

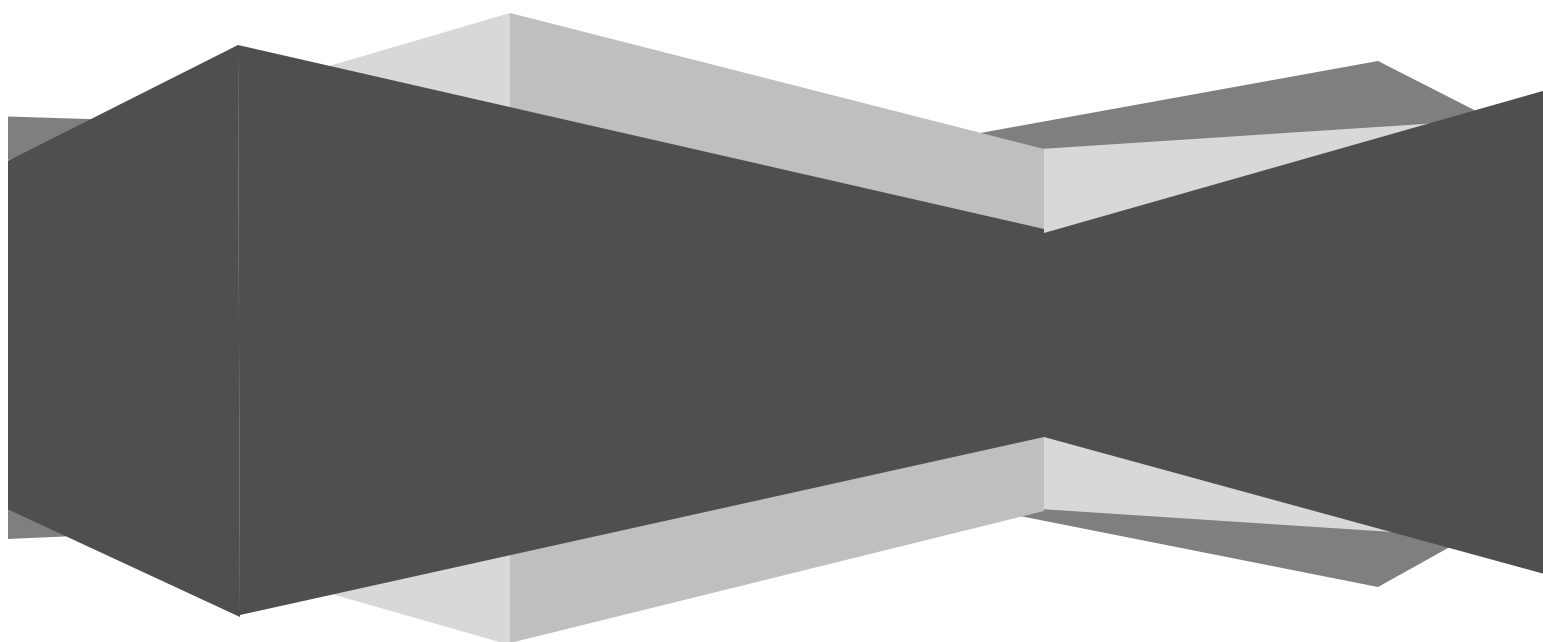
**Appendix 7: Vietnam Final Research Report**

HealthBridge Foundation of Canada

# Tobacco and Poverty: Evidence from Vietnam

Literature review

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# Tobacco and poverty: Evidence from Vietnam

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## ***Executive summary***

This paper presents and analyzes the evidence collected from studies conducted in Vietnam with a view to illustrating the link between tobacco and poverty in Vietnam. It presents a review of the existing evidence on the impact of tobacco control policies on tobacco consumption and its consequences in Vietnam, and identifies information gaps that require further research for the purposes of advocating for stronger tobacco control policies.

There is extensive evidence that tobacco use enhances poverty and inequality in Vietnam. This evidence could be summarized as following:

- The smoking prevalence among Vietnamese males remains high. In fact, cigarette consumption actually increased in the period 1976-2006. Smoking prevalence and the risk of becoming regular smokers are higher among the poor than among the economically better-off groups; both rates are also higher among people with lower levels of education, and among people living in rural areas. These same groups of people are less likely to quit smoking.
- The decrease of the real price of cigarettes in the last decade, together with income increases, has made tobacco even more affordable in Vietnam, thereby attracting more smokers, including among the poor.
- There is evidence that the burden of chronic diseases has increased in Vietnam and now exceeds the burden caused by infectious diseases. The poor are more vulnerable to chronic disease, as they tend to be more exposed to chronic disease risk factors, such as tobacco and alcohol use. It was estimated that in 2004, there were 35,000 deaths in Vietnam attributed exclusively to smoking (Nguyen Duc Son, 1999).
- There is evidence that tobacco use is a significant waste of national financial resources. In 1998, Vietnamese smokers burned away almost 6,000 billion VND (equivalent to USD 448 million) on tobacco, which could instead have been used to buy 1.6 million tons of rice that could feed 10.6 million people for one year. If the money spent on tobacco was used to buy the food, 11.2% of food-poor people would be able to emerge from food poverty.
- There is also evidence that tobacco use widens social inequality. If expenditures on tobacco are separated from total household expenditure, the Gini coefficient<sup>i</sup> would be increased.
- At household level, poor cigarette users' households spend a larger share of their total expenditures on tobacco than do the better-off smoker households. In 1998, on average,

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<sup>i</sup> Gini coefficients are a measure of inequality in society, with 0 representing perfect equality and 1 total inequality.

poor smoker households spent between one fifth and one quarter of their total expenditures on cigarettes. The poorest household spent 2.2 times more on cigarettes than on education and 1.6 times more than on health care. There is evidence that households without smokers spent more on education per child than do households with one or more smokers.

