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Harm Reduction, Healthcare Savings and Economic Growth: A Strategy for Malaysia

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Part 1: Harm Reduction and The Malaysian Landscape

1. Introduction

Harm reduction refers to a public policy strategy designed to limit the negative social and physical consequences associated with various human behaviors, both legal and illegal. A harm reduction approach rejects the usage of restrictions or bans in combating the negative externalities of certain human behavior, whether it is the consumption of harmful goods such as tobacco, sugar, salt, and alcohol, or engaging in activities that emit carbon (such as driving vehicles using internal combustion engines).

Advocates of harm reduction believe that the implementation of such policies implies that individuals are unable to assess risks rationally and make responsible decisions. Rather, they argue that individuals should be provided with the opportunity to switch toward less harmful alternatives. In other words, more – and better – choices for an informed consumer. But let us proceed with order.

While most actions and interactions produce consequences beyond the original intentions of the people involved in the transaction, some of these unintended consequences emerge as a direct benefit or cost affecting bystanders. These costs and benefits are usually called externalities (positive externalities in the case of benefits and negative externalities in the case of costs). The evaluation of the efficiency of a market affected by externalities should take into account such externalities (Cowen and Tabarrok, 2010, p. 178).

If property rights are well defined, and mechanisms are in place to allow for negotiation between individuals, then people can trade their rights to produce externalities in the same way that they trade rights to produce and consume ordinary goods. With his analysis of transaction costs and property rights, Nobel Laureate Ronald Coase proposed the creation of new markets where markets are not present. In other words, if an externality is tradable and transaction costs are low enough, bargaining among different economic actors will result in an efficient outcome regardless of what was the initial (more or less efficient) allocation of property.

Instead, because of the existence of situations where property rights are poorly defined and or even absent, since the publication of Pigou (1920) and the evolution of welfare economics, a great majority of economists and policymakers have come to believe that the performance of markets affected by externalities can be improved through public policies. However, the direction taken by policy within the field of welfare economics is a Manichean division among choices, behaviour, and consumption, whereby some sets of actions or choices and their consequences are judged as bad and therefore deserve to be punished (usually via taxation or bans).

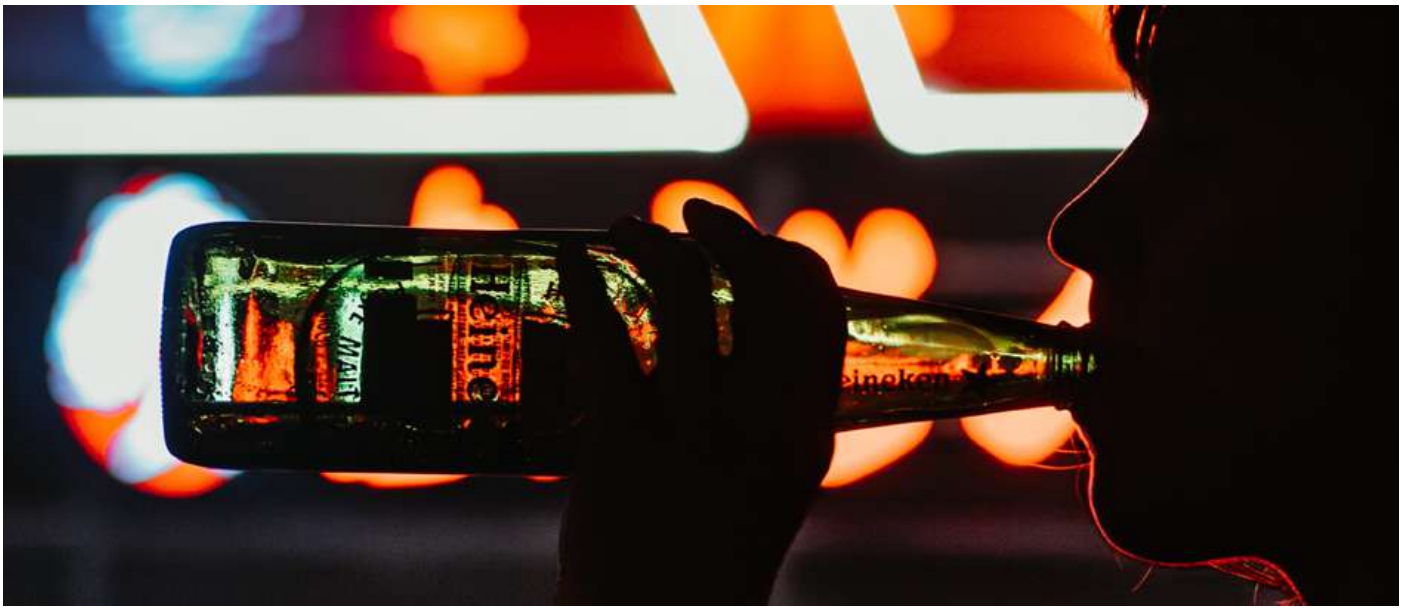
Such an approach presents several issues. The first of these issues regards the fact that policymakers tend to ignore that people affected by negative externalities may have freely chosen the exposure to a specific good, even though they are aware of the implied risks. Instead, the traditional approach to welfare economics considers economic agents as unable to assess their own risks and to choose accordingly. The risk implied in such an approach to harm reduction, where people are considered unable to assess their own risk, is that potentially there is no limit to what the government can advocate to be able to fix or regulate efficiently.

Against such a line of thought, Nobel Laureate Ronald H. Coase developed a comprehensive policy reflection on externalities. In his seminal 1960 work, Coase explained that the problem of social cost is of a reciprocal nature: if A smokes and, by doing so, he or she harms B via passive smoking, it should be recognized that, in

order to protect B, the choice must be made to harm A by denying him or her the pleasure of smoking. In advocating for a change of approach, Coase (1960, pp. 42-43) stressed that the current way of dealing with externalities «concentrates attention on particular deficiencies in the system and tends to nourish the belief that any measure which will remove the deficiency is necessarily desirable». In this way, however, it «diverts attention from those other changes in the system which are inevitably associated with the corrective measure, changes which may well produce more harm than the original deficiency».

Furthermore, Coase (1960, p. 43) added that traditional welfare economics is de facto contrasting the outcome of the market as it is with the status of affairs that would emerge in some kind of ideal world; when doing such a comparison, the available alternatives cannot be properly weighed. «Actually very little analysis is required to show that an ideal world is better than a state of laissez faire, unless the definitions of a state of laissez faire and an ideal world happen to be the same. But the whole discussion is largely irrelevant for questions of economic policy since whatever we may have in mind as our ideal world, it is clear that we have not yet discovered how to get to it from where we are. A more realistic approach should emulate the analysis with a scenario approximating to reality happening on the ground, and evaluate the effects of a proposed policy change, and to ascertain whether the new scenario would be, in total, better or worse than the original one. In this way, conclusions for policy would have some relevance to the actual situation».

In a nutshell, Coase's statements are a call to humility in policymaking. Instead, a direct intervention in externalities via taxation, as an example, presents the following knowledge problems: 1. How may I quantify the social cost? 2. Even if I can solve problem 1, how can I be sure that the result of a policy would actually offset that social cost, in quantitative terms? 3. How costly will that policy be when compared to the achieved result (trade-off analysis)?



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Claiming to be able to answer those questions is what shapes paternalistic policies, which are based on the assumption that actual individual preferences can be known and measured. We should instead avoid the temptation of believing that such policies could be a way to heaven rather than the best path to hell (Rizzo and Whitman, 2020).

Harm reduction policies, instead, realistically recognize that human beings are ontologically *pleasure-seekers:* as historical observation demonstrated, prohibition and taxation would not eliminate harmful consumption but only drive consumers toward illegal ways to consume those pleasure products, therefore potentially exposing them to worse products and depriving governments of fiscal revenues. Not by chance, harm reduction policies are now at the core of any policy decision in a myriad of different industries.

Furthermore, as argued by Malaysia-based think tank Bait Al Amanah, blanket-ban policies targeting social ills such as smoking cigarettes are often elitist in character, as they lack empathy for why people generally found in the lower-income spectrum may be compelled to understand the reasons behind the consumption of products such as combusted tobacco (e.g. the stressful and monotonous nature of work that most lower-income are forced to engage in to earn income). The think tank argues that rather than

traditional moral policing, policymakers should consider alternative approaches that are «multidimensional and free from prejudice towards the consumers» (Basri, 2022).

Harm reduction is predicated on certain principles, which include:

1. A focus on the prevention of harm, rather than the prevention of behavior;
2. Use of evidence-based policy and practice;
3. Pro-choice - Commitment to Universal Human Rights;
4. Empowerment of the individual as the primary agent responsible for reducing harm;
5. The acceptance that behavior change is an incremental process.

Malaysia is no stranger to harm reduction strategies, as demonstrated by the Needle Syringe Exchange Program (NSEP), a programme developed to fight HIV, where used needles and syringes are exchanged with sterile ones among intravenous drug users[1]. The policies have proven to be among the most successful ones implemented by the Malaysian government (Singh et al., 2016).

In conclusion, as argued by Ferlito (2023), people's health is too important to be left to ideological debates or to be a battlefield for crusaders. Rather, Ferlito calls for 'sound economic reasoning and trade-off analysis' in responding to the consumption of goods often defined as 'sinful goods' such as alcohol and tobacco. The report explores the need of a sound policymaking to achieve the intended objective by striking a balance between public health and fiscal policies.

[1] *http://www.myhealth.gov.my/en/needle-syringe-exchange-program-nsep/*

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2. Harm reduction and alternative products: The Malaysian landscape for sugar, nicotine, and electric vehicles (a brief introduction)

2.1. Sugar

Malaysia has the highest obesity rate in Southeast Asia and ranked sixth in obesity rate among countries in the Asia Pacific region. The prevalence of obesity in adults (above 18 years old) has increased from 4.5% in 1996 to 17% in 2015. Obesity among children also increased from 5.4% in 2006 to 11.9% in 2015, effectively having doubled in the span of a decade. Rates of diabetes also increased from 11.6% in 2006 to 17.5% in 2015. The prevalence of overweight adults is also similar for households with different incomes, with between 25% to 35% of households overweight in each income cohort (Tan Zhai and Tumin, 2019).

The consumption of high-calorie foods such as sugars is one of the main drivers of Malaysia's high obesity rates. The Malaysian Adults Nutrition Survey 2014 noted that the daily consumption of sugar stood at staggering level of 55.9% among both urban and rural adults, a slight decrease from 58.5% in 2003 (Kasim et al., 2018).

Other estimates made by the Khazanah Research Institute in July 2019 report revealed that the annual sugar intake per capita for Malaysia increased from 30.0kg per capita in 1961 to 43.0 kg per capita in 2013, a 43% increase. The supply of sugar at 43.0 kg per person is equivalent to 118g of refined sugar per day. This is nearly double the World Health Organisation's (WHO) recommendation of 15 kg to 20 kg per person per year, or 41.1 g to 54.8 g per day (Tan Zhai and Tumin, 2019).

Soft drinks and other sugar-sweetened beverages tend to be one of the main forms of daily sugar consumption for Malaysians. Sugar-sweetened beverages tend to come with a high glycemic load that raises blood sugar levels rapidly. Data published in 2019 noted the high prevalence of sugar-sweetened drinks consumption among Malaysian adolescents, with a mean daily consumption amount of more than 1000 ml, equivalent to four servings per day (Gan et al., 2019). A poll conducted by international survey agency YouGov found that 6% of Malaysians said they currently consume soft drinks several times a day, 8% said they consume soft drinks once a day, and 20% drink soda several times per week (Tang, 2019).

A 2018 study, looking into the sociodemographic factors associated with the consumption of sugar-sweetened foods and beverages in Malaysia, found that those who have a higher likelihood of consuming sugar-sweetened foods and beverages are less educated, reside in Peninsular Malaysia and rural areas and spend less on tobacco, while those who spend more on sugar-sweetened foods and beverages are females, married, well-educated, employed and spend more on alcohol. This seems to indicate that, while less-educated and rural Malaysians may be more likely to consume sugar-sweetened foods and beverages, they spend less on average than those who are more educated and urban due to the spending power (Cheah et al., 2018).

In response to Malaysia's significantly high per capita levels of sugar intake, Malaysia is committed to address the rise of obesity rate and associated non-communicable diseases. On 1st July, 2019, the Royal Malaysian Customs Department implemented a tax on pre-packaged sugar-sweetened beverages (SSBs). All ready-to-drink SSBs that are either imported into or manufactured within Malaysia are now subject to a duty of RM 0.40 per liter. To put in simply, a one-liter sugar-sweetened beverage will incur an additional cost of RM 0.40 (Pakiam, 2019).

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The current need to reduce sugar consumption has driven a vast offering of sugar substitutes within the market. These are products that use sweeteners that can be used to substitute regular table sugar or other nutritive sweeteners, and many have little to no calories. The food and beverage industries are shifting towards a range of sugar substitutes and blends to maintain a sweet taste but offer reduced sugar products, thereby offering healthier alternatives. Currently, the Malaysian Food Regulations (1985) approves the usage of a list of sweetening substances in food and beverages, including artificial sweetening substances. The regulations also list the foods permitted to contain non-nutritive sweeteners such as acesulfame potassium, neotame, and aspartame, and the maximum permitted levels for each food type. Guidelines are also provided on the labelling of artificial sweetening substance preparations and non-nutritive sweetening substances. The Ministry of Health is currently proposing an amendment to the sugar substitute or sweetener regulation, to harmonize it with the General Standard for Food Additives (GSFA) of Codex Alimentarius (1989). Under this proposed amendment, sweeteners would be defined as a food additive other than a mono- or disaccharide sugar which imparts a sweet taste for food. No further development in this regard has been reported (Harjani et al., 2016).

2.2. Nicotine

A shift toward consumption of alternative nicotine products, such as e-cigarettes, heated tobacco products, vaporizers, and nicotine pouches, is considered the most effective harm reduction strategy in the field of tobacco smoking. In fact, it is not nicotine in itself that is harmful for human health, but rather its consumption in the form of traditional, combusted, cigarette smoking[2] (Mishra et al., 2015).

In one 2021 study, it was found that despite its relatively small population, Malaysia had the largest e-cigarette market among the six East Asian countries studied (Malaysia, Indonesia, the Philippines, Vietnam, Taiwan and Hong Kong). Its e-cigarette market grew almost five-fold from 2012 to 2015 (from USD 106 million to USD 514 million), before falling to less than half (USD 229 million) in 2016. The sharp drop was likely due to a 2015 ban on nicotine-containing e-liquids. However, in April 2023, the government had delisted liquid and gel nicotine, key ingredients of e-cigarettes and vaporizers from the list of scheduled poisons, and these products are now subjected to excise tax of RM 0.40/ml. Malaysia's e-cigarette market is projected to remain stable into the 2020's at around US$260 million per year (van der Ejik et al., 2021; MOF, 2023; Rodzi, 2023).

