by 30% by 2030 compared to 2020 levels. Methane is one of the greenhouse gases that contributes the most to global warming. It is one-third of the gas produced by human activities.



Motor Vehicles: More than 30 countries from six major car manufacturers and their respective actors have jointly targeted to only produce emission-free vehicles by 2040 globally and, by 2035, leading markets will accelerate the reduction of CO₂ emissions from road transport which currently account for about 10% of global greenhouse gas emissions.



Charcoal: Leaders from South Africa, the United Kingdom, the United States, France, Germany, and the European Union have announced a significant partnership to support South Africa, the world's most carbon-intensive power producer, with \$8.5 billion over the next 3–5 years to transition to a low-carbon economy.



Financing: Private financial institutions and central banks announced a multi-trillion dollar restructuring plan to achieve global Net Zero emissions. Among them is the Glasgow Finance Alliance for Net Zero (GFANZ), which brings together more than 450 financial institutions in 45 countries with around \$130 trillion in assets.

Commitments by Countries in COP26

The US and China jointly declared to end conflict and work together to resolve CO₂ emissions. The Joint Statement noted that a working group was formed to highlight action on climate change in the 2020s.⁴² Using the Paris Agreement of 2015 as a guideline, the working groups of the two countries will meet regularly, carry out concrete work such as academic exchange, convene meetings of experts from both government and non-government sectors, as well as considering the provisions of the Joint Statement.⁴³ Both countries will strive to achieve new targets to reduce greenhouse gas emissions. This joint commitment will be announced again in 2025. The main control measures being considered are reducing CO₂ and methane emissions, as well as reducing deforestation.

India is the world's third-largest emitter of greenhouse gases after the United States and China. India declared its intention to reduce greenhouse gas emissions to zero by 2070. There is also a declaration on global warming, namely, the use of renewable energy to 50% of total energy demand by 2070, produce 500 gigawatts (GW) of clean energy, and reduce the intensity of greenhouse gas emissions in the economy to 45% by 2030.⁴⁴

The EU has set a goal of zero emissions by 2050 and codified it into law. The medium-term goal of reducing greenhouse gas emissions is by 55% by 2030. This effort will be driven by

“Fit for 55 package”⁴⁵

This is a series of legislative acts that are highly transformative for the EU by 2030. These include:

SUMMARY OF THE AGREEMENTS FROM COP26

WHAT DECISIONS DID EACH COUNTRY MAKE?

	Discontinue deforestation	Year to reach Net Zero	Discontinue use of charcoal	Reduce methane emissions
Thailand	✗	2065	✗	✗
Australia	✓	2050	✗	✗
Canada	✓	2050	✓	✓
France	✓	2050	✓	✓
USA	✓	2050	✗	✓
UK	✓	2050	✓	✓
New Zealand	✓	2050	✓	✓
Vietnam	✓	2050	✓	✓
Japan	✓	2050	✗	✓
Indonesia	✓	2060	✓	✓
Singapore	✓	-	✓	✓
China	✓	2060	✗	✗
India	✗	2070	✗	✗

https://www.aljazeera.com/news/2021/11/14/infographic-what-has-your-country-pledged-at-cop26

Commitments by Countries in COP26

Source: globalcompact-th.com/news/detail/632

In terms of **natural resources**, the EU has new laws to prevent deforestation. It aims to control six products contributing to high deforestation: soybeans, palm oil, beef, cocoa, coffee, and timber, among others. Importing countries are required to prove their products are free from deforestation. (Deforestation-free products). For example, some may have to show the geographic coordinates of the farming/cultivation areas. In addition, there is another important law that the EU will consider, namely

The system of controlling imports of timber through due diligence (DD)⁴⁶

Improvement of the EU Emissions Trading System (EU-ETS) to reduce emissions for aviation and marine transport

Increase the ratio of renewable energy consumption to 40% by 2030 under the Renewable Energy Law

Support the development of clean energy such as hydrogen and batteries

Reform finance and budget for investment in activities that most benefit the climate and reduce investment in traditional energy businesses like fossil fuels

In addition, the EU plans to implement trade measures primarily for environmental goals. The plan is to use trade measures to encourage trade partners to improve product standards to be eco-friendly, such as measures to adjust carbon prices before crossing borders (Carbon Border Adjustment Mechanism) for six groups of imported products, including iron and steel, cement, energy/electricity, fertilizer and aluminum, motor vehicles, and some agricultural products. The aim is to reduce imports of high-emission goods into the EU.

Partner countries began considering the draft law at the beginning of 2022 so that companies and businesses can practice principles of human rights, the environment, and good governance throughout the production chain.

In **climate diplomacy**, the EU has signaled the urgency of tackling climate problems. The EU is emphasizing proactive work in bilateral and multilateral ways, bringing together superpowers that emit greenhouse gases and developing countries to seriously address the climate problem. It also sets guidelines for technical assistance and budget for developing countries. At the same time, new laws are developed and enacted that will help solve climate problems in practice.⁴⁷ The EU's goal-setting and stance is very serious and admirable compared to other major powers.

Agreements in the COP arena reflect that the driving force of most economies and various industries around the world is energy. Too many countries have not yet accepted and agreed with commitments as well as agreements. Much of this reluctance is due to fear of adverse economic impacts.

Actions to Reduce Greenhouse Gas Emissions in Thailand

Thailand has been active on the issue of climate change for some time. This can be seen from **the Cabinet's resolution, on October 1, 2015, to make climate change an important policy of the country**, starting from 2016 onward.⁴⁸ The Thai Bureau of the Budget and various related agencies are eager to support operations to achieve greenhouse gas reduction goals and drive various operations related to mitigating the effects of climate change.

In addition, the Cabinet meeting on January 12, 2016, agreed to assign the Office of Natural Resources and Environmental Policy and Planning together with relevant agencies to prepare the “Nationally Determined Contribution Roadmap on Mitigation, abbreviated as the NDC Roadmap.”⁴⁹ There is the National Science Technology and Innovation Policy Office as the National Designated Entities (NDE) and agencies in related sectors to prepare technology databases and technology roadmaps, even since before the COP26.