- The total cost of inpatient health care caused by smoking in Vietnam reached at least 1.161 billion Vietnamese dong (\$VN) (or \$US77.5 million) in 2005. This represents about 0.22% of Vietnam gross domestic product (GDP) and 4.3% of total healthcare expenditure. The government directly finances about 51% of these costs. The rest is financed either by households (34%) or by the insurance sector (15%).
- There was no evidence that tobacco growing brings much benefit to farmers. When the labour opportunity cost is taken into account, the net benefit seems to be minimum or even negative. Some tobacco farmers even fall into debt. About half of the surveyed tobacco growers are not satisfied with their involvement in the business. Most tobacco farmers use wood for curing tobacco, which contributes to deforestation and environmental erosion. Tobacco growing is labour intensive work, with much of the burden falling on women. Children are exploited as unpaid workers. The tobacco growers also have significantly more illness than do non tobacco growers

Taxation and the enforcement of other strong tobacco control policies would encourage the reduction of tobacco consumption, thereby reducing the tobacco-related health and economic burdens on society and households:

- There is extensive evidence that tax increases and the appropriate enforcement of other strong tobacco control policies – such as comprehensive smoking bans at work and indoor public places, comprehensive bans of advertisement and promotion, intensive mass media information campaigns, strong health warning on cigarette packs, and effective bans on youth access to tobacco – would have a significant impact on cigarette consumption and would generate additional revenue for government. Among those measures mentioned, tax increases have the most notable impact on reducing tobacco consumption. If in 2003 the government had increased tobacco taxes by 100%, and implemented and maintained all of the tobacco control policies noted above, it could have saved between 231,500 and 325,000 lives over a 30 year period (between 2003 and 2033).
- Regarding the impact of price increases, by 2050 the number of smokers is expected to be decreased by 152,000 (if price is increased by 10% and with a price elasticity of 25%) to 2,200,000 (for the best scenario where the price is increased by 50% and with a price elasticity of 75%); The number of lives saved would range between 51,300 and 744,300; the additional tax revenue would range from 2,152 billion to 2,956 billion VND (or 134.5 million to 185.4 million USD), respectively.
- The level of actual impact on smoking reduction depends on the smoker's income and type of tobacco used. It appears that the poor are more sensitive to price change

than the non poor; at the same time, users of low-price cigarettes are more responsive to price changes than are users of non-cigarette tobacco. Cigarette price increases have more impact on an individual's decision to initiate cigarette smoking than does the price of water pipe tobacco on decisions to initiate use of that product. Relatedly, changes in the price of cigarettes are significantly and positively associated with the decision to switch from cigarette smoking to water pipe smoking

- There is no evidence that tax increases would have a negative impact on employment in general.
- There are still some gaps in the available information, and further research is needed to provide additional evidence to support the development of effective evidence-based tobacco control policies. The primary information gaps include: a deficit of reliable data on morbidity and mortality of smoking-related diseases; inconsistency of data collected and definition of smoking status used in national surveys; the real value of health care costs associated with tobacco use; the lack of a reliable system for monitoring of retail price, market share, and affordability; lack of concrete information on the impact of tobacco growing on farmers and the potential impact of tax increases on their income; and lack of information about the environmental costs and other intangible costs of tobacco use. There are also very few studies that have investigated the cost effectiveness of tobacco control policies.

### **I- Background:**

International studies have demonstrated that smoking can further increase poverty both directly and indirectly, particularly by reducing disposable income that could otherwise be used to meet a family's basic needs. In Albania, smokers waste two months wages on cigarettes annually (Shafey et. al. 2009). In Bangladesh, the poorest households were twice as likely to smoke as the wealthiest, and on average, cigarette smokers spend more than twice as much on cigarettes as per capita expenditure on clothing, housing, health, and education combined. If the money spent on cigarettes was instead spent on food, then 10.5 million currently malnourished Bangladeshi children would have enough to eat (Efroymson et. al. 2001). In the Philippines, the poorest households spend about 2.5% of household incomes on tobacco, more than on clothing, education, and health care (Baquilod 2006). In Indonesia, at least 15% of disposable income of poor households goes to tobacco products. This rate is 5% for poor urban households in Myanmar. In Cambodia, the annual expenditure on tobacco would easily cover the US\$ 69.44 million deficit in the national budget (SEATCA 2008). Poor adult and street children in Mumbai spend very little on food items as compared to expenditure on tobacco products (PATH Canada 2003). Smoking also contributes to poor health status, which in turn can lead to increased illness, disability, and death as well as increased medical expenditures and reduced productivity. Lower productivity, higher medical expenditures and reduced disposable income,