In a survey conducted in 2020 to explore e-cigarette usage among adults in Malaysia, it was discovered that approximately 33.7% of respondents had tried electric cigarettes (ECs) at some point. Among them, 2.3% used ECs on a monthly basis, 3.7% used them weekly, and 5.4% used them daily. The survey also revealed that daily EC use was more prevalent among current cigarette smokers (17.4%) compared to non-smokers (0.6%). The study highlighted that overall EC use was more common among current smokers (Driezen et al., 2022).

[1] *https://nida.nih.gov/publications/research-reports/tobacco-nicotine-e-cigarettes/what-are-physical-health-consequences-tobacco-use and https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4363846/.*

Photo by Rubén Bagüés on Unsplash

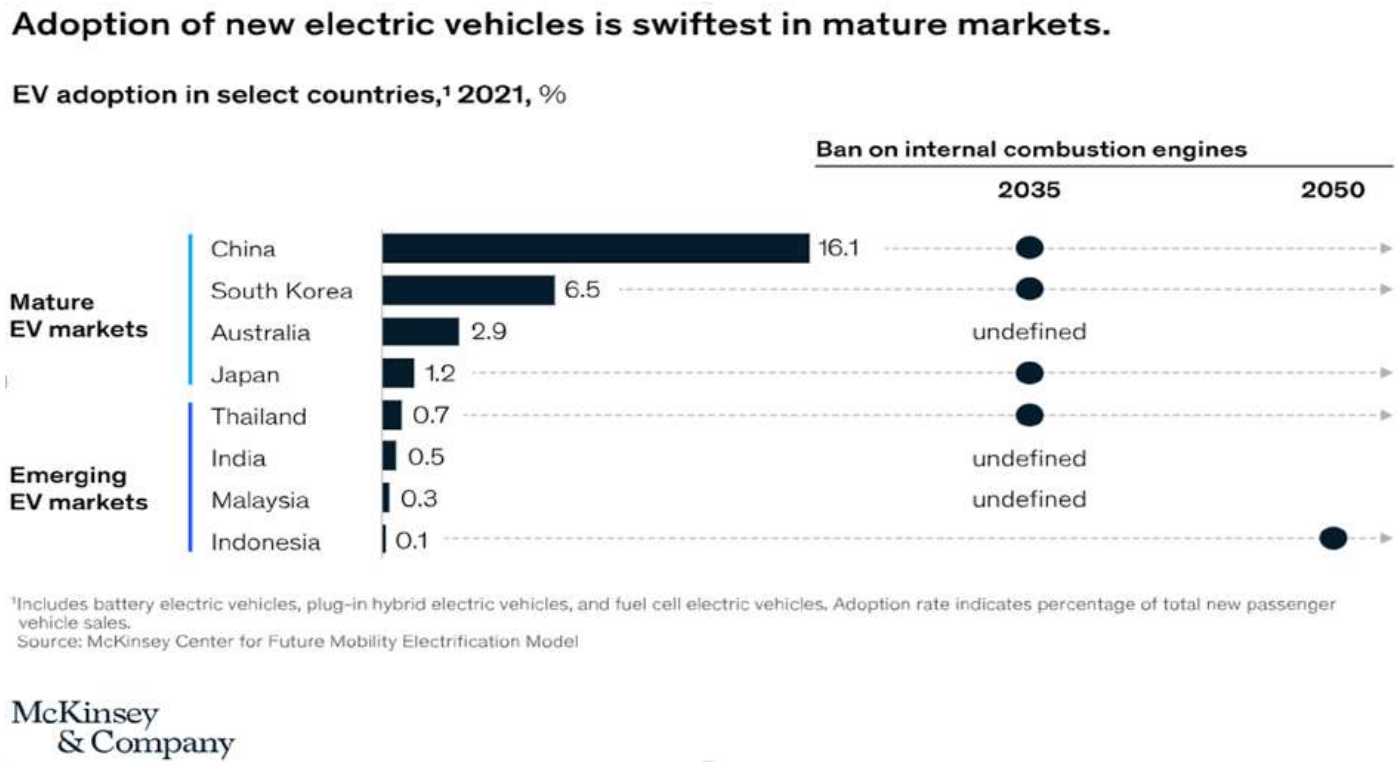
Another study in 2022 investigated the motives behind EC use among a representative sample of Malaysian adult smokers who vape. The research found that for daily users, the primary reasons included wanting to reduce cigarette consumption (91.3%), enjoying the flavor of ECs (90.1%), attempting to quit smoking (87.9%), and deriving pleasure from their use (87.5%). Among those who used ECs weekly or monthly, 76.2% and 77.6% respectively mentioned trying to cut back on cigarette usage as their main incentive (Hairi et al., 2022).

In terms of regulation, there is no national ban on smoking and vaping in Malaysia. Smoking is prohibited on public transportation, specified public places and air-conditioned workplaces, health, education, government and cultural facilities. In addition, virtually all forms of tobacco advertising, promotion and sponsorship are prohibited in contrast to e-cigarettes, where there are no clear regulations in Malaysia. There is a 10% sales tax on tobacco and manufactured tobacco substitutes, and excise duties at varying amounts are levied on cigarettes and other smoking substitutes, electronic cigarette devices and personal electric vaporizing devices, vape gels or juices, and other manufactured tobacco (including heated tobacco products). Legalizing nicotine containing vape and establishing an appropriate regulatory and tax framework for all nicotine alternatives will help further shift consumption from cigarettes to lower risk alternatives.

2.3. Electric vehicles (EVs)

McKinsey has estimated that EV adoption as a percentage of total new passenger vehicles stood at 0.7%, 0.3% and 0.1% for Thailand, Malaysia and Indonesia respectively in 2021 (see Figure 1.1). Compared with more mature markets such as China and Japan, emerging Asian markets are lagging. In 2021, EVs made up less than 1% of new-vehicle sales in the region (Farmer et al., 2022).

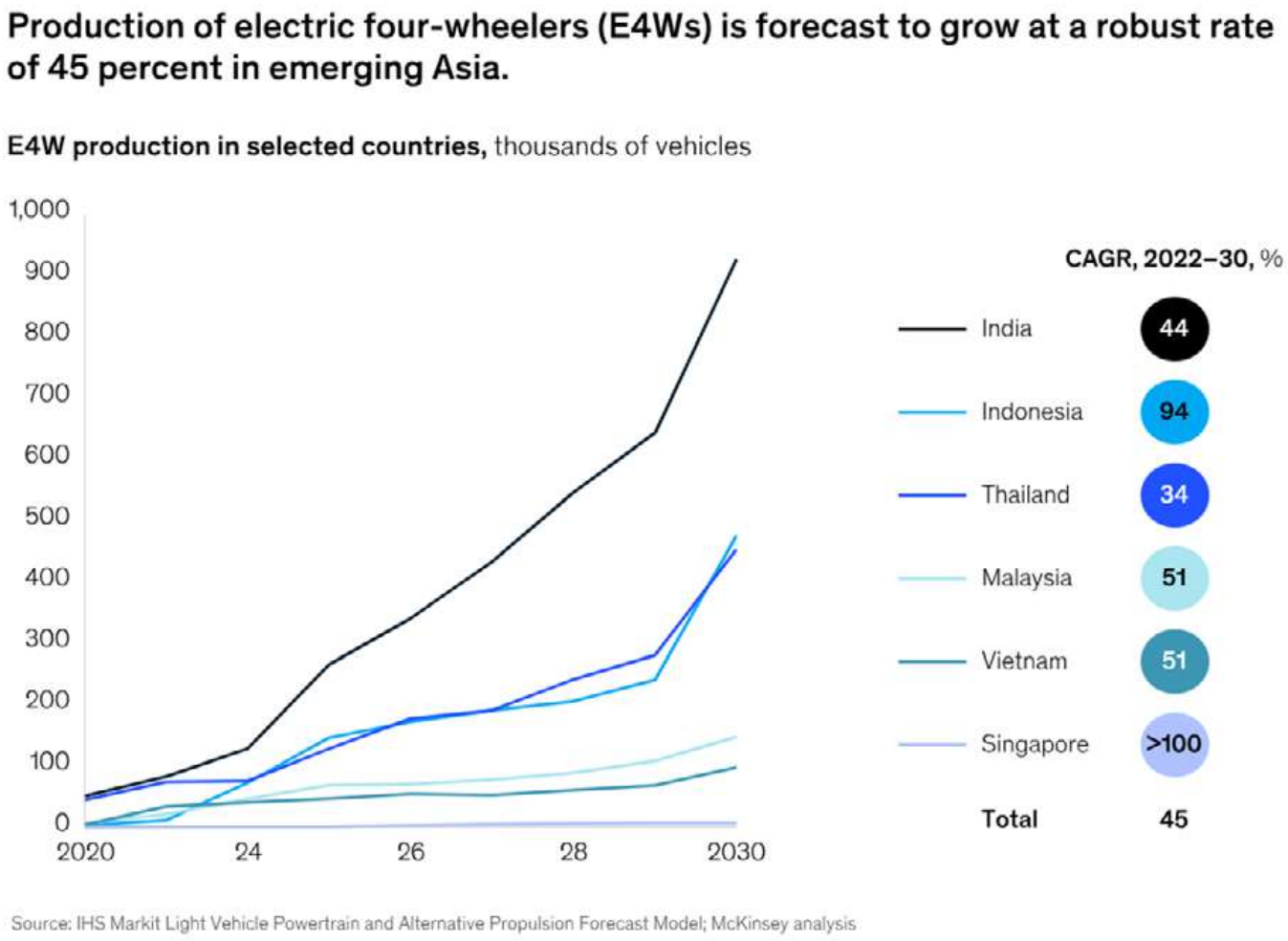
Figure 1.1.: Adoption of new electric vehicles in mature and emerging markets.



Source: Farmer et al., 2022.

McKinsey also predicted that the production of electric four-wheelers (E4W) will pick up rapidly in emerging Asia. Between 2022 and 2030, the consultancy firm predicted a CAGR 51% increase in the production of E4Ws in Malaysia (see Figure 1.2). However, Malaysia will seemingly face more competition from countries like Indonesia and Thailand, both of whom are already major regional automotive production hubs which are set to outproduce Malaysia by 2030 (Farmer et al., 2022).

Figure 1.2.: Production of E4Ws forecast.



Source: Farmer et al., 2022.

In order to accelerate the adoption of EV in Malaysia, policymakers will have to build the necessary EV ecosystem, which will require stimulating both the supply and demand aspects of the EV supply chain. For one thing, cheap petrol due to long-running government subsidies has provided less incentives for Malaysians to switch to EVs. In 2022, Malaysia had the lowest petrol prices in the Asia Pacific region. It has also been suggested that Malaysia introduce off-peak electricity tariffs for domestic users. It would translate into cheaper EV home charging at night, and shift fence-sitters to adopt EVs (Aiman, 2023).

Malaysia's automotive industry plays a crucial role in the country's manufacturing sector, employing over 710,000 people and contributing 4% to the nation's GDP. While the electric vehicle (EV) industry is at an early stage of development, it is well-placed for expansion. Many companies that supply the inputs for EV production, such as semiconductors and copper wire manufacturing, are already based in Malaysia (International Trade Administration, 2022). Also, Malaysia accounts for 11% of the global processing capacity for rare earth elements, integral to clean energy applications and automotive manufacturing (IRENA, 2023).

A 2022 study by Siew Yean Tham mapped out EV production, including planned production, for the main nodes in the EV supply chain within the major ASEAN economies of Indonesia, Malaysia, Thailand, and Viet Nam. The major nodes of the EV supply chain comprise mineral resources mining for EV battery production, battery production, battery swapping, semiconductors for battery production, EV production, battery recycling, as well as EV research and development (R&D) (Tham, 2022).

Malaysia's EV manufacturing industry is reasonably spread out across the entire EV supply chain, with the exception of mineral resources extraction, battery recycling, and R&D activities (see Figure 1.3) (Tham, 2022).

Figure 1.3.: Mapping of EV production in SEA, October 2022.

Nodes in EV supply chain	Indonesia	Malaysia	Thailand	Vietnam
Mineral Resources				
EV battery production				
Battery Swapping				
Seminconductor chips				
EV production by types of vehicles: Motorbikes				
HEVs				
PHEVs				
BEVs				
Battery Recycling				
R&D activities				

Notes:

In production

Planned

No announced plans as yet

Source: Author

Source: Tham, 2022.

Photo by Ernest Ojeh on Unsplash

The Malaysian Investment Development Authority (MIDA) has approved 58 EV investment projects totaling 26.2 billion ringgit (USD 5.8 billion) from 2018 to March 2023, covering vehicle assembly, manufacturing of parts, and charging components. The country has nearly 1,000 charging stations and plans to build 10,000 in total across the country by 2025 (Goh, 2023).

The most recent EV-related investment in Malaysia involves Tesla, the EV manufacturer, which officially inaugurated operations on 20 July 2023. Tesla's objective is to integrate Malaysia in becoming part of the development of a regional EV industry. The company is set to establish a head office, Tesla Experience and Service Centre, as part of the country's BEV (Battery Electric Vehicle) Global Leaders initiative, launched by the government in March 2023 to attract EV manufacturers. The BEV program aims to boost the demand for EVs within Malaysia by fostering an ecosystem to support the adoption of BEVs. The program also aims to attract the investments of BEV manufacturing companies. Tesla will operate under the BEV program, which permits them to sell cars in Malaysia without Approved Permit (AP) regulations, thereby reducing the cost of imported Tesla vehicles (Goh, 2023; MIDA, 2023).

In a bid to further encourage EV adoption in Malaysia, the revised 2023 budget introduced three new measures to bolster EV growth. Tax exemptions, namely zero excise and zero import duties, for fully imported EVs and locally assembled EVs were extended until December 31, 2025, and December 31, 2027, respectively. Additionally, tax break extensions were granted for components used in locally assembled EVs (Aiman, 2023; MIDA, 2023).

Part 2: Harm Reduction and Healthcare Cost Saving

In this section, we will try to estimate the cost savings brought to the Malaysian healthcare system from the adoption of a proper harm reduction strategy, starting from the impact of harm reduction applied to the consumption of nicotine products.

1. Harm reduction and tobacco healthcare costs

Tobacco harm reduction presents a compelling and pragmatic approach to mitigate the escalating healthcare costs stemming from tobacco-related diseases. As the toll of tobacco-related illnesses on healthcare systems continues to rise, exploring effective strategies becomes imperative. The concept of harm reduction, while not endorsing tobacco use, focuses on minimizing the adverse health effects for those who cannot quit entirely. By transitioning smokers to less harmful alternatives such as e-cigarettes, heated tobacco products or nicotine pouches, significant health and economic benefits can be realized.

In 2022, Datametrics Research & Information Centre (DARE), Malaysian think tank, conducted an analysis which found that encouraging smokers to switch to alternative tobacco products can reduce the overall smoking population in Malaysia to 4.0 million by 2025 (DARE, 2022).

On the other hand, a study investigating the switch from combustible cigarettes to the use of alternative tobacco products explores how this shift impacted the exposure to smoke intoxicants. The finding revealed that the switch to alternative tobacco products for five days did in fact reduce exposure to smoke toxicants in a manner comparable to quitting tobacco use (Gale et al., 2018).