In addition, the 12th National Economic and Social Development Plan (2017–2021) places importance on climate change, and increasing the efficiency of reducing greenhouse gases as well as increasing the ability to adapt to climate change. The 13th edition (2023–2027) has set, as **the 10th milestone, the Sustainability of Natural Resources and the Environment. The aim is to push Thailand towards the circular economy and a low-carbon society** while increasing the value of the GDP. The strategy includes

recycling of targeted materials such as plastics, construction materials, food agriculture, etc., and increasing environmental performance, e.g., increasing forest area, increasing the proportion of renewable energy used, increasing the rate of waste recycling, and reducing the amount of waste per capita, all of which is in line with the NDC Roadmap

However, what caused concern and confusion about greenhouse gas reduction plans is the target quantity and year to achieve it. They were urgently changed just before the Thai Prime Minister gave a statement at the COP26 meeting.

According to the original NDC Roadmap that Thailand presented to the UNFCCC, Thailand has set a goal to reduce greenhouse gas emissions by 20% in 2030, or to 111 Mt-CO₂-eq of greenhouse gas emissions. The country is planning the operations of various sectors for the period from 2021 to 2030 (while the NDC Roadmap has stated that it will reduce up to 115.6 Mt-CO₂-eq). For the goal of achieving carbon neutrality, Thailand has informed the UNFCCC that it can be achieved by around 2050, and that Net Zero can be achieved in the second half of this century, or by about 2090 or in the next 70 years.⁵⁰

However, in a statement to the COP26 meeting, **the Prime Minister announced an accelerated timeline for achieving greenhouse gas reduction targets by 2030.** Thailand will reduce its greenhouse gas emissions by 40%.⁵¹ This means that the new greenhouse gas reduction target is about 222 Mt-CO₂-eq. Carbon neutrality remains targeted for 2050, while the target of zero greenhouse gases has been moved up to 2065.⁵² **Nevertheless, the essence and various guidelines which are defined in the NDC Roadmap have not been modified in any way.** Instead, the various agencies related to the NDC Roadmap need to revise their goals and operational guidelines.

Source: unsplash.com/photos/UFnHt94r91w



The Longest-Term Goal in the History of Thailand's National Planning Process

Although the NDC Roadmap ends in 2030, or before the next 10 years, the goal is to reduce CO₂ emissions by 40% from the level in 2005. Still, that will be an important stepping stone to achieve carbon neutrality in 2050 or in the next 30 years. The Net Zero goal includes all the main greenhouse gases, and is to be achieved by 2065, and that is the longest time horizon ever taken by a national plan of Thailand.

The NDC Roadmap divides greenhouse gas reduction measures into three sectors: energy and transportation, industrial processes and product use, and waste management. The National Climate Change Policy Committee issued a resolution on July 13, 2017, assigning agencies to be responsible for the different sectors. **The Office of Policy and Energy of the Ministry of Energy** is responsible for measures related to the energy sector. This will be the main sector since about half of CO₂ emissions come from the energy sector. As for the measures in the transport sector, **the Office of Transport and Traffic Policy and Planning of the Ministry of Transport** is responsible. For industrial process and product utilization measures, **the Department of Industrial Works of the Ministry of Industry** is responsible. For measures related to community waste management, responsibility is assigned to **the Pollution Control Department of the Ministry of Natural Resources and Environment**.

The greenhouse gas reduction action plan, according to the NDC Roadmap, is integrated across ministries that requires efficient and continual coordination and monitoring mechanisms. This is especially true for the field of energy and transportation that have to work across two ministries, namely the Ministry of Energy and the Ministry of Transport.

The NDC Roadmap lays out 15 measures to reduce greenhouse gas emissions, of which nine are measures in the energy and transportation sectors; two are related to electricity generation (i.e., increasing the efficiency of electricity generation and producing electricity from renewable energy); two are related to household energy use (i.e., household energy efficiency enhancement and household renewable energy use). Measures related to energy

use in commercial buildings and government agencies include one measure to increase energy efficiency in buildings. Measures related to energy use in the industrial sector include two measures to increase the efficiency of industrial energy use and use renewable energy in the industry. As for measures related to transportation, there are two measures, which are to increase the efficiency of energy use in transportation and use biofuels for vehicles. All of this is expected to reduce greenhouse gas emissions by 113 Mt-CO₂-eq.

There are four measures in the field of waste management. One measure is to reduce the volume of waste by reducing the rate of waste generation (recycling). There are three measures related to wastewater management, such as increasing the production of biogas from industrial wastewater by reusing methane gas, combined with other industrial wastewater management and community wastewater management. These measures are expected to reduce greenhouse gas emissions by **two Mt-CO₂-eq.**

There are two measures in the field of industrial processes and product utilization. They are measures related to the adjustment of industrial production processes, namely clinker substitution and replacement/modification of refrigerant which is expected to reduce greenhouse gas emissions by **600,000 t-CO₂-eq.**

If the country can follow this road map without any jams or accidents, Thailand will be able to greatly reduce the amount of greenhouse gas emissions: **Either by 20% under the original plan or 40% under the new plan.** That said, Thailand still has to travel at least 20 years to reach carbon neutrality in 2050 and another 40 years to Net Zero greenhouse gas emissions by 2065.