all contribute to increased levels of poverty. It was estimated that in 1990, tobacco caused about 1,460 deaths in developing countries, representing 3.7% of total deaths. The Disability-Adjusted Life-Years lost due to tobacco were 16,772 thousand, which is about 1.4% of total DALYs (Murray and Lopez 1996). In China, the economic costs of smoking in 2000 amounted to US\$5.0 billion. The direct costs were \$1.7 billion (34% of the total), indirect morbidity costs were \$0.4 billion (8%), and indirect mortality costs were \$2.9 billion (58%). The direct costs of smoking accounted for 3.1% of China's national health expenditures in 2000 (Sung et al. 2006). In Bangladesh, the total annual cost due to tobacco-related illnesses is estimated at 66.9 billion taka—46 billion taka in terms of loss of income due to premature death and disability and 20.8 billion taka directly as the health care cost in 2003-2004 (US\$1 = approximately 59 taka in 2004). Of the total cost, 27.4 billion taka is directly attributable to tobacco usage (WHO 2004). In 2006, the general poverty rate in Vietnam was 16%, with an inequality Gini coefficient of 0.36 (World Bank 2007). The poverty line is measured as income per capita per month lower than VND 200,000 (USD 13) in rural areas and lower than VND 260,000 (USD 17) in urban areas. At the same time, Vietnam ranks among the countries with the highest smoking rates in the world. Due to a long-standing custom and positive (or at the best ambivalent) public perceptions of smoking, it is acceptable for Vietnamese males to smoke. In the past, offering cigarettes was a common practice that helped to create or maintain relationships between people. Fortunately, Vietnamese tradition has not accepted smoking among women; as a result, the smoking prevalence has remained low among women for many decades. However, the impact of economic development and globalization has eroded this tradition: some recent studies demonstrate that there is evidence that smoking among young women has increased and become more acceptable, particularly in urban areas.

Vietnam was one of the first countries to sign and ratify the WHO Framework Convention on Tobacco Control, with the treaty becoming effective in Vietnam in March 2005. The government recently issued its plan for FCTC implementation (Prime Minister of Vietnam 2009).

By the end of 2005, the excise tax had been made uniform at 55% of manufactured price for all types of cigarettes produced in Vietnam. In 2008, the excise tax was further increased to 65%. Together with the VAT and a raw material import tax, however, the tax still contributes only about 41% of the retail price (Guindon et al. 2010); this is lower than the rate recommended by the World Bank (World Bank 1999)

To control product quality, the Ministry of Health also issued Decision 02/2007 on “Regulations on the Hygiene and Safety of Cigarettes;” this is a technical terms of reference for manufactured cigarettes that addresses standards on chemical contents, packaging, and labeling. According to this document, all new cigarette brands produced in Vietnam from 2008 forward should have either text or pictorial health warnings on the packaging. Five text samples and five pictorial

samples were proposed but the pictorial health warning is not mandatory; in the end only two text warnings were actually adopted, both unfortunately with weak content: “Smoking can (or as written Vietnamese “may”) cause lung cancer” and “smoking can cause stroke.” There is also no clear indication about rotation expectations.

A number of supplemental legislative documents and practical instructions have been issued to strengthen the enforcement of advertising, promotion, and sponsorship bans (B? Van hóa 2008). To date, significant progress has been made in banning cigarette advertising and promotion in the mass media; however, point-of-sale advertising is still very common and violations of the promotion ban are still observed from time to time (Lê et al. 2010).

In 2007, the Vietnamese Prime Minister issued a Directive on “Reinforcing tobacco control in Vietnam” which emphasized the need to improve public education and to implement a smoke-free policy in work places and public places. In response to this Directive, several ministries (including Health, Education, and Culture) also issued their own guiding documents such as Circulars, Decisions, and Instructions to reinforce the implementation of the smoke-free policy within their own agencies. Compliance with the smoke-free policy is one of the requirements set by the “Regulations on Office Culture” that was issued by the Prime Minister in 2007. The major challenges observed to date in implementing the smoke-free policy have included: i) the lack of strong enforcement measures to counter the high level of violations; ii) continued high smoking prevalence rates; iii) high social acceptability of smoking and limited public support for compliance; and iv) lack of skills and know-how among policy implementers. These issues are now being addressed by a number of projects implemented by the local and international tobacco control community. Cigarette smuggling remains a serious issue for the country, as it challenges both tobacco control laws and government power. The tobacco industry uses the existence of the high level of smuggling as the basis of its lobbying to keep tobacco taxes low. In order to control illicit tobacco trade, the Vietnamese government issued Decree 119/2007/ND-CP in 2007 on cigarette production and trading, through which it reconfirmed that cigarette production and distribution are to be strictly controlled by the government and that the tobacco industry is government-owned. As part of its control of illicit trade, the government requires the application of a government stamp on cigarette products. Licensing for wholesale and retail sale agencies was also proposed in this document.