A common concern raised about the usage of alternative tobacco products is that it provides a gateway to conventional traditional use of combusted cigarette smoking. However, this assertion is debatable. Reviews conducted by independent expert groups concur that while youth uptake of vaping should be closely monitored, existing evidence suggests minimal or no frequent conventional cigarette uptake among youths who use e-cigarettes (Balfour et al., 2021).

In 2018, Public Health England, the UK's public health agency, emphasized in their review that available evidence does not substantiate the concerns that e-cigarettes serve as a pathway to smoking among youth. This is supported by the continuing decline in youth smoking rates in the UK, and regular use of e-cigarette remains rare and is predominantly limited to those who have smoked (Public Health England, 2018).

Undoubtedly, a well-implemented harm reduction strategy has the potential to exhibit a demonstrable reduction in the considerable annual healthcare expenses associated with smoking-related diseases in Malaysia.

Table 2.1.: Deaths due to tobacco smoking and annual healthcare costs.

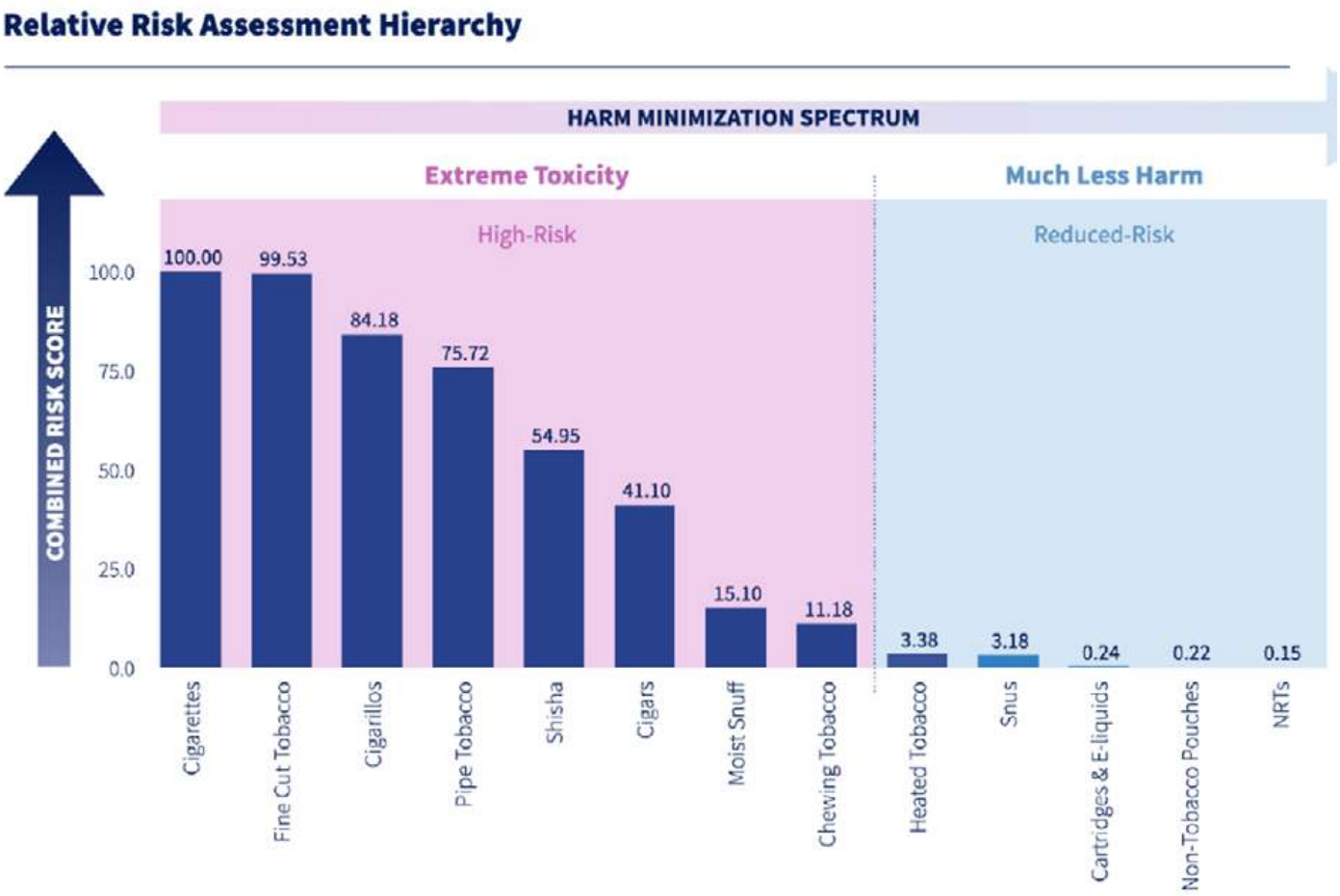
Sickness	Smoking Responsible for Percentage of deaths	Total Annual Number of Deaths (Year 2020)	Deaths due to Tobacco Smoking (Year 2020)	Annual Healthcare Costs (RM Million)
Lung Cancer Deaths	90%	4,319	3,887	132.7
Coronary Heart Disease Deaths	20%	36,729	7,346	544.5
Chronic Obstructive Pulmonary Disease	80%	3,074	2,459	2,200.0

Source: WHO (2020) and KRI (2018).

Implementing a proper harm reduction strategy can lead to a reduction in healthcare costs. This stems from two factors: the harm reduction approach itself, which aids in smoking cessation, and the shift towards alternative nicotine products, which are indeed less harmful to individual health.

While the long-term health risks of electronic cigarettes and vaping remain unknown, the short-term risks show that e-cigarettes (and other innovative products such as Heated Tobacco Products) are significantly less harmful compared to traditional cigarettes (Stratton et al., 2018). Recent research (WVA, 2021) focused on e-cigarettes regulations across 61 countries; the research concluded that a regulatory regime that facilitates and encourages e-cigarettes as a means to quit smoking could see, up to 196 million of current smokers in those countries could switch to vaping – a 95% less harmful alternative (Hoffer et al, 2021, p. 12). In fact, «while vaping isn't entirely risk-free, most of the harmful chemicals responsible for smoking-related disease are absent and the chemicals that are present pose limited danger.»

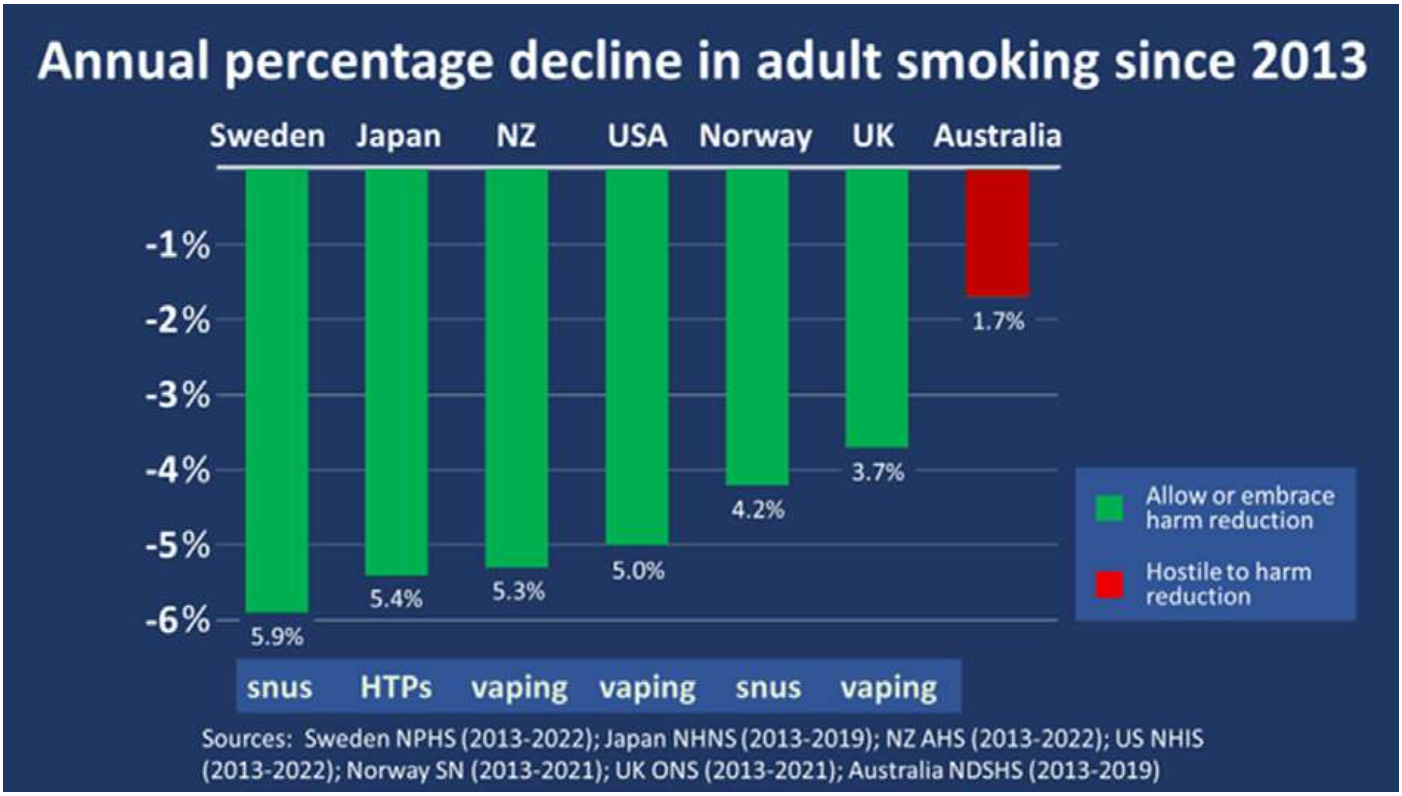
Figure 2.1.: Relative risk spectrum for different smoking products.



Source: FSFW (2021, p. 13); Murkett et al. (2020).

The safety data regarding alternative nicotine products must be integrated with the impact of harm reduction strategies on smoking cessation and changes in consumption pattern. According to official government data reported by Fii (2023), countries that didn't adopt harm reduction strategies, like Australia, recorded a meager 1.7% yearly decline in adult smoking annually since 2013; in contrast, for the countries that embraced harm reduction, the annual percentage decline was between 3.7% (United Kingdom) and 5.9% (Sweden) (see Figure 2.2).

Figure 2.2.: Annual percentage decline in adult smoking since 2013.



Source: Fii (2023).

For our estimations, we will use the average of the above values: 4.92%.

Table 2.2.: Estimation of healthcare costs from smoking in Malaysia, 2020.

Sickness	Smoking incidence	Annual Healthcare Cost (RM Million) - 2020	Cost from Smoking in 2020 (RM Million)
Lung Cancer	90.00%	RM 132.70	RM 119.43
Coronary Heart Disease	20.00%	RM 544.50	RM 108.90
Cronic Obstructory Pulmonary Disease	80.00%	RM 2,200.00	RM 1,760.00
Total		RM 2,877.20	RM 1,988.33

Source: Our elaborations on data from WHO (2020) and KRI (2018).

According to WHO (2020) and KRI (2018) data, smoking-related healthcare *cost in Malaysia reached approximately RM 1,988.33 million (in 2020). By implementing an effective harm reduction strategy, we could potentially save around RM 97.83 million in saving per year (4.92%), deriving from declining in adult smoking due to the switch to less harmful alternatives, or roughly RM 19.88 million for each percentage point of smoking cessation brought in by a harm reduction strategy.

Regarding consumption shift, New Zealand's data suggests around 1% annual rise in alternative nicotine products users: this equates to potential RM 18.89 million in healthcare savings (this is calculated as 1% of RM 1,988.33 million multiplied by 95% - the average less harm estimated for alternative nicotine products).

However, it's important to note that these figures aren't additive, as shifting can lead to cessation, causing overlapping between these two amounts. The potential cost savings for the Malaysian healthcare system due to harm reduction strategies are summarized in the table below.

Table 2.3.: Healthcare savings thanks to harm reduction (direct costs).

Assumption	Category	First Year Savings	10-Year Savings*
HRS – 4.92% smoking cessation per year	Healthcare savings from cessation	RM 97.83 million	RM 787.78 million
HRS – 1% increase in alternative products	Healthcare savings from shifting only	RM 18.89 million	RM 152.11 million

* This is not equal to ten times the first-year savings because the calculation base is progressively declining over time precisely because of the savings from the previous year.
*HRS: Harm Reduction Savings

A further analysis can be conducted on the indirect consequences of smoking in terms of social costs. Tan et al. (2020) calculated that smoking leads to a loss of more than 2.1 million life years (2.9%), 5.5 million (8.2%) quality-adjusted life years (QALYs), and 3.0 million (4.8%) disability-adjusted life years (DALYs). The economic toll of smoking translated to RM 275.3 billion (USD 69.4 billion) in loss of productivity, roughly around 17% of Malaysia's GDP, amounting to USD 406.31 billion in 2020!

Utilizing the same dataset and assuming 95% less harmful for alternative nicotine products, switching just 1% of the smoking population to alternative products could potentially save RM 2.61 billion in loss of productivity (in this case, gain of productivity). In other words, this represents a yearly saving equivalent to 0.16% of Malaysia's GDP.

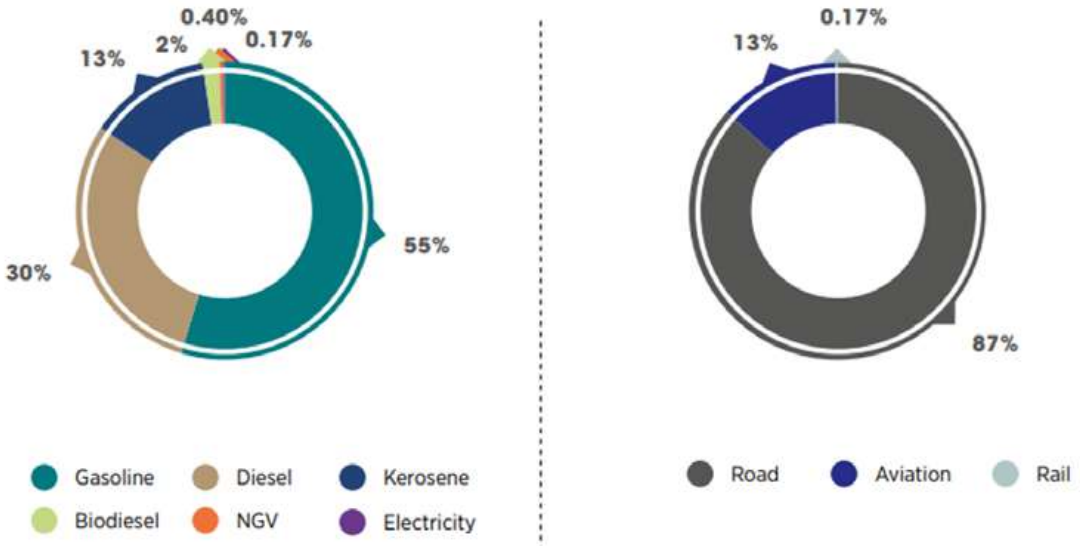
2. Harm reduction and vehicle pollution healthcare costs

The International Renewable Energy Agency (IRENA) predicts that Malaysia's vehicle count will double by 2050 from 29 million vehicles today, primarily comprised of motorcycles and cars. In the absence of proactive policy to encourage and integrate other modes of transport and adoption of energy-efficient vehicles, the demand for oil in road transport is expected to triple by 2050, as indicated in the planned energy scenario based on the current plans and policies for the energy sector (IRENA, 2023).