Source: unsplash.com/photos/TUJudOAWAPI

Inter-Sectoral Collaboration to Reduce Greenhouse Gases

In the coordination of many sectors, including the public sector, the private sector, and international organizations, the government has assigned the Office of Natural Resources and Environmental Policy and Planning to be the coordination focal point, and to work with Thailand Greenhouse Gas Management Organization (TGO), which was established in accordance with the Cabinet resolution on May 15, 2007. The TGO plays a large role in terms of coordinating across agencies and looking for opportunities and persuading potential agencies to initiate projects to reduce greenhouse gas emissions. The TGO also provides technical assistance and seeks support and cooperation from foreign organizations.⁵³

An important tool of the TGO that encourages various agencies to come together to reduce greenhouse gas emissions is to certify the amount of greenhouse gas, which has two parts

Greenhouse Gas Mitigation Mechanism

Certification of the carbon footprint label

1

The greenhouse gas mitigation mechanism is a criterion for the approval of various projects. This mechanism includes four types of actions to reduce greenhouse gases:

Thailand Voluntary Emission Reduction Program (T-VER). In 2021, there were 32 T-VER projects registered, and these pledged to reduce a total of 3,578,816 tons of carbon equivalents per year. During 2014–2021 Fiscal Years, there were 257 T-VER projects, representing a total of 9,582,052 tons of carbon equivalents/year to reduce/store.⁵⁴

2

Low Emission Support Scheme (LESS), which is a preliminary assessment of greenhouse gas emissions to raise awareness of greenhouse gas emission reduction. This mechanism does not involve trading the amount of greenhouse gas reductions. Instead, these projects will receive a Letter of Recognition. In 2021 Fiscal Year, 1,178 activities from 473 agencies have been certified, representing 942,753 t-CO₂-eq of greenhouse

gas reduction and storage capacity of 1,086,080 t-CO₂-eq. During 2015–2021 Fiscal Years, 7,697 activities from 1,041 agencies have been certified, representing a total reduction and storage of greenhouse gas emissions of 190 Mt-CO₂-eq. This total can be divided into the amount of greenhouse gases that can be reduced by 3.5 million tons of carbon and storage (Carbon stock) of 186.5 million tons of carbon.

Joint Credit Mechanism (JCM) is a mechanism implemented in conjunction with Japan’s Ministry of the Environment, which provides assistance in low-carbon technologies. Since the start of the cooperation in November 2015 until 2021, there have been 39 supported projects worth more than 2.3 billion baht, and it is expected that these projects will reduce greenhouse gas emissions by 207,404 tons of carbon equivalents.

Clean Development Mechanism (CDM) is a mechanism under the Kyoto Protocol that allows industrialized countries that are developed and listed in the Protocol’s annexes to make commitments to reduce greenhouse gas emissions by trading carbon credits earned from CDM projects to offset each country’s greenhouse gas emissions. This mechanism has been implemented since 2008 with 27 initial projects. In 2021, there were 154 projects that can reduce greenhouse gas emissions by 7.41 Mt-CO₂-eq per year.⁵⁵

3

4



In addition to the greenhouse gas reduction mechanism, TGO also undertakes **Carbon Footprint label certification** and, among ASEAN member countries, Thailand is considered to be the leader in carbon footprint label certification.⁵⁶ In Thailand, **there are five groups of carbon footprint labels, covering organizations, products, to individuals**, as follows:

1

The carbon footprint of a product is included on a label that appears on various products. It refers to the amount of greenhouse gases generated from the production of products from the acquisition of raw materials, through the production process, transportation, use, and disposal. The product's carbon footprint label is valid for three years. In the 2021 Fiscal Year, there were 491 products from 87 companies that have been authorized to use the carbon footprint mark and, at the time of this report, there were 4,509 authorized products from 650 companies in Thailand.

2

The carbon footprint for an organization, or Corporate Carbon Footprint (CCF). This is a certification of greenhouse gas emissions from operations and activities, both directly and indirectly of an organization during a period of one year. The certification is valid for one year. In the 2021 Fiscal Year, 187 organizations were allowed to use the carbon footprint mark and, at the time of this report, there were 568 authorized organizations.

3

Carbon footprint reduction label of product or label to reduce global warming. This is a label that shows that a product has passed the carbon footprint

assessment of the product. The label also indicates how much the product can reduce greenhouse gas emissions according to the specified criteria. This is an assessment of greenhouse gas emissions throughout the life cycle of a product. In the 2021 Fiscal Year, there were 127 products with global warming labels made by 28 companies and, at the time of this report, there were 756 products from 99 companies with a global warming label approval.

4

Cool mode label is a label given to clothes or products that have special properties to absorb sweat and help cool the wearer. The clothing (or product) can be worn indoors or in a room with an air conditioning temperature of 25 degrees Celsius without feeling uncomfortable. There is a three-year certification period for entrepreneurs who produce cool mode products. In the 2021 Fiscal Year, 43 fabrics from 35 companies were allowed to use the cool mode mark and, at the time of this report, 186 fabrics from 52 companies were authorized to use the label.

5

Offset carbon label and Carbon Neutral label (Carbon Offset/Carbon Neutral). This is a label that certifies activities that buy carbon credits to offset the amount of greenhouse gases emitted from activities of the organization or products or process. If there is an offset to reduce greenhouse gas emissions, some will be certified with the Carbon Offset label as fully offset. If reduced to zero, that item will be certified with the Carbon Neutral label, which is equivalent to no greenhouse gas emissions from that activity.⁵⁷

The labeling for offset carbon and carbon-neutral groups is given on several levels. That is, at the organization, activity, product, and individual levels. In the 2021 Fiscal Year, **26 organizations, 21 activities, two products, and 53 individuals** have been approved for labeling, representing a carbon credit amount of 231,824 t-CO₂-eq. At the time of this report, a total of 112 organizations, 55 products, 113 activities, and 1,330 people have been granted permission to use this label, equivalent to 744,272 tons of carbon credits.

Operations of Various Sectors to Reduce Greenhouse Gases

Energy and Transport

The campaign for the use of electric vehicles (EV) is one of the key drivers in energy and transportation to reduce greenhouse gas emissions. The government appointed the National Motor Vehicle Policy Board, or EV Board, on February 7, 2020.⁵⁸ The Board was created to advance the development of the EV industry in Thailand. It has announced the **30@30** Policy with the target that 30% of total vehicle production has **Zero Emission Vehicle (ZEV)** by 2030, the final year of the NDC Roadmap, as a contribution toward achieving a low-carbon society.