The government has been drafting a comprehensive tobacco control law since 2008. The draft law was to be submitted to the National Assembly for review and passage in early 2011; however, there are still many loopholes in the draft law’s content, likely due to the tobacco industry’s interference in the drafting process. There also continue to be some common misconceptions among policy makers about tobacco economics that continue to pose barriers to the adoption of a strong tobacco control law. These misconceptions include the following:

- The belief that the tobacco industry contributes significantly to poverty reduction by generating national income and creating many jobs.
- The belief that tax increases will worsen smuggling.
- The belief that high taxes and cigarette prices would impose an additional burden on poor smokers.
- The belief that the tobacco control law should “balance” health and economic issues and should focus primarily on public education rather than on legal restrictions.

Research on tobacco control issues, particularly related to tobacco economics, began in the mid 1980s, but has grown rather slowly due to the low priority given to it and to a lack of resources, both human and financial. The research results that do exist have been poorly used for advocacy and policy making. To better understand what research does exist, this study sought to review and analyze existing local evidence about the relationship between tobacco use and poverty in Vietnam. It also examined existing evidence about the impact of tobacco control policies to date on tobacco consumption and its health and economic consequences. Furthermore, the review aimed to identify the information gaps that would need to be addressed by future research.

### **II- Objectives:**

This study aimed to

- 1- Gather evidence to illustrate the link between tobacco and poverty in Vietnam;
- 2- Review the existing evidence on the impact of tobacco control policies on tobacco consumption and its consequences in Vietnam; and
- 3- Identify the information gaps that require further research for the purposes of advocating for strong tobacco control policies.

### **III- Methodology:**

A secondary analysis of published and unpublished papers and reports on tobacco control in Vietnam was conducted. The authors developed a search strategy that combined the following search terms: tobacco economic, tobacco tax, tobacco burden, tobacco related health cost, tobacco control policies, and Vietnam. For all areas of interest, the research team searched MEDLINE and PUBMED, and also conducted a general Google search. The literature search was supplemented by a manual search through libraries and other sources such as directly contacting researchers and tobacco control activists to collect original reports and unpublished

papers. Two monographs that had published almost all Vietnam research on tobacco control in Vietnamese and workshop materials are also included as sources.

Overall, 43 documents<sup>ii</sup> were included in the review. A summary of major studies providing evidence on the link between tobacco use and poverty in Vietnam and a list of searched documents are presented in the appendices and list of references, respectively.

## **IV- Findings:**

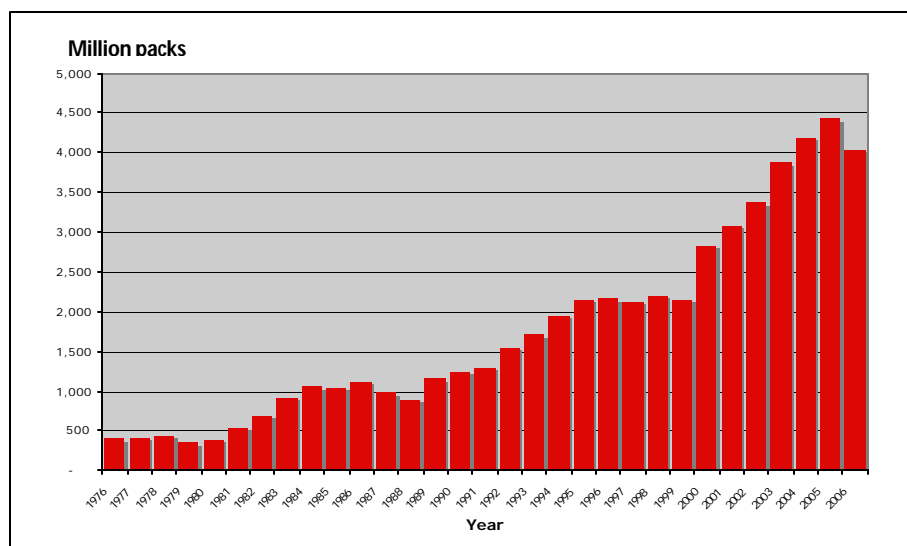
### **1. Evidence on the link between tobacco use and poverty**

The following sections provide an outline and summary of the various research studies and other documents that were identified and reviewed during the literature review.

#### **1.1 Tobacco consumption**

Tobacco production in Vietnam has steadily increased since 1976 with a remarkable increase since 2001 (Graph1) (Bales and Hoang, forthcoming). The upward trend evident in the graph also reflects indirectly the upward trend of tobacco consumption in Vietnam over the same time period, taking into consideration the fact that before 1995, the cigarettes produced locally were consumed exclusively by the local market. Cigarette exportation has increased recently, although it still represents a small share of total production. To protect the local industry, a ban on the importation of foreign cigarettes was enforced by the government prior to 2007.

**Figure 1: Tobacco production per year 1976 - 2006**



Source: GSO, 2007<sup>iii</sup>

<sup>ii</sup> When taking into account various government documents that were used for background material, the total was higher than 43.