Figure 2.3.: Transport energy consumption by end use and carrier, 2018.

Road transport consumed 87% of the total transport energy consumption in Malaysia in 2018 (Figure 33). Oil dominates in this energy consumption (98%), consisting of petrol, diesel and kerosene.

Road transport dominates energy use in Malaysia's transport sector, with petrol accounting for more than half of the sector's energy consumption.



Note: NGV = natural gas for vehicles.

Source: IRENA, 2023.

Photo by American Public Power Association

Electrification is the most viable way to decarbonize Malaysia's transportation sector, aligning with the nation's objective of achieving net-zero status by 2050 (IRENA, 2023).

Released in June 2021, the World Energy Transition Outlook by the International Renewable Energy Agency (IRENA) provides a pathway to limit global temperature rise to 1.5°C and attain CO2 emissions to net zero by 2050. According to Malaysia's energy transition outlook report for 2023, under the 1.5°C scenario 76% of all road vehicles in Malaysia should run on electricity by 2050. Specifically, the penetration rate of electric cars should reach 19% by 2030 and soar to 80% by 2050 (IRENA, 2021; IRENA, 2023).

Furthermore, one-third of annual sales of cars and motorcycles will be electric vehicles starting in 2030, escalating to 60% from 2040 onward. To support 38 million electric vehicles by 2050, Malaysia needs to install 1.3 million public charging stations (IRENA, 2023).

This is in line with Malaysia's Low Carbon Mobility Blueprint 2021-2030, aiming for electric vehicle shares to constitute 5% of cars, 15% of motorcycles and 20% of buses by 2030. The imperative to decarbonize the transportation sector is critical for Malaysia due to the sector being the second largest greenhouse gas emitting sector in 2014, accounting for 20% of Malaysia's total greenhouse gas emissions, with road transport alone accounting for 18% of emissions (Ministry of Environment and Water, 2021).

Let's shift our focus to the potential healthcare savings stemming from the implementation of harm reduction through electric vehicles. According to CREA (2022, p. 17), «the health impacts of observed ambient air pollution in Malaysia result in an annual economic cost of MYR 303 billion (US$ 73 billion) — or 20% of the country's GDP in 2019. This amounts to approximately MYR 9,250 (US$ 2,200) per capita due to the healthcare and medical expenses arising from heightened prevalence of diseases or disabilities linked to air pollution, missed workdays impacting individual ability to earn a salary, along with the cost of lost livelihoods and economic productivity as a result of premature death». The present observed situation far exceeds the projection set by the WHO 2005 and 2021 targets (see Figure 2.4).

Table 2.4.: Estimated Economic Cost of air pollution annually in Malaysia, by cause and scenario in USD millions.

	Economic Cost in USD millions		
Cause	**Observed Scenario**	**WHO 2005 Scenario**	**WHO 2021 Scenario**
Work absence (sick leave days)	904 (774 - 1,031)	436 (372 - 499)	223 (190 - 256)
Number of children suffering from asthma due to pollution exposure (increased prevalence)	14 (3.5 - 29)	14 (3.5 - 29)	9 (2.4 - 19.9)
Asthma emergency room visits	3.0 (1.8 - 4.1)	0.8 (0.5 - 1.1)	NA
Preterm births	766 (387 - 810)	76 (37 - 81)	NA
Years lived with disability	2,184 (713 - 4,370)	1,411 (390 - 3,295)	471 (44 - 2,209)
Premature deaths	9,084 (4,475 - 15,610)	9,084 (4,475 - 15,610)	5,718 (2,813 - 9,841)
	144,035 (75,166 - 250,668)	72,167 (40,367 - 117,599)	32,694 (19,009 - 53,354)
Total Economic Cost	**73,044 (44,266 - 110,410)**	**43,139 (25,867 - 66,075)**	**21,919 (13,096 - 34,549**

Source: CREA (2022, p. 17).

According to CREA (2022, p. 9), motor vehicles account for just 12% of PM emissions, yet they account for 24% of NO_2 emissions (CREA, 2022, p. 9). Using date from preceding table for PM and NO_2, a combined emission of 205 µg/m^3 of PM and NO2 in a 24 hours in 2020 leads to a healthcare cost of USD 73,044 million. Among these emissions, only 33 µg/m^3 (16.10%) originates from vehicle (based on CREA's provided information). Meeting the WHO 2025 targets would bring slash healthcare costs down to USD 21,919 million (-70% reduction). To achieve this, it is critical to bring down PM and NO_2 emissions by 58.54% (85 µg/m^3). This means that a reduction of 1% in µg/m3 emissions yields a 1.2% reduction in healthcare costs.

Assuming vehicle emissions constitute an average of 16.1% of the total, estimated healthcare cost attributed to vehicle pollution would be approximately USD 11,758.3 million. How do electric vehicles compare to their combustion counterparts in terms of pollution reduction? These could be answered in the main findings arising from research conducted by the MIT and the US Department of Energy:

Table 2.5.:
Pollution deriving from different types of vehicles.

Type of Car	CO2 grams/mile	CO2 lbs/year
Gasoline	350	11435
Hybrid	260	6258
Electric	200	3932
Gasoline	100.00%	100.00%
Hybrid	74.29%	54.73%
Electric	57.14%	34.39%

Source: Moseman and Paltsev (2022).

A complete transition to Electric Vehicles could potentially lead to a savings in healthcare costs associated with vehicles emission of between 43% and 66% circa. Currently, the market share for EVs in Malaysia hold a mere 0.4% (Arifin, 2023). However, as of December last year, Minister of international trade and industry (MITI) Tengku Datuk Seri Zafrul Tengku Abdul Aziz revealed the nation's aspiration to achieve 15% of the total industry volume (TIV) made up of EVs and hybrids by 2030, eventually reaching to 38% by 2040 (Lim, 2023).

This implies that with the right set of harm reduction policies in place, assuming that such policies can drive Malaysia toward the targets set by the MITI minister, healthcare expenses related to vehicle emission might see reductions as depicted in the subsequent table.

Table 2.5.: Estimated healthcare savings from applying HR to EVs.

Year	2020	2030	2040
EV market share	0.40%	15.00%	38.00%
Vehicle Emission Healthcare Cost (Actual) - USD Million	USD 11,758.30		
Vehicle Emission Healthcare Cost (Prudential Est) - USD Million		USD 11,002.41	USD 9,843.38
Savings from Prudential Scenario		6.43%	16.29%
Vehicle Emission Healthcare Cost (Optimistic Est) - USD Million		USD 10,601.03	USD 8,826.55
Savings from Optimistic Scenario		9.84%	24.93%

The healthcare savings falls between 6.43% and 24.93%[1].

[1] *The reader needs to be aware that such are very rough estimations and that a proper harm reduction strategy for EVs implies also solving the current issues which are present at the manufacturing stage of the supply chain.*

3. Harm reduction and sugar healthcare costs

The Malaysian Dietitians Association advocates for the use of sugar substitutes to reduce calorie intake, support weight and diabetes management and prevent dental caries. The safety and benefits of sugar substitutes have undergone thorough examination and have received approval from main regulatory bodies worldwide (Harjani et al., 2016).

Low calorie sweeteners (LCSs) have proven effective in facilitating a calorie reduction plan. In a study, substituting regular-calorie food and beverages with LCSs options led to modest weight loss and may be a useful dietary tool to improve adherence with weight-loss and or weight-maintenance plans. For dental health, LCSs are advantageous if coupled with good oral hygiene habits, regular dental check-ups, and fluoride exposure (Harjani et al., 2016).

The US-based Mayo Clinic, an academic medical-center, emphasizes that artificial sweeteners can be part of a healthy diet when consumed moderately. They are deemed safe for healthy adults and do not pose serious health risks. Artificial sweeteners can aid overweight or obese individuals in short term weight management. However, the long-term effectiveness for weight loss or maintenance remains inconclusive, as do potential long-term health effects. They also contribute to reduced risk of tooth decay and cavities, without affecting blood sugar levels (Mayo Clinic, 2023).

This section primarily focuses on diabetes, even though excessive sugar consumption is associated with obesity, type 2 diabetes and high blood pressure. According to research conducted by the Malaysian Ministry of Health and the World Health Organization (MOH, 2022), the total direct health-care costs of three selected noncommunicable diseases (NCD) – diabetes, cardiovascular diseases (CVD) and cancer – totaled RM 9.65 billion in 2017.

This is equivalent to RM 301.37 per capita cost for the national population. In terms of overall healthcare expenditure within NCD category, diabetes accounted for RM 4.38 billion (45.38% of total costs), followed by CVD with RM 3.93 billion (40.73% of total costs), and cancer with RM 1.34 billion (13.89%). Hospitalization costs amounted to RM 1.58 billion, or 16.33% of total costs for the three NCD categories (MOH, 2022, p. v).

However, the societal cost stemming from diabetes in Malaysia extend beyond the direct healthcare costs. According to MOH (2020, p. 7), diabetes could lead to an average annual loss of 7.25 working days. In the 2017 Malaysian population, disability-adjusted life years (DALYs) due to diabetes mellitus amounted approximately 238,394; diabetes mellitus accounted for one in every 10 of the total DALYs (10.1%) arising from the three major categories of NCDs mentioned above, translating to DALY losses from diabetes mellitus amounting to RM 10.21 billion. Most of the DALY burden linked to diabetes mellitus was due to years lived with disability (YLD), with 194,072 YLD constituting 81.4% (RM 8.31 billion) of the total DALY cost attributed to diabetes. The remaining 18.6% of the cost burden (RM 1.9 billion) resulted from 44,322 years of life lost (YLL) due to diabetes (MOH, 2020, p. 17).

Therefore, we can estimate that the direct and indirect costs, borne by the Malaysian society due to diabetes reached nearly RM 15 billion per year. Incentivizing certain behaviour can reduce the incidence of diabetes on society, including the consumption of chromium picolinate for the prevention of Type 2 Diabetes Mellitus (DM), resulting in savings of RM 1.31 for every RM 1 spent on chromium picolinate. This could lead to a total potential net cost savings of RM 248.27 million per year. Thus, individual expenditure for dietary supplements serves as an alternative form of insurance, mitigating the risk of substantial expenses for future medical treatments (Weerasena et al., 2021, p. 4).

Table 2.6.: Summary of cost calculations for Chromium Picolinate Supplementation and Type 2 Diabetes Mellitus (DM) cost hypothetical case.

<table>
<tr><th>Ref. Column</th><th>Metric</th><th>Measure</th><th>Note/ Data Source</th></tr>
<tr><td>A</td><td>Target population with DM, 2019</td><td>3,900,000</td><td>Institute for Public Health</td></tr>
<tr><td>B</td><td>Expected number of people within the target population who will experience a DM hospitalization event[15], 2019</td><td>47,243</td><td>Malaysian Healthcare Performance Unit</td></tr>
<tr><td>C</td><td>Number needed to treat (NNT)[16],</td><td>95</td><td>Frost & Sullivan</td></tr>
<tr><td>D</td><td>Total Annual Cost per person, 2019
<table>
<tr><th>Sub-Metric</th><th>Cost (RM)</th></tr>
<tr><td>Direct Healthcare costs (Ambulatory Care)[17],</td><td>1,476</td></tr>
<tr><td>Direct Healthcare costs (Hospitalization)</td><td>6,079</td></tr>
<tr><td>Direct Non-Healthcare costs (Ambulatory Care & Hospitalization)[18]</td><td>8,067</td></tr>
<tr><td>Direct Non-Healthcare costs (Miscellaneous Expenses)[19]</td><td>882</td></tr>
<tr><td>Direct Non-Healthcare costs (Consumables)[20]</td><td>3,477</td></tr>
<tr><td>Cost of Absenteeism from Work (Seeking Treatment)</td><td>560</td></tr>
<tr><td>Cost of Absenteeism from Work (Accompanying person)</td><td>593</td></tr>
<tr><td>Cost of Absenteeism in hospitalization activities</td><td>3,780</td></tr>
<tr><td>Cost of Absenteeism in hospitalization activities (Accompanying person)</td><td>536</td></tr>
<tr><td>Total Annual Costs</td><td>25,450</td></tr>
</table></td><td>RM 25,450</td><td>Pharmaceutical Services Division Ministry of Health; Author's estimates</td></tr>
<tr><td>E</td><td>Annual cost of Chromium Picolinate dietary supplementation per person[21]</td><td>RM 204</td><td>GNC Livewell; Author's estimates</td></tr>
<tr><td>F</td><td>Number of events avoided if everyone in the target population took a supplement[22]</td><td>41,053</td><td>A/C=F</td></tr>
<tr><td>G</td><td>Avoided total costs of DM (using Chromium Picolinate)</td><td>RM 1,044.80 million</td><td>D*F=G</td></tr>
<tr><td>H</td><td>Total Costs of Chromium Picolinate supplementation</td><td>RM 796.53 million</td><td>A*E=H</td></tr>
<tr><td>I</td><td>Net savings</td><td>RM 248.27 million</td><td>G - H= I</td></tr>
<tr><td>J</td><td>Net benefit cost ratio
(per RM1 spent on dietary supplement)</td><td>RM 1.31</td><td>G/H=J</td></tr>
</table>

Source: Weerasena et al. (2021, p. 39).

An alternative approach would be enacting differential taxation on sugar content: rather than taxing sugary products per se, a proper harm reduction strategy would entail introducing different levels of taxation according to the sugar content. For instance, in the United Kingdom, manufacturers of soft drinks with more than 5 g of sugar per 100 ml are subjected to a levy of 18 p a litre, while those exceeding 8g per 100ml incurred 24 p a litre for sugar content. Since this tax's initiation in April 2018, a recent study demonstrated that soft drinks volume purchase remained constant, but the sugar content decreased by 29.5 g – equating to a 10% reduction per household per week compared to estimations. While consumption patterns remained the same, producers lowered the sugar content to reduce the tax payable to Government (Sky News, 2021), achieving this outcome within a year. Although different countries may react variably to sugar taxation based on the availability of substitutes and demand elasticity, it surely seems that such a measure may bring considerable savings not only in terms of healthcare costs but also in terms of saved lives.

Other instances can be observed in Philippines. In 2013, an estimated 31.1% of the 56.3 million adults were overweight and the percentage of overweight youth had nearly doubled, from 4.9% (0.9 million of 18.5 million) to 8.3% (1.7 million of 20.3 million), in 10 years. In response, the Philippines' government enacted the Tax Reform for Acceleration and Inclusion Act, with the Act being implemented in January 2018. This included a 6 Philippine pesos per litre excise tax on sweetened beverages made with caloric or non-caloric sweeteners and a 12 Philippine pesos per litre tax on beverages made with high-fructose corn syrup (equivalent to USD 0.12 and US$ 0.24 in January 2018 respectively). This two-tiered levy represented retail price increases of approximately 13% from 45 to 51 Philippine pesos per litre of regular cola and 26% from 45 to 57 Philippine pesos per litre of cola made with high-fructose corn syrup, respectively (Saxena et al., 2019).