The 30@30 Policy is divided into three phases: Phase 1, 2021–2022, is a pilot promotion of EVs by subsidizing a discount on car purchases of 70,000–150,000 baht per car, a discount on motorcycle purchases of 18,000 baht per vehicle, as well as a reduction of import tax on EV cars from 8% to 2%, and 0% on pick-up trucks, with the exception of import duty on EV components. Phase 2 is from 2023–2025, and focuses on the development of the EV industry. The target is to produce 225,000 passenger cars and pick-up trucks, 360,000 motorcycles, 18,000 buses, and trucks by 2025, and to have domestic production of batteries for domestically-produced EVs. Phase 3 is from 2026–2030, with a target to produce 725,000 passenger cars and pick-up trucks and 675,000 motorcycles.⁵⁹

In the 43rd Bangkok International Motor Show, from March 23 to April 3, 2022, it was found that **the popularity of EVs was one of the reasons why car bookings grew 13.6% from the previous year. Out of the total car reservations of 33,936 cars, 3,084 were EVs, accounting for 9% of total car reservations.**^{60,61}

To support the policy of using electric vehicles, the Electricity Generating Authority of Thailand (EGAT) plans to expand EV charging stations across the country.⁶² The project is being coined “**Elex by EGAT**”, in which EGAT welcomes business partners to expand coverage areas. The project was launched in 2022, and the first phase will



Source: thainews.prd.go.th/en/news/print_news/TCATG210410192049650

install at least 120 charging stations, 80 of which are dual-channel fast charging stations in public places, and the other 40 are installed in office areas. EGAT is coordinating with the Provincial Electricity Authority (PEA) and the Metropolitan Electricity Authority (MEA) **to expand charging into residential homes to support the use of electric EVs at the household level.**

To enable home charging of EVs, EGAT has joined hands with the National Science and Technology Development Agency (NSTDA) **to develop a home charger under the Wallbox brand (60 kW to 150 kW), and has also developed the BackEN system for network management for EGAT customers and business partners across the country.** This will enable efficient monitoring of the performance of the charging stations.⁶³ There will be special rates for electricity for small operators such as apartments, offices, hotels, resorts, golf courses, motorcycles, etc.

EGAT is also implementing the Triple S strategy, which is developing power generation and transmission with innovation and technology that will support the achievement of carbon neutrality by 2050 and zero greenhouse gas emissions by 2065.⁶⁴ The strategy consists of the following:

1 Sources Transformation: This is to adjust the production and transmission of electricity to reduce greenhouse gas emissions. Previously, EGAT mainly generated electricity from fossil fuel energy. Now, **EGAT will increase the proportion of electricity generation from renewable energy or clean energy. There will be power plant improvement, new technology for electricity generation and energy storage system** such as pumped-storage hydroelectric power plants, Battery Energy Storage System (BESS), and hydrogen energy storage systems.

2 Sink Co-creation: This is an increase in absorbing and storing carbon sources such as forest planting, as well as seeking and developing technology for carbon capture and utilization (Carbon Capture, Utilization and Storage: CCUS) by EGAT power plants.

3 Support Measures Mechanism: This is to promote participation in reducing greenhouse gas emissions in the public sector. The aim is to create the power to help reduce greenhouse gases broadly by reducing the use of electricity through various strategies. Examples include the Energy-saving Label #5, and creating a platform for households to track high-consumption electrical appliances such as air conditioners, refrigerators, washing machines, etc.

The Bangchak Cooperation PCL has announced the concept policy of “**Bangchak 100X: 100 Ideas for a Sustainable World**” on the occasion of Bangchak’s 38th year of operations. The company intends to achieve 100 years of operation and **reduce the revenue share from fossil energy to green business from the current 60:40 to 50:50 ratio by 2050**, and to 70% clean energy revenue share. This initiative is being implemented with partner organizations to create a carbon credit trading network, and the network members have already traded more than 60,000 tons of carbon equivalent.⁶⁵

In addition, the Petroleum Authority of Thailand has announced an alliance to achieve carbon neutrality and reduce greenhouse gas emissions to zero in Thailand by implementing the following three approaches:

1 Pursuit of lower emissions reduction in PTT’s production process through key projects such as Carbon Capture and Storage (CCS) in the Gulf of Thailand and areas on the seacoast in the east. There will also be the use of CO₂ for maximum benefit (Carbon Capture and Utilization, CCU) to be further developed into products to reduce emissions into the atmosphere.

2 Increase investment proportion by focusing on clean energy business and growth in new businesses (portfolio transformation) with a target that within 10 years, 30% of the investment budget of PTT will focus on clean energy.

3 Increasing the absorption of greenhouse gases from the atmosphere through natural methods such as afforestation by coordinating with various agencies (Partnership with Nature and Society).

Industry

To drive measures to reduce greenhouse gases in the industrial sector, the Department of Industrial Works has been assigned to be the coordination focal point with other government agencies, and the professional and industrial sectors and education sector. The strategy is to advocate for the use of cement to reduce greenhouse gas emissions. This initiative has been implemented since 2021.

The construction industry accounted for 7.7% of GDP during the past five years, during which the demand for cement was approximately 30–35 million tons per year. Cement to reduce greenhouse gases therefore plays an important role in implementing the NDC Roadmap.⁶⁶

An important partner in this endeavor is the Thai Cement Manufacturers Association (TCMA), which has announced “Mission 2023” with the goal of advocating for reduction of greenhouse gas emissions through three main programs: (1) Supporting the relevant sectors to use hydraulic cement which is a cement innovation to reduce greenhouse gas emissions. Currently, there are 16 agencies in cooperation with five ministries working on this. (2) Sustainable mining development. This encourages network members to follow **the policy of ‘green mining,’ which is mining that reduces the impact on the environment. Modern technology is used in combination with green management and rehabilitation of the surrounding area. For example, activities include planting trees to absorb CO₂ after mining and adapting these activities into a learning center**

■ Agriculture

for the community. (3) Creating a system to manage unused materials and various waste to promote the Circular Economy. In this way, over 1.5 million tons of discarded materials and waste can be used each year as fuel in co-processing cement kilns. The discarded include concrete scraps from construction and demolition that can be re-used.⁶⁷