The study “Vietnam: A Tobacco Epidemic in the Making” was undertaken through a collaboration between the University of California, the Institute of Sociology, and the Health Information and Education Center in Ho Chi Minh City in 1995. It was possibly the first study that purposively investigated tobacco use in Vietnam (Jenkins et al. 1997). The study found that 74% of Vietnamese men were either regular or occasional tobacco users, one of the highest rates in the world. Although this it was a small scale survey conducted on a non- representative sample, and the findings may not be nationally representative, the research results began to attract the attention of both the public and the government to the problems of tobacco use (however, , little action was taken at the time). Investigation of the prevalence of smoking in Vietnamese since that original study has become more regular through a number of national surveys on living standards, the national health survey, Euromonitor International, and even in a small scale survey on smoking epidemics (see Tables 1, 2, 3, 4) .

The Vietnamese government has collected data on tobacco consumption periodically via the Vietnam Living Standard Surveys and the National Health Survey. The first Vietnam Living Standards Survey (VLSS)<sup>iv</sup> was implemented over the period October 1992 to October 1993 with a sample size of 4,800 households and 23,839 individuals. The second round of this survey was implemented from December 1997 to December 1998 with an increased sample size of 6,000 households and 28,518 individuals. The third survey was conducted in 2006 using a sample of 9,189 households. The sample populations for each survey were selected using three-staged random stratified cluster sampling to ensure that the data collected would reflect the national age, sex, and rural/urban breakdown and also represent the eight economic -geographic regions of Vietnam. In 2001, the Ministry of Health, in collaboration with the General Statistics Office, conducted the National Health Survey with a representative sample of 36,000 households from 1,200 communes in 61 provinces. The prevalence of tobacco use reported through these surveys is presented in Table 1. Due to a slight difference in definition of smoking status and in the sampling approach used between the National Health Survey and the VLSSs, any interpretation of the differences between the two surveys’ findings need to be made with caution (Nguyen et al. 2004; Nguyen et al. n.d; Bales and Hoang not published).

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<sup>iii</sup> Based on the most recent update of GSO, the production in 2007, 2008, 2009 were 4.5; 4.4; and 4.9 billion packs respectively – Statistical Handbook of Vietnam 2009

<sup>iv</sup> The survey was implemented by the State Planning Committee (now Ministry of Planning and Investment) and the General Statistical Office (GSO) in 1992-93 and by the General Statistical Office in 1997-98 and 2006.

## ***Tobacco and poverty: Evidence from Vietnam***

**Table 1: Reported Prevalence (%) of Tobacco Use by Sex and Residence, Age Group, and Income Quintile and Education**

		VLSS 1993		VLSS 1998		VNHS 2001		VHLSS 2006	
		Males	Females	Males	Females	Males	Females	Males	Females
Total aged 15+		61.3	4.1	50.7	3.2	56.1	1.8	49.2	1.5
Urban		56.6	2.7	47.4	1.9	55.1	1.4	46.9	1.2
Rural		62.6	4.6	51.7	3.6	56.4	2	50	1.6
Age	15–24	38.7	0.5	25.5	0.2	31.6	0.3	21.5	0.5
	25–34	74.6	1.6	65.6	0.9	69.8	0.7	59.4	0.8
	35–44	79.2	3.9	69	1.9	72.2	1.3	68.9	0.9
	45–54	71.3	8.2	66.1	5.2	67.9	3.6	66.7	2
	55–64	66.5	10.3	58.9	9.7	57	5.8	56.1	2.8
	65+	56.3	11.6	44.9	11.8	46.1	4.8	43	3.6
Income quintile	Q1: Poorest	65.1	8.1	57	4.8	62.3	4.3	55.4	3.6
	Q2	63.7	4.4	53.5	4.5	59.8	1.7	53.2	1.3
	Q3	63.8	4.3	52.9	2.7	55.7	1.4	48.8	0.8
	Q4	58.9	2.5	48	2.5	54.3	1.3	47.2	1
	Q5: Richest	56.3	2.2	42.1	1.5	50.7	0.9	43.3	0.9
Illiterate						65	6.5		
Lower primary				58.75	9.94	67.1	3.2		
Education	Primary			55.12	3.3	58.7	1.0		
	Second			45.69	1.19	51.3	0.3		
	High school			37.88	0.45	50.6	0.3		
	Above			46.08	29.75	49.7	0.1		

Source: GSO. Table is adopted from E.Guindon et al. 2010.

For the period 2002-2007, Euromonitor International (2009) prepared a report that estimated the prevalence of smoking and number of current adult smokers<sup>v</sup> in Vietnam (see Tables 2 and 3).