Photo by Alexander Grey on Unsplash

The new tax is believed to have reduced the consumption of sugary drinks by 8.7%. According to 2019 cost-benefit analysis, the tax also helped avert around 24,000 premature deaths related to diabetes, stroke and heart disease (Saxena et al., 2019).

Consequently, data from the UK and the Philippines points to a potential 8% to 10% reduction in sugary drink consumption. However, it's important to highlight that Malaysians consume about 3 kg of sugar annually through sugary drinks (Clark-Hattingh and Lo, 2019) constituting around 7% of their total sugar intake exceeding 41 kg (Faostat[2]). In the earlier section, we cited research estimating direct and indirect diabetes costs at roughly RM 15 billion. A 10% decrease in sugary drink consumption might translate into a 0.7% reduction in healthcare costs, equivalent to RM 105 million.

While this sum is significant, it underscores the need for a broader strategy beyond just targeting sugary drink consumption. Encouraging the emergence of sugar-free snacks could be supported through differentiated treatment and taxation for these products.

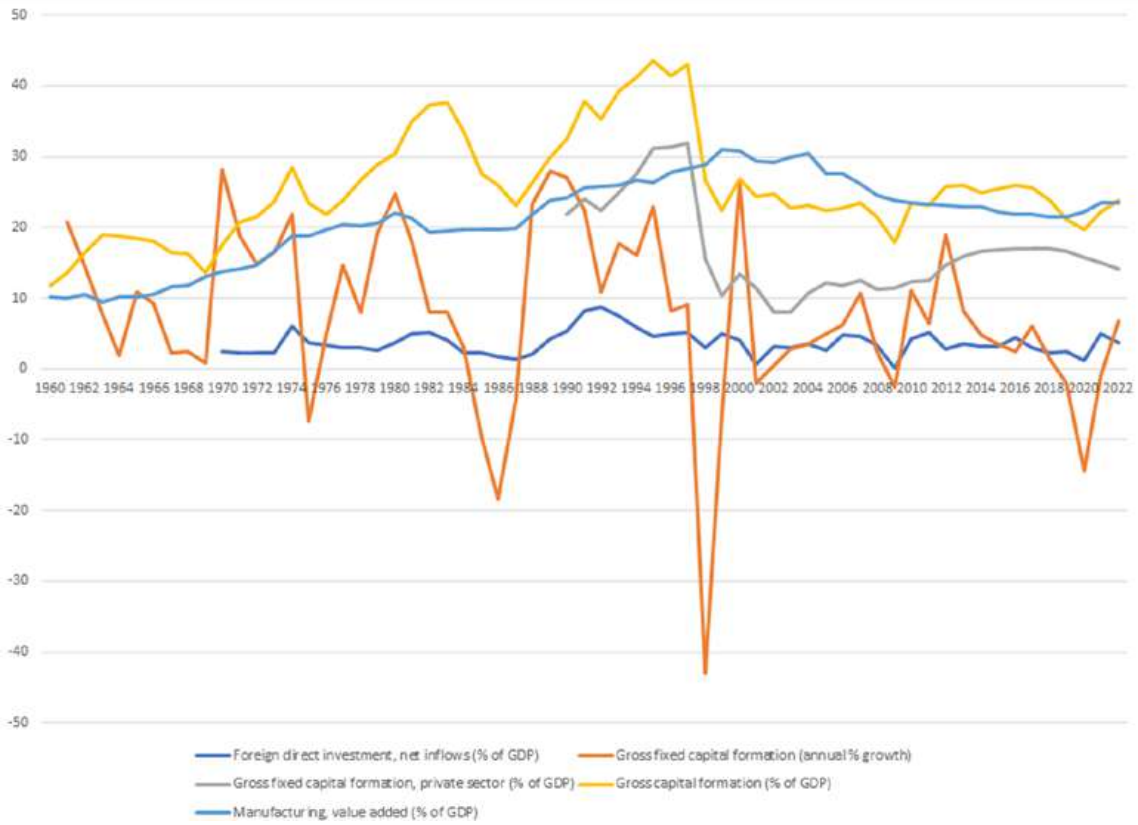
[2] *https://www.helgilibrary.com/indicators/sugar-consumption-per-capita/Malaysia/.*

Part 3:
Harm Reduction, Innovation and Investments

1. The role of investments in the Malaysia's economy: some introductory figures

Frequently in Malaysia, conversations about investments tend to focus on country's ability to attract foreign direct investments (FDIs). Nevertheless, we believe that a more comprehensive discussion should encompasses the broader spectrum of investments, specifically gross fixed capital formation (GFCF) in Malaysia (see Figure 3.1).

Figure 3.1.: Several investments indicators for Malaysia, 1960-2022.



Source: World Bank[1].

[1] *Foreign direct investment, net inflows (% of GDP): https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS?locations=MY.*
Gross capital formation (% of GDP): https://data.worldbank.org/indicator/NE.GDI.TOTL.ZS?locations=MY.
Gross fixed capital formation, private sector (% of GDP): https://data.worldbank.org/indicator/NE.GDI.FPRV.ZS?locations=MY.

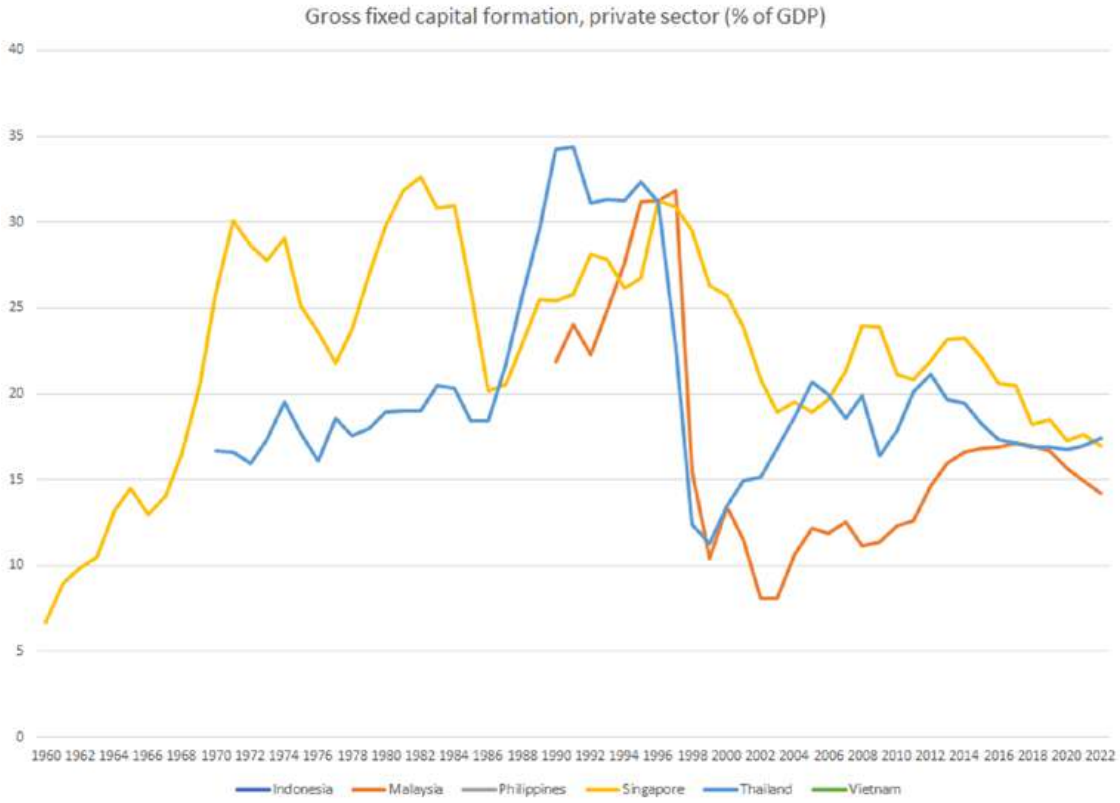
Photo by Joshua Mayo on Unsplash

Key takeaways gleaned from the preceding graphs include:

- The weight of FDIs as a percentage of GDP declined from the heights of 1990s and exhibits considerable year-to-year variability;
- Investments, in contrast to the peak levels of the late 1990s, are on a downward trajectory as a percentage of GDP; in particular, private investments show an alarming declining trend, shifting the responsibility for revitalizing investments onto the public sector (indicated by the growing gap between the yellow and gray lines). This situation introduces various interconnected challenges such as public debt, inflation, issues related to knowledge and planning, distorted pricing, and the displacement of private entrepreneurship;
- The role of manufacturing in GDP composition has plateaued following a sustained decline.

Among the Southeast Asia countries with available data, Malaysia demonstrates the most alarming trend in the declining role of private investments (see Figure 3.2).

Figure 3.2.: Gross fixed capital formation, private sector, selected Southeast Asia countries, 1960-2022.

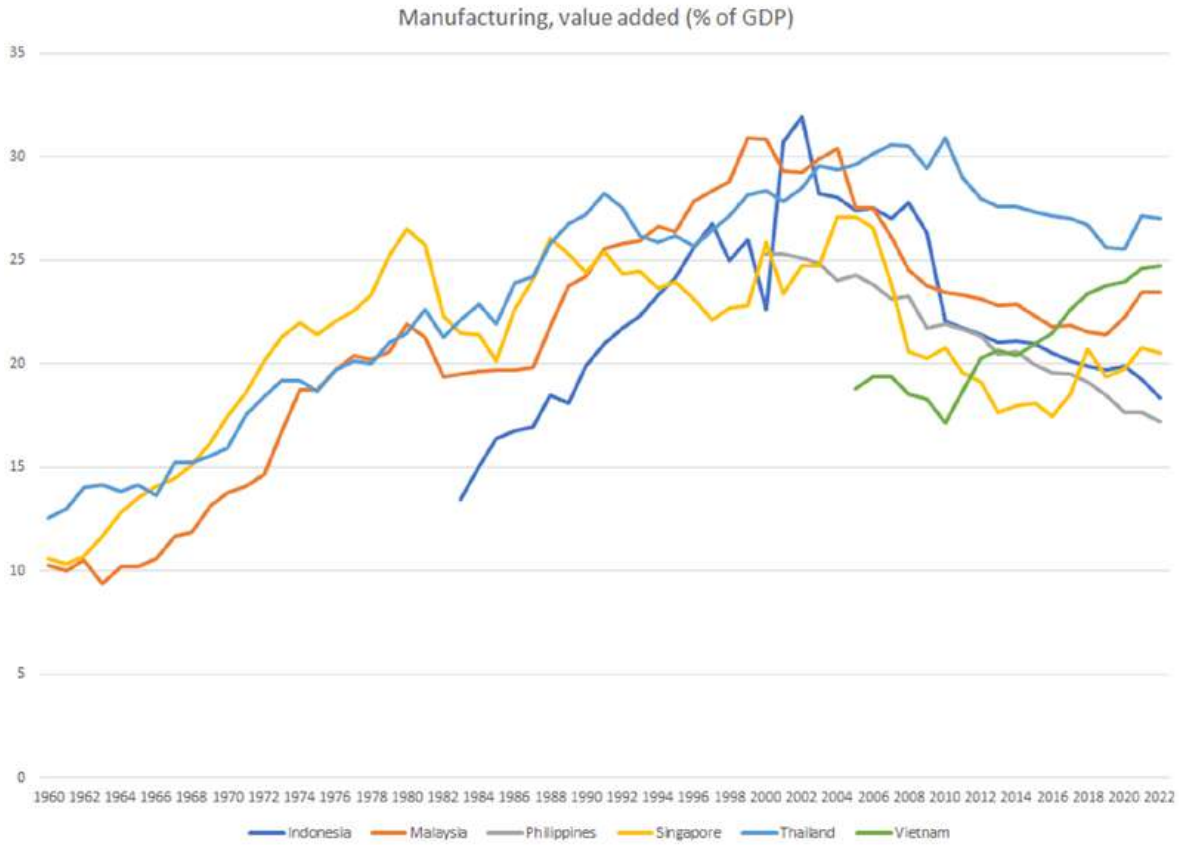


Source: World Bank.

In Thailand and Vietnam, manufacturing appeared the core of economic growth, while Malaysia has shown encouraging signs over the past three years (see Figure 3.3).

Gross fixed capital formation (annual % growth): https://data.worldbank.org/indicator/NE.GDI.FTOT.KD.ZG?locations=MY.
Manufacturing, value added (% of GDP): https://data.worldbank.org/indicator/NV.IND.MANF.ZS?locations=MY.

Figure 3.3.: Manufacturing value added as % of GDP, selected Southeast Asia countries, 1960-2022.



Source: World Bank.

Why do we find this trend alarming? We wish to emphasize that achieving a positive GDP performance *per se* is not a sufficient reason for celebration. In fact, not all GDP components "are born equal" and, *ceteris paribus, some of them can generate unsustainable growth*. Let's illustrate this with a simple example: if, ceteris paribus, the government devotes resources to unproductive expenditures and, furthermore, these outlays are financed by printing or borrowing money, GDP statistics may show growth, but likely outcome will be most likely be inflation and unemployment. In a nutshell, the micro foundations behind macro-aggregates matter more than the aggregates themselves.

On the other hand, long-term sustainable growth relies on investments funded by real savings, and savings are the flip side of consumption. Therefore, the recipe for enduring economic growth involves a combination of investments and savings, rather than investments and consumption.

Center for Market Education

2. Harm reduction and investments

The macro-analysis of investments in Malaysia, contribution on GDP and the importance of reshaping the growth model are intricately tied to the concept of harm reduction. We believe effective implementation of proper harm reduction policies serves as a driver for increased investments and, consequently, job creation.

The first interpretative key used here is the potential investment traction generated by harm reduction policies on the semiconductor industry and microchip industry in Malaysia. This sector, already significant within the country, plays a pivotal role in both the development of Electric Vehicles (EVs) and devices for alternative products such as e-cigarettes and heated tobacco products.

Let us proceed with order, from the macro to the micro. By utilizing data on foreign direct investments, we will ascertain the relationship between investments and job creation, with the intent of applying these insights on domestic investments as well. Subsequently, we will transpose the trends observed for the semiconductor industry in the European Union post implementation of the new chip regulation to the Malaysia context.

The 2022 FDIs trends are summarized in the table below.

Table 3.1.: FDIs in 2022.

Total Projects	Estimated Investments (USD Billion)		Jobs Created	USD/Investment (USD Million)		Jobs/Invesment	Jobs/USD million
16,040	USD	1,155.00	2,277,002	USD	72.01	141.96	1.97

Source: FDI (2023).

Photo by Zbynek Burival on Unsplash

Considering the inherent limitations associated with average values, here are some key insights for the year 2022:

- The average value of each FDI amounted to USD 72.01 million;
- Each investment created 141.96 jobs;
- Approximately 1.97 jobs were created for every million USD invested.