In addition, the Industrial Estate Authority of Thailand and the Federation of Thai Industries signed a cooperation agreement with the TGO in 2019 to develop industries in the industrial estate area, especially in the Eastern Economic Corridor area to reduce greenhouse gas emissions with eco-friendly management. The aim was to create a model of a low-carbon industrial area of the country's eco-industry by working with various sectors throughout the production chain, from raw material suppliers to communities surrounding the industry.⁶⁸ There is also the implementation of the "Carbon Footprint for Organizations (CFO) project in the industrial sector," which helps the industrial sector determine guidelines for reducing greenhouse gas emissions. The project focuses on the activities of the organization such as the combustion of fuels, the use of electricity, waste management, and transportation, and helps the organization become more efficient. The project has been in operation since 2013 and is currently entering its 7th phase. In each year, about 30 organizations participate in the project. They may apply for funding support and some may not.⁶⁹

It is worth noting that, in a resolution of the Cabinet on January 12, 2016, relevant agencies were identified for joint action on climate change, consisting of the Ministry of Energy, Ministry of Transport, Ministry of Industry, Ministry of Interior, Ministry of Natural Resources and Environment, and Ministry of Agriculture and Cooperatives. In addition, at the 1/2559 Climate Change Sub-Committee Meeting on July 29, 2016, a working group was appointed to prepare the country's greenhouse gas reduction plan. The composition of the working group consists of representatives from relevant agencies and experts in different fields, namely: energy and transport, industrial process, agriculture, land use, forest, waste management, and the reduction of greenhouse gas emissions of the country as a whole.

However, in determining measures to reduce greenhouse gases according to the NDC Roadmap, the Ministry of Agriculture and Cooperatives does not seem to be part of the plan. The Roadmap stated only that "... *Energy and transport, industrial process and product use and waste management are fields where the agency's master plan is ready and has operational potential that can support the reduction of greenhouse gases.*"⁷⁰

In this regard, the NDC Roadmap has been criticized for its omission of key sectors such as agriculture, which is the second-highest contributor to greenhouse gas emissions after energy. **According to 2016 data, the agricultural sector emitted greenhouse gases at a level of 354 Mt-CO₂-eq, which is higher than the industrial sector, product consumption, and the waste sector.**⁷¹

In any case, the Ministry of Agriculture and Cooperatives has prepared an action plan on climate change in agriculture consisting of four main issues: raising awareness about climate change; adapting to climate change; participation of the agricultural sector in reducing the country's greenhouse gas emissions; and strengthening management capabilities.⁷²

To adjust farming methods to reduce greenhouse gas emissions, the Ministry of Agriculture has **the Thai Rice Nationally Appropriate Mitigation Action (Thai Rice NAMA) project** as a prime example of changing the way rice farming done. Traditionally, rice farming contributed to a large amount of greenhouse gas emissions from soil amendment, water use, and fertilizer use. It is estimated that rice farming each year emits up to 55% of all agricultural greenhouse gas emissions, and Thailand's rice farming emits the 4th highest greenhouse gas emissions in the world compared to other countries. Waterlogging of rice paddies in irrigated rice paddies produces methane emissions that increase global temperatures 28 times greater than CO₂.

The Thai Rice NAMA project is supported by the NAMA Facility, which is part of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Germany's international development agency. The aim is to adapt methods of rice cultivation in Thailand to increase productivity, increase quality, increase income, reduce production costs, reduce water consumption, and reduce greenhouse gas emissions. The

Community Waste Management

Laser Land Leveling (LLL) technique is used for alternating wet and dry farming to reduce the use of water and fuel from water pumping. The mentioned methods include fertilizer management based on soil analysis, converting rice straw, and handling stubble without burning.⁷³

In addition, the Rubber Authority of Thailand (RAOT) has implemented the project “Carbon credits management in the rubber plantation area” which not only reduces the amount of greenhouse gas emissions, but also increases income from carbon credits for rubber farmers as well. RAOT registered to participate in the Thailand Voluntary Emission Reduction Program (TVER) in 2022 and has plans for certification of carbon credits for sale in the carbon market, because rubber is a perennial plant that can store CO₂ gas well. Since the rubber tree life cycle spans 1–18 years, careful management in the first five years (i.e., before opening the slit coupled with reducing the use of chemical fertilizers) can reduce various factors of production, and reduce fuel consumption in production and transportation processes.⁷⁴

This project started by using RAOT’s rubber plantation of 20,000 rai in Nakhon Si Thammarat Province as a model to experiment with, distill lessons learned, and transfer knowledge. The goal is to expand the operating area to cover the rubber plantations throughout the country under the supervision of RAOT’s 22 million rai.



Episode 5 of “Health”, a show produced by ThaiHealth to publicize the model for converting waste to happiness.

Source: www.thaihealth.or.th/รายการสุขภาวะภาพ-ep-5-ขยะสร้าง

The implementation of municipal waste management has received strong support from the private sector, especially related to the production and distribution of products used in daily life, such as retail business groups that have united in announcing a policy to reduce the use of plastic bags. The behemoth Central Group and affiliated businesses set a goal to reduce the use of plastic bags by 150 million in 2019. Family Mart (convenience outlet chain) campaigns for customers to refuse plastic bags. Tesco Lotus announced a ban on food packaging made from foam from July 2019 and the company could reduce the use of foam packaging by 51 tons/year. Seven-Eleven has a project called “Reduce one plastic bag a day ... you can do it,” a continuation of the “Charging for Bag” project, which encourages customers to refuse plastic bags by converting 20 cents/bag to donation for medical equipment for hospitals. The Mall Group department stores campaign for customers to bring their own cloth bags, and charge one baht for a plastic bag. The Mall’s campaign will fund environmental conservation activities.