<sup>v</sup> **Note:** Definition of adult smokers: daily smokers who are older than the minimum legal smoking age in the country (above 18)

**Table 2: Smoking Prevalence in Population 2002-2007 (%)**

	2002	2003	2004	2005	2006	2007
Total adult population 18+	35.95	35.9	35.35	35.13	34.94	34.75
Adult male population	69.2	69.2	68.4	68.02	67.7	67.38
Adult female population	3.66	3.54	3.22	3.14	3.06	2.98

**Source:** Euromonitor International from national statistics

**Table 3: Number of Smokers by Gender 2002-2007 (thousands)**

	2002	2003	2004	2005	2006	2007
Total no. of smokers	17,564.72	17,996.97	18,184	18,540	18,918.57	19,301.16
No. of female smokers	907.35	900.27	839.99	840.17	839.76	838.66
No. of male smokers	16,657.37	17,096.70	17,343.59	17,700.09	18,078.81	18,462.50

**Source:** Calculated using above % prevalence and country population data by Euromonitor International

From the data presented, socio-economic characteristics appear to be a major predictor of tobacco use. The data from VLSSs show that smoking prevalence is higher among males than among females, and that tobacco consumption is regressively related to socio-economic status: the lowest income group has the highest rate of smoking, while the rate is lowest in the highest income group (Table 1). The survey data also consistently showed that there were higher rates of smoking in rural areas than in urban areas. Rural smokers and those from lower income groups tend to use cheaper type of tobacco (see Table 4). Findings from the VLSS 1997-1998 also showed that the quitting rate is higher among richer groups than among poorer groups, and among people with higher levels of education than among people with lower levels of education.

**Table 4: Prevalence of tobacco (%) use by type of tobacco, age, residence area, and income of males of 15 years old or above**

		VLSS 1993		VLSS 1998		VNHS 2001	
		Cig	Waterpipe	Cig	Waterpipe	Cig	Waterpipe
Total aged 15+		43.9	19.7	34.9	19.4	38.8	13
Urban		47.4	12	43.1	6.9	48.6	3.8
Rural		42.9	21.9	32.6	23	35.6	16
Age	15–24	32	8.6	21.1	5.9	26.6	2.7
	25–34	51.3	27.1	48.1	22.4	50.6	13.3
	35–44	55.9	26.7	45	29.7	46.9	18.8
	45–54	47.8	24.8	42.5	28.5	43.8	19.9
	55–64	44.9	22.4	34.7	27.8	32.8	21
	65+	37.9	18.4	25.2	22.2	24.2	20
Income quintile	Q1: Poorest	37.7	29.1	28.6	33.1	31.9	25.6
	Q2	39.2	27.1	32.4	25.5	35.4	18.8
	Q3	42.3	24	36.5	20.4	36	14.1
	Q4	46.6	15	37.3	14.2	41.8	8.4
	Q5: Richest	51.1	7.5	39.4	5.4	46.2	2.5

In a smaller scale study using the WHO STEPwise surveillance approach to collecting information about non-communicable disease risk factors in a rural district of Vietnam, Minh et al. found (Minh et al. 2006) that smoking prevalence is higher among low income groups than among high income groups (68.6% vs 41.8%). People with lower levels of education are more likely to be smokers than people with higher levels of education (58.2% vs 48.1%). The risk of becoming a regular smoker is also higher among people with low incomes than among people with high incomes (OR=1.37; 95% CI 1.06-1.78). Daily smokers in the highest income group had a greater chance of smoking cessation than those with low incomes (RR=2.8, 95%CI: 1.72-4.56).

Ten studies/ were found that investigated smoking patterns among specific subpopulations including youth (Ly et al. 2002; Ministry of Health et al. 2005), medical professionals (Ngo et al. 2004), farmers (Tran 1999), workers (Le et al. 1999; Nguyen 1999), ethnic minorities (Le n.d.), women and young girls (Hoang et al. 2010; Tran et al. n.d.), and urban communities (Huynh n.d.). In 1998, a more comprehensive study assessing tobacco use in Vietnam was conducted by the Ministry of Health (Le Ngoc Trong 1998). This study involved a survey of 7,720 people selected from six provinces, and found that 38.8% of the people interviewed smoked, 8% had

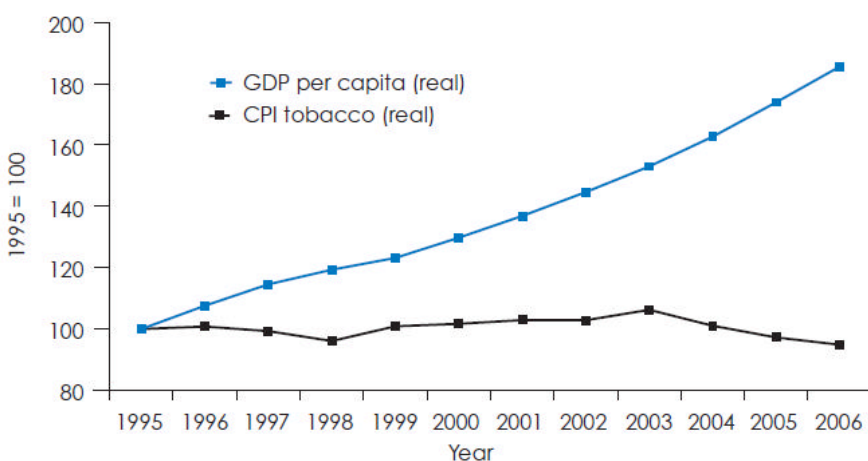
quit, and 53.2% had never smoked. Smoking was lower among students and higher among the military and factory workers. Farmers demonstrated the lowest rates of quitting smoking.