It is worth noting that USD 210 billion investments were attracted by the renewable energy industry, while Asia-Pacific as a region attracted USD 279.7 billion. Also, some of the most interesting sectors for Malaysia, namely semiconductors and batteries, attracted important shares of investments worth, USD 91.6 and 54.3 billion respectively (FDI, 2023).

As mentioned in table 3.2, the Asia-Pacific region captured USD 279.7 billion, distributed across 3,475 project, or USD 80.49 million per project; if we maintain the same average job creation rate of 1.97 jobs per million USD invested, this translates to a potential creation of 551,409 jobs, or approximately 158.68 jobs per investment. Malaysia, contributing 4.12% of the region's total projects (143 projects) and 5.96% of the regional investment total (USD 16.68 billion), played a notable role in this dynamic landscape.

Table 3.2.: FDIs in 2022 – World, Asia-Pacific and Malaysia.

	Total Projects	Estimated Investments (USD Billion)		Jobs Created*	USD/Investment (USD Million)		Jobs/Invesment*	Jobs/USD million*
World	16,040	USD	1,155.00	2,277,002	USD	72.01	141.96	1.97
Asia-Pacific	3,475	USD	279.70	551,409	USD	80.49	158.68	1.97
Malaysia	143	USD	16.68	32,883	USD	116.64	229.95	1.97

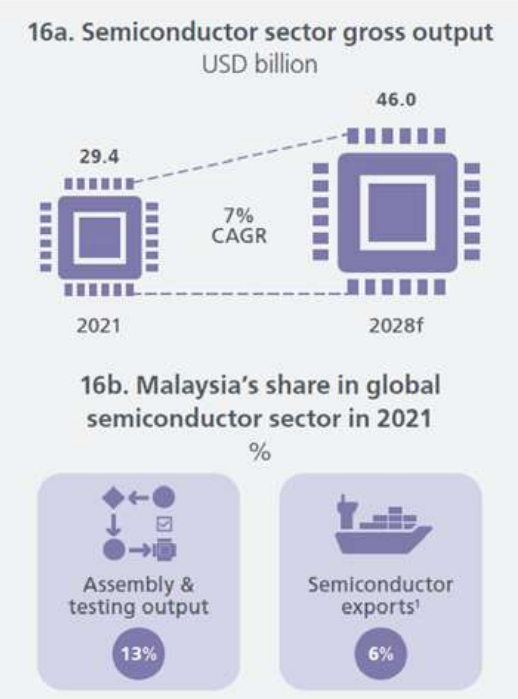
Source: FDI (2023).
* For Asia-Pacific and Malaysia, the values are estimated using the World data.

It's evident that the average investment value in the Asia-Pacific region and Malaysia surpasses the global average. By utilizing the parameter of 1.97 jobs per USD million invested, we can project the potential creation of 32,883 jobs through FDIs in Malaysia in 2022, and USD 116.64 million per project.

Despite the historical high of 81%, on average, FDIs in the semiconductor industry represents 38% of the total in Malaysia. Therefore, we may estimate that the industry attracted USD 6.1 billion, creating 12,495 jobs.

These figures are of significance as they enable us to gauge the possible ripple effects stemming from investments driven by harm reduction policies. In our assessment, owing to its substantial size, the semiconductor industry stands to gain the most from the application of harm reduction principles to the production of electric vehicles and alternative nicotine products such as devices for e-liquids and heated tobacco products.

Figure 3.4.: Semiconductor industry in Malaysia.



Source: EastSpring (2022).

The potential boost to the semiconductor industry driven by policy initiatives far exceeds these figures. Recently, Infineon has announced its commitment to invest a further EUR 5 billion in additional production capacity in Malaysia, underlining the German chipmaker's growing confidence in the automotive industry's transition to electric vehicles. The Munich-based company said recently that its previous announcement of a EUR 2 billion investment into its silicon carbon chip fabrication plant in Kulim, Malaysia would rise to EUR 7 billion. This expansion owes much to purchase commitments and prepayments from regional clients, including Chinese automakers SAIC and Chery (Nilsson, 2023).

In fact, the semiconductor devices market for electric vehicles is expected to grow at a CAGR of 30.2% over the period 2023-2028. The growing initiatives by the government for the adoption of electric vehicles and the rising demand for longer driving range and faster charging time in EVs drive the need for electric vehicles' semiconductor devices[2].

[2] *https://www.mordorintelligence.com/industry-reports/semiconductor-devices-market-for-electric-vehicles*
https://www.researchgate.net/figure/iQOS-product-diagrams-A-iQOS-components-and-use-and-B-iQOS-data-collection_fig1_338483700
https://www.bat-science.com/groupms/sites/BAT_C6ZJDE.nsf/vwPagesWebLive/DOC67AX9#

It is estimated that chips in cars are only 11% of the overall chip market, electric vehicles incorporate more than double the number of chips compared to traditional vehicles (Moore, 2022). However, the relationship between harm reduction policies and semiconductors is not limited to the impact of the EVs industry; It's also a crucial component in the realm of alternative nicotine: such as electronic devices that heats up e-liquids containing nicotine as well as heated tobacco products. These devices also incorporate the use of microprocessors, batteries, and LED lights.

Figure 3.5.: Parts of an Electronic Devices for E-liquid and Heated Tobacco Products.

Source: https://en.wikipedia.org/wiki/Construction_of_electronic_cigarettes#/media/File:Parts_of_an_Electronic_cigarette.png.

A cautious estimate of the potential investment impact within the semiconductor industry, influenced by harm reduction policies, can be drawn by comparing it to the European Union's situation. In the EU, the semiconductor industry generates around USD 53 billion in revenues[3], while the new European Chips Act – a new policy framework inspired by harm reduction principles – is expected to generate EUR 43 (USD 46.86) billion in public investments and the same amount in private investments by 2030[4], or USD 5.86 billion/ year for 8 years.

Considering Malaysia's more significant role in the semiconductor industry compared to the European Union, it's reasonable to anticipate that a policy aligned with similar principles could have an even more substantial impact in Malaysia. Our conservative estimate is detailed in the table below.

Table 3.3.: Economic effect of harm reduction policies on the semiconductor industry.

Description	Value (USD)	Value (RM)	Jobs/Projects
Gross Output	USD 29,400.00	RM138,180.00	
Potential Govt Investment (1 year) - USD (RM) Million	USD 3,249.09	RM15,270.70	
Potential Private Investment (1 year) - USD (RM) Million	USD 3,249.09	RM15,270.70	
Direct Job Creation (1 year)			12,801.40
Indirect Job Creation (1 year)			12,033.31
Induced Job Creation (1 year)			6,528.71
Total Potential Investment (10 years) - USD (RM) Million	USD 64,981.72	RM305,414.07	
Total Job Creation (10 years)			313,634.26
Number of Projects (1 year)			56
Number of Projects (10 years)			557

Source: Previous Data; indirect and induced jobs multiplier is obtained as an average from similar case studies.

Therefore, we estimate that the right set of harm reduction policies can generate the following spillover effects on the semiconductor industry and its ecosystem over a period of ten years:

- Almost USD 65 billion (or more than RM 305 billion) in private and government DDIs and FDIs through more than 550 projects;
- More 300 thousand jobs (direct, indirect and induced).

[3] *https://www.statista.com/outlook/tmo/semiconductors/europe.*
[4] *https://digital-strategy.ec.europa.eu/en/library/european-chips-act-staff-working-document.*

While these considerations mainly apply to the semiconductor industry and its relationship with the production of Electric Vehicles, they also apply to the production of electronic devices for e-liquid containing nicotine and heated tobacco products. Therefore, more positive effects can be estimated from these industries.

Electronic devices for e-liquid containing nicotine

In 2019, the vape industry had a retail value of RM2.27 billion per annum, with over 3,300 vape-related businesses established which has created over 15,000 jobs in Malaysia. Majority of the businesses are Small and Medium-sized Enterprises (SMEs) and driven by Malaysian entrepreneurs (MVCC, 2019).

The latest 2022 data found that the industry has since grown its retail value by 9.6% to RM 2.49 billion. However, compared to 2019, the number of vape specialty stores saw a decline to 2,250 from 3,000 due to the COVID-19 pandemic, forcing many vape outlets to fold. At the same time, the findings also indicate that the industry has expanded its sales channels, with vape products now being made available in general stores. There are around 7,500 general retail stores that have also started trading vape products.

Based on MVCC's latest estimation, the number of manufacturers stands at 200 while the number of importers has increased to 100. In this regard, MVCC estimated that the vape industry now provides direct and indirect employment to 31,500 Malaysians (Focus, 2023).

The global vape market size was valued at USD 12.41 billion in 2019, and this market is expected to expand at a revenue-based compound annual growth rate (CAGR) of 23.8% from 2020 to 2027. In the Asia Pacific, this industry is projected to grow at a CAGR of 1.93% for the period between 2020 to 2025. Correspondingly, in Malaysia, the growth of the vape industry is on an upward trend, showing a CAGR growth of 44% in 2019 compared to 2018, representing a significant economic potential for the country (MVCC, 2019).

Electronic Devices for Heated Tobacco Products

The global heated tobacco products market is expected to be valued at USD 77.61 billion by 2025 and is furthermore expected to grow at a compound annual growth rate (CAGR) of 52.56% during the forecast period. It is driven by the steady decrease in cigarette sales concurrent with rising demand for potentially reduced-risks products. Presence of low level of nicotine and chemicals in Heat-Not-Burn (HNB) products is anticipated to further fuel the demand. HNB tobacco devices do not produce smoke and can be used multiple times. The health risks associated with cigarettes and chewing tobacco are anticipated to drive the adoption of Heated Tobacco Products (HTPs)[5]. In Malaysia, there were an estimated 115,000 HNB users in 2021 since the launch in 2018. With HNB globally expanding at a CAGR of 27.2%[6], we may expect to have more than 186,000 users by the end of 2023.

Table 3.4.: Malaysia's Vape industry growth, 2019-2022.

	2019	2022	3-year increase	1-year increase
Vape Industry Retail Value (RM million)	2,270	2,490	9.69%	3.23%
Workers involved	15,000	31,500	110.00%	36.67%
Retailers	3,000	9,750	225.00%	75.00%
Manufacturers	300	200	-33.33%	-11.11%
Importers	30	100	233.33%	77.78%
E-cigarette smokers/vapers	1,126,073	1,450,000	28.77%	9.59%
HNB Users (2021) - Ext.		115,000	81.60%	27.20%
HNB Retail Value (RM Million) - Ext.		197	81.60%	27.20%

Source: MVCC (2019), NIH (2019) and Focus (2023).

[5] *https://www.grandviewresearch.com/industry-analysis/heated-tobacco-products-htps-market*
[6] *https://growthmarketreports.com/report/heat-not-burn-hnb-tobacco-products-market-global-industry-analysis.*

With regard to the smoking population, instead, it can be divided as follows (2019):

Table 3.5.: Smoking population in Malaysia, 2019.

				Smoking Population > 15	Prevalence	% Smoking Pop.
Any Tobacco Product	Total			5,335,310	23.30%	100.00%
	Smokless Tobacco Use	*E-Cigarettes*	1,126,073		4.90%	21.11%
		Others	370,203		1.60%	6.94%
		Total		1,496,276	6.50%	28.04%
	Smoking Tobacco Use	*Cigarettes*	4,776,548		20.80%	0.00%
		Others	101,149		0.50%	0.00%
		Total		4,877,697	21.30%	91.42%
	Smoking and Smokless	*Total*		1,038,663		19.47%

Source: NIH (2019).

The recent data demonstrates that there's around 1.4 -1.5 million vapers and 115,000 HNB users for 2021, (projected to grow to more than 186,000 by the end of 2023). With the conventional tobacco smoking population in decline and vape/HNB on the rise, we may estimate that currently vapers/e-cigarettes/HNB consumers may represent between 25% and 30% of the smoking population in Malaysia.

Malaysia's Minister of Health (MoH) has set as a target a declining of the smoking population to 5%. If, as we claim, this can be done with harm reduction, meaning not by bringing to 5% the total number of consumers but by changing the composition of the smoking population, whereby the great majority would be made of consumers of alternative and less harmful products, the benefit can be tremendous. The composition of the smoking population would change as follows.

Table 3.6.: Reducing smoking prevalence to 5% with harm reduction.

MoH KPI: Smoking Prev. 5% - Here Hp. with Harm Reduction				Smoking Population > 15	Prevalence	% Smoking Pop.
Any Tobacco Product	Total			5,335,310	23.30%	100.00%
	Smokless Tobacco Use	*E-Cigarettes*	3,601,312		15.73%	67.50%
		Others	1,176,231		5.14%	22.05%
		Total		4,777,543	20.86%	89.55%
	Smoking Tobacco Use	*Cigarettes*	1,554,189		6.79%	0.00%
		Others	37,360		0.16%	0.00%
		Total		1,591,549	6.95%	29.83%

In our simulation, users of alternative products would increase from almost 1.5 million to more than 4.7 million, while consumers of traditional combusted tobacco will decline from 4.8 million to 1.5 million (we assume that some consumers will keep on recurring to both typologies of consumption).

By combining the data in the tables above, we can estimate that, if the MoH target to reduce smoking prevalence to 5% is achieved with harm reduction policies, which means having the totality of that 15% switching to less harmful alternatives, the following positive spillovers in the vaping/HNB industry would emerge:

Table 3.7.: Spillovers on the vaping industry if MoH target is achieved with harm reduction.

	2019	2022	3-year increase	1-year increase	With MoH Target	Increase on 2022
Vape Industry Retail Value (RM million)	2,270	2,490	9.69%	3.23%	8,790.65	253.04%
Workers involved	15,000	31,500	110.00%	36.67%	82,108.99	160.66%
Retailers	3,000	9,750	225.00%	75.00%	21,929.65	124.92%
Importers	30	100	233.33%	77.78%	223.29	123.29%
E-cigarette smokers/vapers + HNB users	1,126,073	1,496,276	32.88%	10.96%	4,777,543	219.30%
HNB Retail Value (RM Million) - Ext.	105.18	191	81.60%	27.20%	528.04	176.46%

These estimates are cautiously conservative, as they are obtained by applying past trends to future projects, and those past trends are based on the existing institutional framework, which lacks harm reduction policies. Given the looming decline of the traditional tobacco market, it's probable that major industry players will make substantial investments in countries endorsing harm reduction strategies and policies.These policies would enable them to transition their businesses towards producing less harmful products. Malaysia has already attracted investments in heated tobacco products: one of the major industry players already invested almost RM 20 billion for the development of a smoking-free Malaysia (Lokman and Othman, 2018). Consequently, we might witness an increase in manufacturing activity within these countries.

Part 4:
Guidelines for a Policy Strategy

Preamble: Bottom-up and market-friendly solutions to achieve intended objectives

The approach endorsed here prioritizes bottom-up and market-friendly solutions, which are believed to outperform centrally planned interventions. This viewpoint rejects relying solely on econometric modeling for policymaking, aligning with the idea that policy is an art as much as a science. Colander and Freedman's (2019) stance is echoed, acknowledging that policy's complexity defies modeling due to the dynamic reality it engages with.