These campaigns by the retail industry have had a significant impact on people’s behavior toward being more environmentally friendly. This is **also reducing the amount of waste. Before the campaigns, Thais generated 1.2 kilograms of waste per person or 27.8 million tons of waste/year, 45 billion plastic bags/year, 6,700 million pieces of foam packaging/year, and 9,750 million glass and plastic bottles/year.**⁷⁵

In addition to the operations of the private sector, local government organizations in Thailand periodically organize a wet trash project to reduce global warming. This is a TVER project and was registered with TGO in February 2019. The project covers 36,644,309 households, 1,701 schools in 18,935 child care centers under the local administrative organizations, and aims to reach the level of trading carbon credits.⁷⁶

The program “Waste creates happiness,” initiated by the Thai Health Promotion Foundation (ThaiHealth), is a comprehensive waste management model. The activity starts with the arrangement of general waste sorting bins, recyclable waste, organic waste, and hazardous waste. The waste is weighed and recorded for each type of waste. The proceeds from selling the recycled solid waste are returned to the home communities for income generation. Organic waste is brought into the decomposition process to produce compost and biogas. This model has been certified by the US Green Building Council (USGCB), and the ThaiHealth Wellness Learning Center building has been certified as an energy-efficient building in Platinum level.⁷⁷

Reforestation

Adding natural green space and reforestation is another important undertaking to achieve carbon neutrality and net zero emissions. Trees help produce oxygen, and can absorb CO₂ gas. Each type of tree can absorb different amounts of CO₂ gas. However, on average, one tree can absorb an average of 9–15 kg of CO₂ gas equivalent per year.⁷⁸

The Thai government has issued a National Forest Policy that requires an increase of 55% in all types of natural green areas by 2037, with the Ministry of Natural Resources and Environment as the main agency responsible for implementing such policy.⁷⁹ There are other agencies, both public and private, to support this endeavor. For example, PTT set a goal to plant additional forest cover of two million rai, of which PTT will operate one million rai and cooperate with companies in the PTT group for another one million rai within 2030.⁸⁰ EGAT aims to plant a million rai of the forest by 2030 in collaboration with the Royal Forest Department, Department of National Parks, Wildlife and Plant Conservation, and the Department of Marine and Coastal Resources. In addition, the Siam Cement Group has planted trees continuously, for example, the “Plant-Cultivate-Protect Campaign” to plant 150,000 trees in 2021, the campaign “Plant to Reduce Hot Climate” to plant trees covering three million rai and the project on developing mangrove forests covering 30,000 rai by 2050. Charoen Pokphand Foods (PCL) has operated the “Grow, Share, Protect Mangrove Forest” project since 2014 in cooperation with both the government sector and the host communities. That project has conserved mangrove forests totaling 500 rai and planted new ones between 2019–2023, totaling 104 rai. The company has plans to plant trees in the workplace to cover an area of 20,000 rai by 2030.

Mangroves in Ranong Province

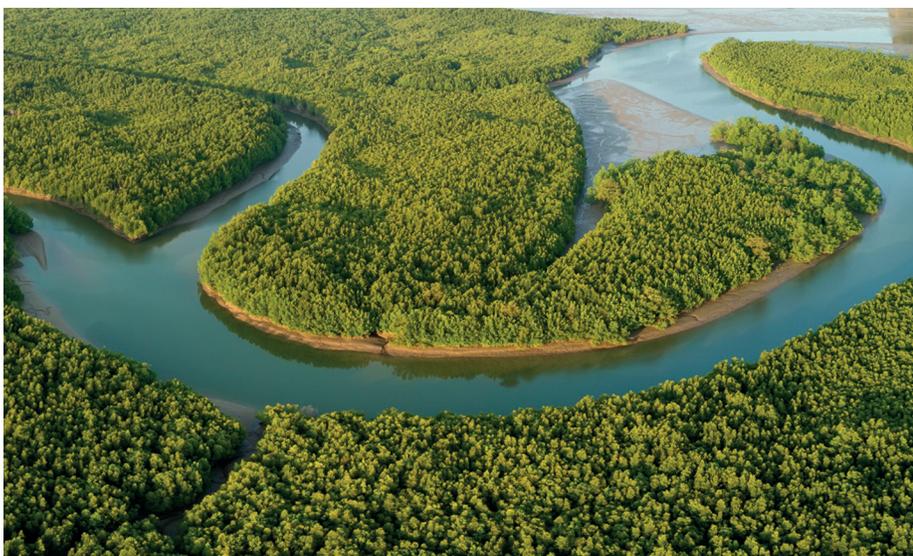
Source: projects.dmcr.go.th/miniprojects/115/news/274/detail/49024

Taxation and Other Financial Mechanisms

The Excise Department is studying carbon taxation guidelines to encourage businesses to reduce greenhouse gas emissions, which is expected to be of great importance in supporting the achievement of Carbon Neutral and Net Zero goals. The taxation uses a rate of carbon taxation per ton of carbon equivalent. The state will allow factories to emit a certain amount of CO₂ that is tax-free; then tax will be collected for amounts over the CO₂ limit. This is an approach already used in Europe, Singapore, and Japan. Another approach is greenhouse gas trading. Industry can buy carbon credits from low carbon-emitting factories, a practice that has been used in China and Germany.⁸¹ As noted in an earlier section, Thailand already has tax incentives for EV vehicle sector.

In addition to tax measures, financial and investment mechanisms are essential to drive efficient greenhouse gas reduction. This is due to the need for new technologies, behavior change, and work process adjustment, which usually requires funding.

Green finance is involved in discussions at all levels and forums, making the finance sector critical to greenhouse gas reduction strategies. The Bank of Thailand and the Stock Exchange of Thailand play an important role in driving Green Finance by developing a mechanism to connect listed companies and investors who conduct business in accordance with environmental, social, and governance guidelines (ESG) to incentivize green investment. This includes the development of green finance-related instruments such as green bonds or loans for projects that are eco-friendly, and the “Green Deposit” account, which is a bank deposit that will be used in projects for the environment and social sustainability.⁸²



Recommendations

Thai children born in 2023 will not know whether the Road Map to reduce greenhouse gases of today will succeed or not. Actually, they will not know until they are 70 years old. At that time, how much the world will have avoided the worst impacts of the climate crisis is anyone's guess.

However, the most important thing is that today's generation, although not able to live long enough to see the results of that action, must do everything with all their might to protect the environment for the next and future generations.

The Road Map that is currently available, although there is a need to flesh out some of the details to be in line with the accelerated targets that Thailand pledged at the COP26. Even so, the Road Map is considered comprehensive in terms of greenhouse gas emissions, whether in the field of energy and transportation, industrial processes, product use, and waste management sectors.

The current features of the Road Map are largely focused on what the government sector can do. Even though there is a collaboration between government agencies, there is considerable concern about the effectiveness of cross-sectoral and inter-ministerial implementation. Thus, the powers-that-be will need to maintain vigilance and motivation to keep the national agenda on track and with the full cooperation of all concerned.