The findings of the literature review demonstrate that smoking is common among males and low among female populations. It is higher in “lower” socio-economic groups than among those who are better off, higher in rural than in urban areas, and higher among those with lower levels of education.

### **1.2 Tobacco affordability in Vietnam**

International experience has demonstrated that high tobacco taxes that raise the price of tobacco products have a significant impact on reducing tobacco use at the national level (World Bank 1999). To describe the issue of tobacco affordability in Vietnam, E. Guindon and colleagues examined tobacco taxation in Vietnam using average prices and price indexes that had been collected and estimated by the Vietnam General Statistic Office (GSO) for the period 1995-2006 (Guindon et al. 2010). In Vietnam, as shown in Figure 2, tobacco prices have actually decreased in the decade 1995-2006. Affordability has increased even more significantly due to the mix of falling prices and rising incomes. Affordability is measured as GDP per capita divided by the Consumer Price Index<sup>vi</sup> (CPI) for tobacco. A rising affordability index indicates that tobacco products are becoming more affordable (Figure 3).

**Figure 2: CPI tobacco and GDP per capita 1995-2006, (1995=100)**

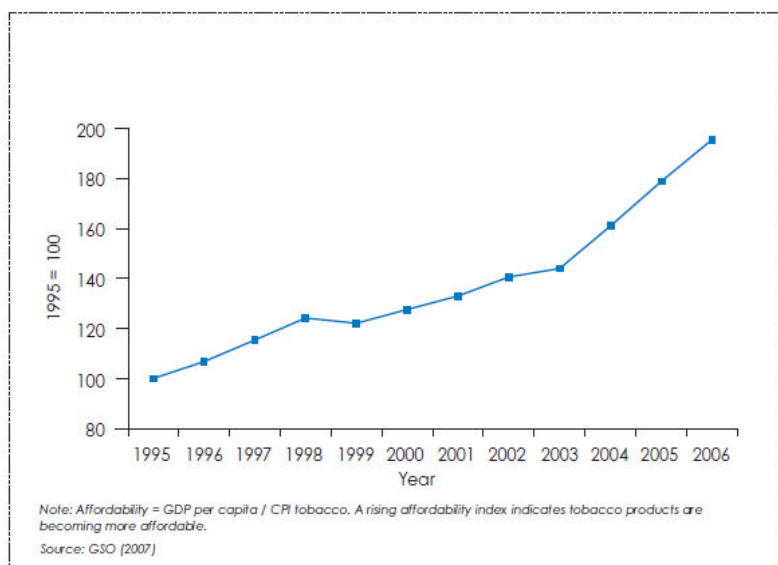


Source:  
GSO (2007) and IMF (2007)

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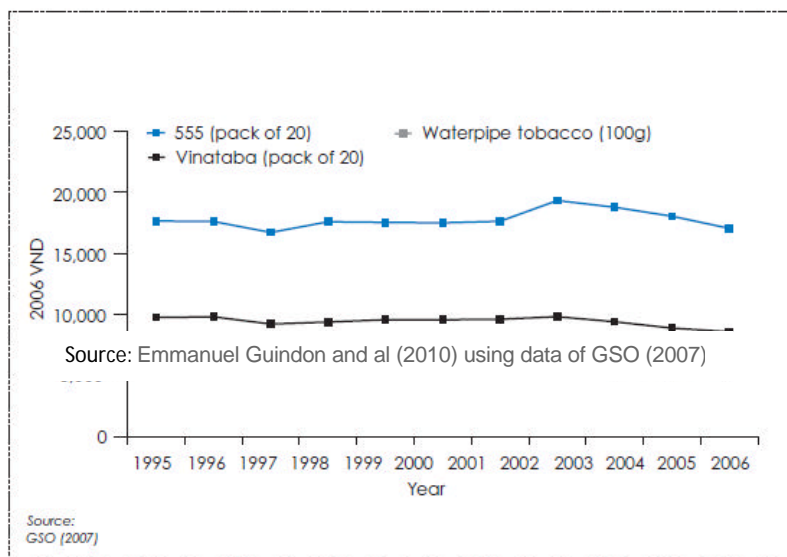
<sup>vi</sup> To calculate the consumer price index (CPI), GSO collects prices for nearly 400 goods and services on a monthly basis. The CPI is a relative indicator measuring the change in prices for goods and services.

Figure 3: Affordability of tobacco products, 1995-2006



The actual price of major tobacco products on the market in the same period is reflected in Figure 4

Figure 4: Prices of tobacco products 1995-2006



The data presented in the figures demonstrate that tobacco affordability has increased in Vietnam over the past decade.

### 1.3 The health burden of tobacco use

It is widely acknowledged that cigarette smoking is strongly associated with increased morbidity and mortality from a number of diseases, such as lung cancer, malignant tumors of

the oral cavity and the pharynx, myocardial infarction, cerebral thrombosis, arteriosclerosis, and chronic obstructive pulmonary diseases such as asthma and emphysema (WHO 2010). Smoking increases the risk of acquiring a wide range of diseases, resulting in increased health expenditures. In addition, smoking-related morbidity may also lead to lost productivity or premature death, resulting in costs to the smoker, the employer, and society at large. It is the same case for Vietnam.