Revisiting Mises' argument, under socialism, rational economic calculation collapses. This hinges on comparing expected revenues and costs, necessitating market-determined prices and private ownership of means of production. The latter's role in engendering money prices underscores its significance in facilitating economic calculation. Hayek's knowledge problem complements this, highlighting the inherent limitations of central planning in capturing dispersed and tacit entrepreneurial insights essential for successful decision-making.

This knowledge dichotomy extends to government intervention, where the experts' technical knowledge falls short of grasping entrepreneurial insights. The latter's subjective and emergent nature poses a challenge for central planning. This extends to partial interventionism, where market-driven discovery and competition play a pivotal role. The absence of market-determined prices handicaps policymakers, and interventions struggle to adapt to evolving conditions.

Economic analysis reinforces the notion that interfering with the competitive market process often yields adverse outcomes, reinforcing the value of market-friendly solutions. This multifaceted perspective underscores the complex interplay between knowledge, entrepreneurship, markets and policy outcomes.

I. State of Play – A prohibitionist approach and traditional taxation policy are not viable solutions in an ever-evolving industries

Before delving into the fundamental principles of shaping a new approach to harm reduction policies, let us briefly address the shortcomings of the traditional approach: traditional taxation policy and prohibitionist approach. Indeed, taxing "sinful" behaviours presents problems from both theoretical and practical perspectives (Ferlito, 2023).

In reality, conventional taxation policies such as a uniform taxation system violates both horizontal and vertical equity (Tollison and Wagner, 1992, pp. 20-24) and proves regressive (Hoffer et al., 2021, p. 7). Furthermore, evidence shows that a conventional taxation policy, i.e., a huge tax increase for goods like cigarettes in Malaysia will not achieve its public health and fiscal objective, and in reality, will spawn a thriving black market for illicit products. Indeed, illicit cigarette incidences in Malaysia has already doubled to current levels of 59.7% (The Star, 2019). As highlighted in another CME research (Weerasena, Casadio and Ferlito, forthcoming), it is possible to establish, as a rule of thumb, that an increase of 1% in the excise duty has an elasticity of 1.2 on the illegal market share, raising the share of the illegal market of about 1.2%.

Photo by Adam Wilson on Unsplash

Unfortunately, like taxation, prohibition never worked in the fight against "pleasure consumption", nor in any other field. Former Malaysia's Health Minister, Khairy Jamaluddin, aimed to pass the Generational End Game (GEG) bill, prohibiting the sale of tobacco products, including e-cigarettes, to those born after 2005, drawing parallels to the Prohibition era in the US when alcohol was banned. However, historical evidence suggests that such bans often fail to curb consumption. For instance, the Volstead Act, which banned alcohol in 1919, led to an increase in organized crime and illegal drinking establishments, causing alcohol consumption to double.

Furthermore, it led to a lucrative criminal business. There were 16,000 saloons in New York before the Volstead Act. These were replaced by 32,000 illegal drinking establishments known as "speakeasies". With the price of alcohol first doubling and then climbing to 10 times what it had been before Prohibition, there was plenty of profit for bootleggers.

During the prohibition era, the US government saw adverse effects on trade, employment, and government revenue. At the national level, Prohibition costed the federal government a total of USD 11 billion in lost tax revenue, while costing over USD 300 million to enforce. A National Commission established in 1929 criticized the enforcement of the Volstead Act and noted growing public opposition to Prohibition. The alcohol prohibition was repealed by the passage of the Twenty-first Amendment to the United States Constitution on December 5, 1933.

A similar trend emerged during South Africa's temporary smoking ban during the COVID-19 lockdown, with 93% of consumers continuing to buy cigarettes through illegal means despite the ban. The ban also led to a 250% price increase and a shift to the black market (Filby et al., 2022).

Closer to home, the huge jump in the price of legal cigarettes in Malaysia has widened the pricing gap between legal and illegal products, and this has led to an estimated loss of RM 5.1 billion in cigarette tax every year for the Government. Inevitably, the GEG will further proliferate the illicit market; and at the same time, add further strain on government resources in eradicating illicit trade in Malaysia and jeopardize the ongoing anti-illicit measures spearheaded by Malaysia's Customs Department.

It is therefore clear that an approach to harm reduction – or versus the whole pleasure consumption – based on punishment (taxation or prohibition) presents the following problems:

- Control over freedom of choice;
- Overambitious policy targets;
- Violation of horizontal and vertical equity in taxation;
- Thriving illicit markets and smuggling activities;
- Unemployment;
- Loss of revenues for the government.

Center for Market Education

2. Moving forward: the need for a progressive policy

2.1. Introduction

In Hoffer et al. (2021) and Hoffer and Ferlito (2021), it is proposed that a novel harm reduction strategy should be built upon these three fundamental pillars:

- Utilize increased rewards to encourage behavior change.
- Concentrate efforts on reducing consumption of traditional products, while minimizing restrictions and taxes on less harmful alternatives such as vaping, heated tobacco products, alcohol-free beer, electric vehicles, etc.
- Foster an environment that promotes innovation.

The latter two points are closely intertwined and revolve around the concept that an effective harm reduction policy should primarily encourage the development of alternative consumer products which, in turn, incentivizes a change in consumption behavior. Generally speaking, shifting consumption habits is more feasible than achieving complete cessation. A successful harm reduction strategy should prioritize offering less harmful or non-harmful alternatives, with the overarching goal of preserving consumer pleasure (i.e., satisfying the consumers' utility) while eliminating harm.

However, for these alternative products to flourish, a supportive ecosystem for innovation is imperative. To facilitate this, a favorable regulatory and tax framework should be established, one that provides consumers with financial incentives to shift their habits, not only for health reasons but also for economic benefits. Exploring avenues such as reducing or eliminating VAT-like taxes and excise taxes on e-cigarettes, heated tobacco products, and similar alternatives should be the initial step. Any potential decrease in fiscal revenue can be offset by reduced healthcare costs and avoided losses in GDP. Moreover, promoting innovation and stimulating economic growth can expedite wealth creation, leading

to additional fiscal revenue through the positive spill-over effects of innovation (Hoffer et al., 2021).

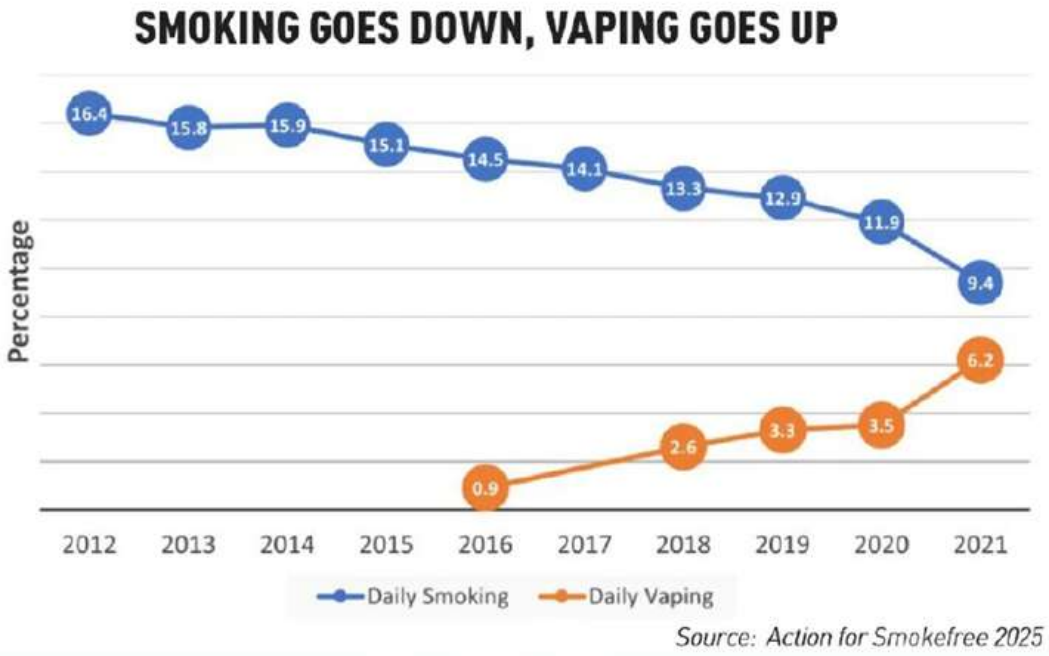
2.2. International best practices: Tobacco harm reduction in the UK and New Zealand

In Malaysia, several tobacco control measures (i.e. eatery bans, minimum cigarette price, etc.) in place to curb smoking prevalence have yielded minimal reduction, the smoking prevalence in Malaysia remained stagnant over the past decades, 23.1% in 2022 to 21.3% in 2019.

New Zealand

New Zealand is in the endgame of its tobacco control efforts. In the past 10 years, the country has reduced smoking prevalence by 49% (2011: 18.2% and 2019: 9.4%): thanks to a phased approach that includes regulating vaping and encouraging smokers to 'switch (see Figure 4.1).. The black market for tobacco products in New Zealand is only 10%, compared to 60% in Malaysia. New Zealand is on track to achieve its goal of a 5% smoking prevalence by 2025.

Figure 4.1.: Smoking vs Vaping in New Zealand, 2012-2021.



Source: Povera (2022).

New Zealand's GEG is only phasing out combustible tobacco, but not smokeless tobacco, heated tobacco products, vaping, or other nicotine products. The government currently promotes smoking cessation through a switch to alternative forms of nicotine products, one of the two core strategies in its Quit Strong campaign (Lang and Braillon, 2022).

University student surveys suggest strong support for the Smokefree goal and belief that it can be achieved. The surveys also show that students believe that e-cigarettes/vaping can help achieve this goal (Wawamili et al., 2020).

The holistic approach to reducing smoking prevalence (including media promotion) is expected to reduce adult smoking prevalence from 31.8% in 2022 to 7.3% in 2025 for Māori, and from 11.8% to 2.7% for non-Māori. The benefits of these strategies in terms of declining smoking prevalence are already clearly evident (Ait Ouakrim et al., 2023).

United Kingdom

The UK government is not planning to ban tobacco sales, but it is taking steps to reduce the harm caused by smoking. The UK government has announced a new scheme to swap cigarettes for reduced-risk products. This is based on the government's position that vaping is less harmful than smoking and can be an effective tool to help people quit. The smoking prevalence in England is currently 12.9%, the lowest on record.

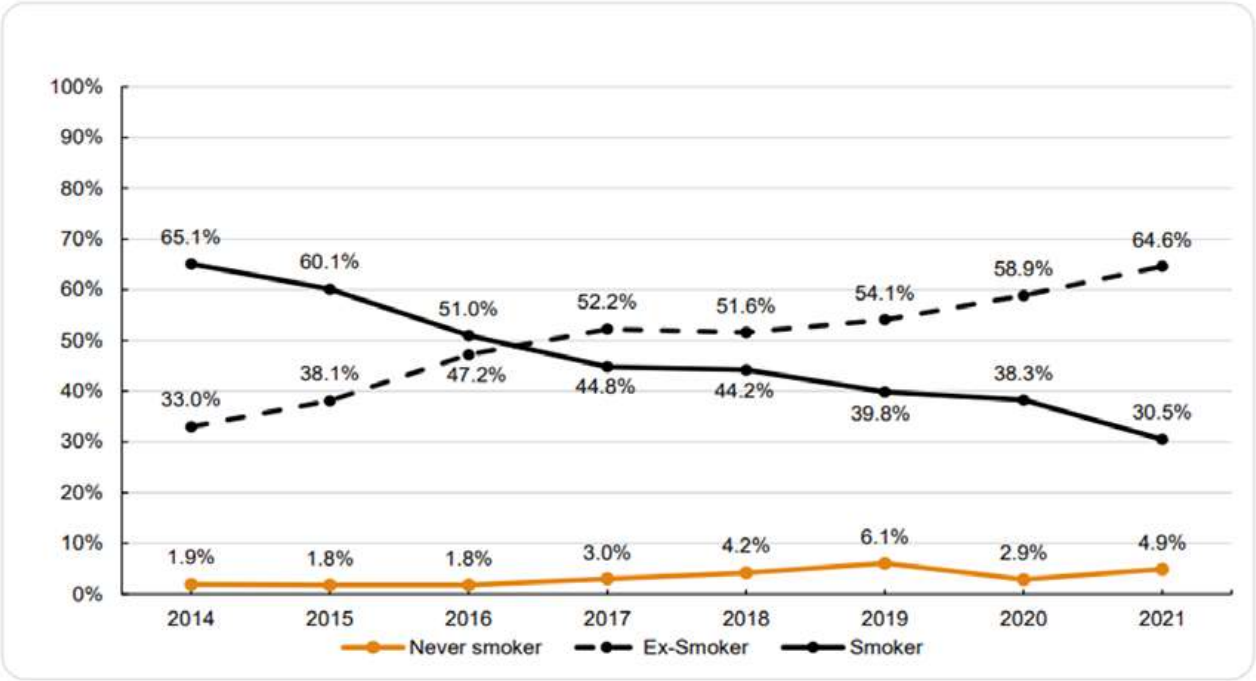
The UK is incentivizing the switch to alternative nicotine product consumption as a key strategy to reduce the harm caused by combusted tobacco (Yach, 2022). This strategy has been successful in reducing smoking rates, with the prevalence of smoking dropping from 19.8% and 20.2% in 2011 to 13.9% and 14.1% in 2019. At the same time, the prevalence of vaping has increased significantly, with an estimated 3 million vapers in the UK (DARE, 2022).

A 2021 report by ASH found that e-cigarettes are largely used by current and ex-smokers, with very few never-smokers using them (ASH, 2021). Among current vapers, 64.6% were ex-smokers and 30.5% were dual users (smokers who also vape). The main reasons given by ex-smokers for vaping were to help them quit smoking (36%) and to prevent relapse (20%). The main reasons given by current smokers for vaping were to cut down on smoking (26%), to help them quit smoking (17%), and to prevent relapse (14%).

A report commissioned by Public Health England found that vaping was positively associated with quitting smoking successfully (McNeil et al., 2017). In 2017, over 50,000 smokers stopped smoking with a vaping product who would otherwise have continued smoking.

Overall, the evidence suggests that the UK's strategy of incentivizing the switch to alternative nicotine product consumption is having a positive impact on reducing smoking rates. Vaping is a less harmful alternative to smoking and can be an effective tool for helping smokers quit.

Figure 4.2.: E-cigarette users in Great Britain, 2021.



Unweighted base: GB adult vapers 2014, n=498; 2015, n=614; 2016, n=667; 2017, n=669; 2018, n=738; 2019, n= 854; 2020, n=787, 2021, n=826).

Source: ASH, 2021.

Malaysia

Malaysia can learn from some of the experiences of New Zealand and the UK in reducing smoking prevalence. Malaysia needs to properly regulate alternative products, such as vaping, heated tobacco products, etc. so that smokers have options to quit smoking. Simply pushing smokers to quit (the so-called "quit or die" method) has not been effective. The use of multiple alternative products, able to entice all combustible tobacco consumers while reducing the harm, can help Malaysia reduce its smoking population to 4 million by 2025. Switching smokers away from cigarettes will help Malaysia reduce its healthcare spending by close to RN 800 million in a decade.