Importantly the agricultural sector, which contributes a large amount of greenhouse gas emissions, faces the formidable challenge of persuading many Thai farmers to adapt their farming practices to the new, eco-friendly approaches. Thus, there should be a specific Road Map expressly for the desired farming model that will help Thailand achieve its emissions goals. That will require both knowledge, budget, and massive education. Currently, there are pilot projects to build upon, such as the Rice NAMA or model rubber plantations. It needs to be clear about how to scale the successful components until they are national in scope.

The private sector has progressed and continues to cooperate, partly because it relates to profits from month to year, and the survival of the business. There is increasing pressure from trading partners on the international level regarding import and export conditions to be in line with the COP vision, mission, and goals. In addition, the private sector has the flexibility to make decisions, change direction, and break into new markets on the global stage by getting on the "green bandwagon." This can create tremendous momentum and change.

On this issue, it is essential for the government to work closely with the private sector, civil society, and academia, in a partnership or joint venture manner. There need to be mechanisms and ecosystems that enable all sectors to come together to work effectively in this field. This should be the essence of the Road Map. Still, as long as the attitudes and behaviors of consumers do not change, it will be difficult to achieve the goal of reducing greenhouse gas emissions. Indeed, the changing global climate today is caused by the collective actions of people, which means all consumers around the world.

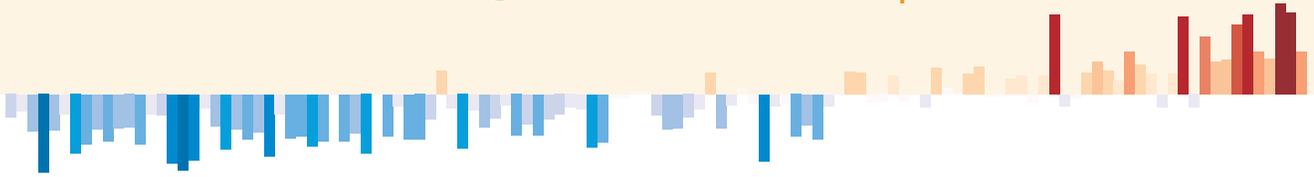
Past movements to campaign for people to "conserve" have been considered successful to a certain degree. The new generation seems to be more aware of the need to protect the climate and the environment. Thus, it will be important to maintain and build upon this sensitivity so that the COP movement is adopted by the younger generation of students, workers and society at large.

The world is entering into uncharted territory which has never been documented in recorded history. Even so, it is the only world we have. By understanding, sympathizing with, and cherishing with gratitude the world we have now, there can be hope that the worst effects of climate change will not come to pass.

“A sage was used to observe the vegetation on the surface of the ground in order to identify the best site to dig a well. He was able to do this with astonishing accuracy. However, more and more today, this traditional wisdom, based on observation, trial and error, is losing its magic. Now, it seems there is an invisible invader which is upsetting the state of nature. No longer can the sage see where the underground water is. That water has been diverted, as if his land had become another land entirely.”

Kanokpong Songsompan: "Other Lands."
S.E.A Write Award, 1996

Criteria for the 2023 Thai Health Report



PART 1: HEALTH INDICATORS

PROCESS OF CONSIDERATION

- 1 Selection of key demographic indicators was conducted by the Steering Committee in consultation with the Project Team.
- 2 Contacting experts for the various indicators which have credible sources of data which are tabulated on an annual basis, in order to reflect the latest situation.
- 3 Specify the time frame for writing the report: The Working Group for each of the main indicator sections are informed of the guidelines for content, the objectives of each indicator section, and preliminary deadline for assembling the relevant content.
- 4 Drafting the presentation of the data for the health indicator.
- 5 Convene a brainstorming session to review the draft indicator sections for appropriateness, completeness of content, and lack of redundancy with other sections. The review is then submitted for consideration to the Thai Health Report Team and the Steering Committee.
- 6 Experts and resource persons read all the Thai health indicator sections, and provide recommendations for improvement.

CRITERIA FOR ASSEMBLING CONTENT ON THE INDICATORS

- 1 Research to find key messages on the section which are to be included, so that the information is assembled in an orderly and logical format.
- 2 Locate the relevant statistics for the indicator, with an emphasis on annual data to show trends over time, including the most recent data to reflect the current situation.
- 3 Emphasize data that can be easily viewed and interpreted by readers of all ages and backgrounds.

PART 2: 10 HEALTH MILESTONES IN THE YEAR AND 4 SPECIAL ACHIEVEMENTS TO SUPPORT THAI HEALTH

The situation in the Report year comprises a description of the situation for the 10 indicators and the 4 “good practices.” The combined situation sections are referred to in brief as “Key Situation 10+4”. The criteria for selecting the key situations and achievements are as follows:

CRITERIA FOR SELECTING THE 10 SITUATIONS TO HIGHLIGHT

- 1 It is an event or situation which is prominent in the Report year or an update of a previous situation, or is a lesson learned for Thai society.
- 2 It is a phenomenon which is having a big and broad impact on Thai health, including issues of security and safety.
- 3 It is a policy with direct health impacts that are clearly visible in the Report year.
- 4 It is a new situation which has not occurred before.
- 5 It is a phenomenon which occurred repeatedly during the Report year.

CRITERIA FOR PRIORITIZING ACHIEVEMENTS

- 1 The Project Report Team taps the opinions the Steering Committee using a survey form. The survey respondents are asked to score candidates on a 5-point Likert rating scale from 5 (highest) to 1 (lowest).
- 2 The Team then analyzes the ratings to prioritize candidates for good practice achievements.

GOOD PRACTICES AND ACHIEVEMENTS TO PROMOTE THAI HEALTH

This section highlights successes during the Report year which include inventions, advances in health, and discoveries of benefit to Thai society and individuals generally.

Steering Committee: Thai Health Report 2023

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PART 3: SPECIAL TOPIC

The special topic has two features: The topic is target-group oriented and the topic is issue-oriented. Issues and target populations may alternate from year to year. This issue could relate to one of the health milestones of the Report year or one of the health indicators.