2.3. Forward fiscal guidance: A progressive fiscal policy able to spur innovation, boost revenue, and achieve the intended social & welfare objectives

While taxation has always been considered primarily as a tool for collecting revenues, recent developments in behavioral economics have shown the potential of incorporating a progressive fiscal levy for a holistic outcome that takes into account human welfare, health, and environmental conservation.

The fiscal tool developed in association with harm reduction strategies is called *differentiated taxation*, whereby «the tax rate should correspond to (or at least respect) different levels of harm because lower harm means lower social costs» (Boesen, 2021). In this way, multiple goals are achieved; on the one side, there is an impact on «consumers' behavior by the provision of stimuli toward either a complete discontinuation of the product's usage or, where possible, switch to a substitute (alternative) presumably posing less harm to health and/or the environment»; on the other, «such taxation influences the research and development activities of producers/traders so that they shift their investments, manufacturing and distribution towards products with lower risk levels» (EYB, 2022).

Photo by Tbel Abuseridze on Unsplash

In previous sections, differential taxation has shown positive effects on nicotine and sugar consumption. Freitas-Lemos et al. (2021) demonstrated its effectiveness in encouraging smokers to switch to less harmful products due to budget considerations, especially when alternatives are available. Similar findings were reported by Chaloupka et al. (2015).

It's important to note that differential taxation isn't limited to tobacco or sugar. Meireles et al. (2021) found that applying taxes based on CO2 emissions or including a CO2 component in passenger vehicle taxation can help reduce greenhouse gas emissions. This approach promotes eco-friendly mobility, encourages collective transport use, and incentivizes consumers to choose less-polluting vehicles, ultimately boosting electric mobility. This aligns with research in Northern European countries (Kok, 2016; Venturini et al., 2019; Klier and Linn, 2015).

Norway, among Northern European nations, successfully decarbonized its car fleet using two key policy tools: a CO2-based registration tax favoring low emissions vehicles and significant tax incentives for zero-emission cars. This strategy has propelled Norway to lead the world in electric vehicle sales (Eskeland and Yan, 2021).

For a comprehensive assessment of differential taxation across various harmful consumptions in line with EU legislation, consult EYB (2022).

In conclusion, a prudent tax policy reflecting harm reduction principles must be in place and also access the externalities factor in Malaysia, i.e., for tobacco-related taxation excessive sudden cigarette tax increases of the past should be avoided because it led to the rise of illicit trade in Malaysia.

A long-term predictable tax policy should be adopted, which focuses on gradual increases in taxation of harmful products while maintaining or increasing the 'tax differentials' for a less harmful alternative such as vape, heated tobacco products, electric vehicles, sugar substitute drinks, etc.

2.4. Nurturing innovation

In order for innovative and less harmful products to thrive, they require support from a robust economic and institutional ecosystem dedicated to nurturing innovation. When we examine Malaysia's position in this context using the Global Innovation Index 2022 by Dutta et al. (2022), we discover some intriguing insights. Malaysia achieved a score of 38.7 in 2022, while Switzerland scored 64.6, South Korea scored 57.8, Singapore scored 57.3, and Indonesia scored 27.9. This places Malaysia 36th globally, making it the 8th highest performer in the "Southeast Asia, East Asia, and Oceania" region and the 3rd highest among upper middle-income countries, trailing behind China and Bulgaria.

According to the index, Malaysia's performance aligns with the expectations for its income group, which is classified as upper middle-income. In contrast, Thailand's performance within the same income group is considered to exceed expectations. In Asia, Singapore and Hong Kong, both part of the high-income group, also outperform, along with India, Vietnam, the Philippines, Indonesia, and Pakistan within the lower middle-income group. Vietnam has consistently outperformed others in this category for the past 12 years.

In Malaysia, the manufacturing sector is the mainstay of the economy. Close to 90% of exports are contributed by manufactured goods, valued at MYR 850.40 billion. As rightly pointed out in MIDA's Press Release: *Malaysia's Economy Continues to Soar to Greater Heights*, the manufacturing sector continued to be the mainstay of the economy for 2021, generating multiplier effects on the nation's economic growth. The manufacturing sector led investment for 2021 and these approved investments is ranked as highest Foreign Direct Investment (FDI) in Malaysia.

How to nurture innovation, then? While we cannot exhaustively answer the question here , few directions can be pointed out. We believe that one of the biggest obstacles toward technical progress in Malaysia is represented by the fragmented structure of production: in 2021, the number of firms registered in Malaysia was 1,259,234, out of which 1,226,494 were MSMEs (97.4%). This means that, in terms of numbers, MSMEs represent almost the totality of firms operating within the Malaysian territory. It is even more striking that 964,495 firms (76.59% of the total and 78.64% of MSMEs) were microenterprises, 242,540 (19.26%) were small firms and only 19,459 (1.55%) were medium firms (DOSM, 2022). Such a capitalistic structure is an obstacle to improving Malaysia's innovative capacity. At the present stage of the evolution of capitalism only through the process of industrial concentration described by Joseph A. Schumpeter (1911, 1939) first and by his disciple Paolo Sylos Labini (1957) later, are technological jumps conceivable. And they happen not as the result of government planning (industrial revolutions are emergent orders which can only be described ex-post, rather than planned ex-ante), but rather as the result of the economies of scale emerging precisely by the process of competition. Therefore, the first field of action would be to favour processes of industrial concentration. At this regard, positive initiative could be:

- Removal of policy-induced obstacles, such as subsidies;
- Trade liberalization;
- The creation of *entrepreneurial networks*.

[1] *See, instead, Ferlito, Weerasena and Shamsunahar (forthcoming).*

Photo by Minku Kang on Unsplash

However, concentration in itself cannot work without the promotion of indigenous entrepreneurship. Innovative entrepreneurship is the result of cultural processes, resting on the parallel development of adequate institutions, and it can hardly be incentivized with just short-term policy interventions. Education reform is one of the policy levels at which we can operate in order to achieve the target of a higher degree of entrepreneurship. While the debate about Malaysia's education is often focused on which language should be used for which discipline, such a focus misses an important target we should take into account. In fact, we believe that the major flaw of the current education system is its strong imbalance between sciences and humanities; while an important emphasis is placed on mathematics and engineering, the humanities – such as literature, philosophy, history and geography – are taught in a way that is often unable to help students grasp the bigger picture about the world they live in. One of the main achievements of such an education reform would be the enhancement of critical thinking, thanks to a higher degree of humanist knowledge: creativity, the essence of entrepreneurship, implies challenging the status quo.

As righted pointed out in the study, it showcases that with the right harm reduction framework in place, it sends the right message to investors and potentially it will attract more investment in semiconductor industry, that is predominantly used in electric vehicles and devices for vape and heated tobacco products.

2.5. The importance of freedom

However, the key element that needs to be placed at the origin of it all is *freedom*. Only classical liberal values, with freedom at the core can generate a new wave of entrepreneurship for long-term sustainable development (McCloskey, 2019). This implies economic freedom to exchange and cultural values that dignify and support wealth creation with the support of the right system of property rights (Cheang and Palmer, 2023, p. 184), but in a larger sense it means the emergence of a cultural system which values, respects and encourages individual freedoms.

According to *Freedom in the World 2023*, released by Freedom House[2], Malaysia is only moderately free, scoring 53/100 – 22/40 in political rights and 31/60 in civil liberties. Surely, the recent improvement in the World Press Freedom Index 2023, whereby Malaysia raised to the 73rd position from 133 the previous year (Rahim, 2023), is a great sign of progress, but the path to the top is still long. A not-so-shiny picture of Malaysia resulted instead from the *2021 Country Reports on Human Rights Practices: Malaysia*, issued by the U.S. Department of State.

With regard to more strictly economic indicators, the 2023 Index of Economic Freedom (Heritage Foundation)[3] shows that Malaysia's economic freedom score is 67.3, making its economy the 42nd freest in the 2023 Index. Its score is 0.8 point lower than last year. Malaysia is ranked 8th out of 39 countries in the Asia–Pacific region, and its overall score is above the world and regional averages. While some measures have been taken to improve entrepreneurial vitality, Malaysia has not done enough to promote the effective rule of law or to enhance and modernize its legal framework.

While policy reforms can be implemented for improving both human rights and economic freedom, we believe that a more general embracing of *freedom as a value* per se is a bottom-up process of cultural evolution, a spontaneous order, intended as the result of human action but not of human design.

[2] *https://freedomhouse.org/country/malaysia/freedom-world/2023.*
[3] *https://www.heritage.org/index/country/malaysia.*

2.6 The right institutional framework

As a consequence, it is the right institutional framework that can nurture innovation and entrepreneurship, with liberty as the key conceptual element in such an institutional setup. The International Property Rights Index[4] (IPRI) developed by the Property Rights Alliance can serve as a valuable ally in understanding if Malaysia is institutionally well placed to nurture innovation.

The IPRI scores the underlining institutions of a strong property rights regime including the legal and political environment, physical property rights, and intellectual property rights. In 2022, Malaysia's IPRI score decreased by -0.399 to 6.3 placing it 8th in the Asia and Oceania region (it was 7th in 2021) and 29th in the world[5].

For an environment which is conducive to innovation, three components are essential: a stable political environment, the protection of physical property rights, and the protection of intellectual property rights.

On a global scale, Malaysia ranks 29th in the index in its entirety, while the country is 41st for the legal and political environment, 28th in the protection of physical property rights, and 32nd in the protection of intellectual property rights.

On a regional scale, Malaysia ranks 8th overall, 9th in legal and political environment and for protection of intellectual property rights, and 7th for the protection of physical property rights.

Looking at the different sub-components that make up the composition of the index and the sub-indexes, Malaysian needs to improve in the following aspects:

- Political stability;
- Control of corruption;
- Process of registering properties;
- Copyright protection, and
- Patent protection.

[4] *https://www.internationalpropertyrightsindex.org/*
[5] *For a detailed analysis of Malaysia's IPRI score, see Karim and Ferlito (2022).*

Part 5:
Concludin Remarks:

This report started by introducing the concept of harm reduction, defining it as a public policy strategy designed to limit the negative social and physical consequences associated with various human behaviors, both legal and illegal. A harm reduction approach rejects the usage of restrictions or bans in combating the negative externalities of certain human behavior, since these presume that individuals are unable to assess risks rationally and make responsible decisions. Rather, advocates of harm reduction believe that individuals should be provided with more choices for less harmful alternatives.

Harm reduction takes place within a larger discussion on how to improve the performance of markets affected by negative externalities and is ultimately based on the following principles:

- A bottom-up and realistic approach to policy making;
- Focus on the prevention of harm, rather than the prevention of behavior;
- Evidence-based policy and practice;
- Pro-choice & Commitment to Universal Human Rights;
- Empowerment of the individual as the primary agent responsible for reducing harms;
- Accepting behavior change as an incremental process.

The paper unfolded in three main parts:

1. Estimating the healthcare savings brought by the adoption of harm reduction policies;
2. Estimating the positive spillovers on the economy brought by the adoption of harm reduction policies in terms of investments and job creation;
3. Listing the pillars for a comprehensive policy strategy inspired by harm reduction.

Starting with the impact of harm reduction applied to the consumption of nicotine products, we estimated healthcare savings up to RM 787.78 million in ten years, deriving from a decline in adult smoking due to switching to less harmful alternatives. Furthermore, switching just 1% of the smoking population to alternative products could potentially save RM 2.61 billion in loss of productivity (in this case, gain of productivity). In other words, this represents a yearly saving equivalent to 0.16% of Malaysia's GDP.

Looking at the estimated healthcare saving deriving from the application of harm reduction to electric vehicles, we projected that achieving the WHO 2025 targets would bring the healthcare cost down to USD 21,919 million (-70%). Based on the government's targets of having 15% of the total industry volume (TIV) made up of EVs and hybrids by 2030, and to 38% by 2040, we projected healthcare savings would be between 6.43% and 24.93% of the current pollution-related costs; meaning we can obtain savings from reduced emissions of between USD 755.89 million and USD 1,157.27 million by 2030 and between USD 1,914.92 million and USD 2,931.75 million by 2040.

Finally, shifting to the healthcare savings to be derived from the application of harm reduction with regards to sugar alternatives, we only analyzed the direct healthcare costs of diabetes (which is associated with the overconsumption of sugar). We estimated that the direct and indirect costs for Malaysian society deriving from diabetes amount to almost RM 15 billion per year. Through the consumption of chromium picolinate, RM 1.31 can be saved per RM 1 spent on chromium picolinate, amounting to a total potential net cost savings of RM 248.27 million per year. Looking at the implementation of differential taxation on sugar content, we estimated that a 10% drop in sugary drink consumption will potentially turn into a 0.7% healthcare cost saving with regards to diabetes-related healthcare costs, or RM 105 million.

As semiconductors are an essential component for both EVs and electronic cigarettes, and given the prominent role of Malaysia in this industry, we then estimated the positive economic effects on it deriving from harm reduction policies, using as reference a harm-reduction inspired bill adopted by the European Union. We concluded that the right set of harm reduction policies can generate the following spillover effects on the semiconductor industry and its ecosystem over a period of ten years:

- Almost USD 65 billion (more than RM 305 billion) in private and government DDIs and FDIs through more than 550 projects;
- More 300 thousand jobs (direct, indirect and induced).

Furthermore, if the MoH target to reduce smoking prevalence to 5% is achieved with harm reduction policies, which means having the totality of that 15% switching to less harmful alternatives, users of alternative products would increase from almost 1.5 million to more than 4.7 million, while consumers of traditional combusted tobacco will decline from 4.8 million to 1.5 million.

Such an achievement will bring the following positive spillovers in the vaping/HNB industry:

- Vape industry retail value growing from RM 2,490 million to RM 8,790.65 million (+253.04%);
- Number of workers involved in the industry growing from 31,500 to 82,109 (+160.66%);
- Number of retailers growing from 9,750 to 21,929 (+124.92%);
- Number of importers growing from 100 to 233 (+123.29%);
- HNB retail value from RM 191 million to RM 528.04 million (+176.46%).

The paper is concluded with a set of policy guidelines inspired by harm reduction and to be applied to the specific case of Malaysia. These policies should be centred on the following pillars:

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- Avoid prohibition and uniform taxation, as such policies only favour the growth of illicit trade;
- Follow successful examples like the United Kingdom and New Zealand;
- Favour a fiscal action centred on differentiated taxation, whereby taxation is proportional to the harm level;
- Nurture innovation, as the emergence of less harmful products is strictly linked to an ecosystem that favour entrepreneurship and thus innovation; in order to do so, the following actions are suggested:
  - Favouring industrial concentration, as firm dimensions are a key element for investing in R&D and innovation;
  - Promoting trade liberalization, so that a bigger potential market size creates an incentive to innovation;
  - Promoting humanistic education as a key for critical thinking, as innovation is based on challenging common wisdom;
  - Promoting human and intellecstual freedom;
  - Strengthening institutions and the rule of law.

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Center for Market Education

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