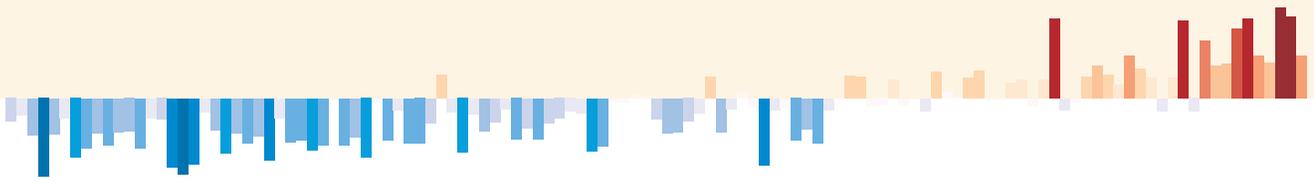
CRITERIA FOR SELECTING THE SPECIAL TOPIC

- 1 It has policy implications.
- 2 It is of interest/benefit to the population.
- 3 It is an issue with multiple points of view.

PROCESS OF CONSIDERATION

- 1 The Steering Committee meets to consider candidate topics.
- 2 The Report Team specifies the framework of the section.
- 3 The Team contacts experts to compile data and information on the special topic.
- 4 The Report Team organizes the relevant information and re-formats it so that it is suitable for public dissemination. This includes verifying the accuracy of the content by expert advisors and resource persons.
- 5 Qualified persons review the draft section and provide recommendations for improvement.

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Narcotics in the Community: What Is the Solution?

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E-cigarettes Are Making Great Inroads in Thailand: Need to Speed Up Control

- 1 It's a new term for doctors and comes from the US Centers for Disease Control and Prevention, which means that "Lung injury associated with use of e-cigarettes or vaping-related products"
- 2 Centers for Disease Control and Prevention. (n.d.). *Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products*. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
- 3 Prevalence: E-cigarettes were found to be used by 7.6%, followed by cigarettes (1.5%), cigars (1.4%), smokeless tobacco (0.9%), hookah (0.8%) and nicotine pouches (200,000; 0.8%). It was found that 2.8% of middle-school children used e-cigarettes, and 11.3% of high school students did so. Therefore, current use of e-cigarettes is five times that of current cigarette use (7.6% vs. 1.5% = 5 times).
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Safe Pedestrian Crosswalks and Pedestrians: Approaches Toward Improvement

- 1 For example, in 2021, there was an accident with Ms. Wilawan Phummala or 'Nong Lychee,' a newly graduated student who, on her first day of work was hit by a motorcycle while crossing a pedestrian crossing at the intersection of the Department of Public Works and Town & Country Planning, Rama 9 Road. In another case, in 2019, there was an incident with Ms. Hathaiphat Tantasirin or 'Nong Baimon,' age only 15 years old, when a motorcycle ran a red light and crashed violently into her, resulting in her death.
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- 5 Swiss Cheese Theory calls for a process of analyzing the factors that lead to accidents, consisting of 4 levels: Unsafe Act Level, Unsafe Conditions Level, Unsafe Supervision Level, and Organization Influence Level. The elements/factors from all 4 levels will affect structural/systemic causes of accidents. For example, if road safety policy formulations are not well informed or suited to the local context, legislation may be inconsistent with local reality. As a result, relevant agencies can choose to act in two ways: Either refraining from performing their duties because they do not have the authority to implement; or performing according to the rules but risking conflict with the people in the area when the implementation does not proceed. Environmental corrections, such as road maintenance or public education training, will not be possible either. When there is no training, people could not act properly or lack caution due to lack of information. Therefore, road accident management requires systematic analysis. This includes the safety of crosswalks and pedestrians.
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Amendment of Thai Liquor Law: From the Progressive Liquor Act to Unlocking Community Liquor

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Public Health Service System in Bangkok and Primary System Reform

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Thai Society and Health Literacy

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Wising Up to the “Call Center Gang”

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- (1) Barring incoming calls from abroad with the format of the incoming number being a home phone number, short 3-digit telephone numbers, or short 4-digit telephone numbers from Thailand calling to the destination number in Thailand.
- (2) Barring incoming calls from abroad whose incoming number format is a country code that the International Telecommunication Union has not allocated to any country.
- (3) Conduct investigations of illegal incoming calls from abroad. that the number has been modified or not with the Test Call Generator (TCG) system continuously.
- (4) In the event that the incoming call from abroad does not have the originating number (non-calling line identification), proceed to add a +66 sign in front of the telephone number to let people know that it is an incoming call from abroad.

Thailand and an Aged Society

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- 3 Super-aged Society refers to a society in which more than 28 percent of the total population is age 60 years or over.
- 4 Healthy aging refers to the aging process in which the ability to perform daily tasks is developed and maintained, and that contributes to the well-being of older persons, which is possible by creating an environment and opportunity to help people become and do what they value throughout their lives.

- 5 Active aging refers to the process by which people in society grow up with good health both physically and mentally, have stability in life, continuously participate in social, economic, cultural affairs, and perform good citizenship that benefits families, communities and the nation.
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Promotion of Thai Herbal Products: Past to Present

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4 Outstanding Accomplishments for Health

UNESCO Praises Her Royal Highness Princess Galyani Vadhana

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WHO Presents the Prestigious World-Class Award to Two Thai Doctors: Dr. Prakit & Dr. Paisan

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Siriraj Hospital Receives the Highest Accolade: Thailand Lean Award 2022

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UNESCO Inducted Phraya Srisundaravohara

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Feature Article

Thailand's Commitment in COP (Conference of Parties) and Responses to Climate Change

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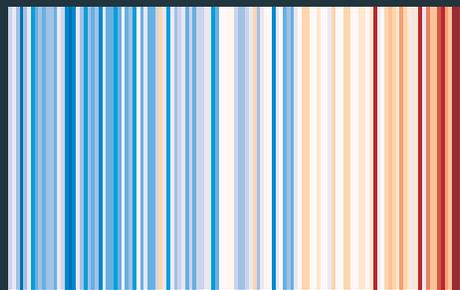
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Thai Health Report Team





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