In a rural community-based death survey in Vietnam using a verbal autopsy approach, conducted by Dao et al., cardiovascular diseases were noted as the leading cause of death in 1999, at 20.6% of all deaths in that year, followed by infectious and parasitic diseases combined (17.9%) (Dao et al. 2003). By 2002, the WHO estimated that the number of deaths due to chronic diseases at 66% of total deaths (WHO 2002). The age-standardized mortality rate from chronic diseases was 664.1 per 100,000 persons. The proportion of all hospital admissions attributable to chronic diseases had increased from 39% in 1986 to 68% in 2003 (MOH Vietnam 1998; MOH Vietnam 2003). In another 2002 study, the International Agency for Research on Cancer (IARC) estimated that in Vietnam 75,150 cancer cases were newly detected, of which lung cancer was the most prevalent; 54,642 cancer deaths were predicted, with about 9,500 due to lung cancer (IARC 2002). Lung cancer is the leading cancer among males and the fifth among females. Together these studies demonstrate the increasing prevalence of chronic diseases associated with tobacco use, in line with increasing tobacco use itself.

In a review of research studies conducted on the economic aspect of chronic disease, Hoang Van Minh and colleagues found that the estimated economic loss caused by chronic diseases for Vietnam in 2005 was about US\$20 million (0.033% of annual national GDP). Chronic diseases were also shown to cause economic losses for families and individuals in Vietnam. The poorer people in Vietnam are more vulnerable to the risk factors of chronic diseases, other than being overweight (Hoang et al. 2009).

Levy and colleagues used the tobacco control policy simulation model SimSmoke to predict deaths attributable to smoking in Vietnam and the potential impact that tobacco control policies would have on tobacco-related deaths. Using a smoking prevalence of 55% and a relative risk of total mortality of 1.35 based on similar studies from China, the model predicted that about 35,000 deaths would occur in 2004 and about 37,500 in 2008. The number would be about 90,000 in 2004 if the smoking-related risk of death of Vietnamese is similar to that of Americans (RR=2.4) (Levy et al. 2006).

In a recent study soon to be published, Norman and colleagues estimated the proportion of deaths attributable to smoking using the smoking impact ratio (SIR) for chronic obstructive pulmonary disease (COPD) and cancers using smoking prevalence rates from the 2006 VLSS.

The relative risks used to calculate population-attributable fractions (PAFs) were based on a study of tobacco hazards in China for COPD and the American Cancer Society Cancer Prevention Study, Phase II (CPS-II) for all other health outcomes done by Norman et al in 2006. The study showed that smoking caused between 66,000-76,000 deaths in Vietnam in 2006; this accounted for between 9.7% and 11.1% of total deaths and 6.8%-7.7% of DALYs<sup>vii</sup> in that same year. Cardiovascular diseases and chronic obstructive pulmonary disease accounted for the largest proportion of burden attributed to smoking in males and females (Norman et al. forthcoming).

In 2008, Hoang Van Minh et al. conducted a cross-sectional survey on a representative sample of 2,500 adults aged 25—74 year in a rural area of Vietnam, using a structured self-reporting questionnaire about chronic conditions and risk factors. They found that 39% of the respondents reported having at least one of the studied chronic diseases; the prevalence of current smoking was 59% among men and 0.7% among women. Tobacco use, alcohol drinking, age, and low education levels were found to be associated with a higher probability of having at least one chronic disease of interest. Economic status was found to be inversely correlated with the probability of having at least one chronic disease among women (Hoang et al 2008).

### ***1.4 Tobacco use wastes scarce government and household financial resources***

In a study using data from the VLSS 1997-1998 to estimate the economic burden of smokers' cigarette expenditures, Minh N.T and colleagues estimated the total number of cigarettes consumed in Vietnam by summing the number of cigarettes produced locally with the estimated number of smuggled cigarettes. They calculated that 2.34 billion packs were purchased in that year. As the average price of retail cigarettes was 2,493 VND per pack (based on data collected from VLSS 1997-1998), the estimated overall cigarette expenditure in Vietnam in 1998 was 5,834 billion VND (equivalent to USD 435.6 million). This amount of money could alternatively have been used to purchase 1.6 million tonnes of rice, which could have fed 10.6 million people for one year (Minh et al. 2004). Error! Bookmark not defined.

Minh et al.'s study also found that tobacco use contributed to inequality. As the prevalence of tobacco use is higher among the poor, the poor ultimately spend a larger portion of their daily expenditures on tobacco. Gini coefficients are a measure of inequality in society, with 0 representing perfect equality and 1 total inequality. Because expenditure on tobacco as a portion of income is greater among the poor, tobacco use contributes to inequality. In Vietnam, the Gini coefficient increases after separating spending on tobacco from total household expenditure from 0.34 (smoking households) to 0.39. In urban areas, it increased from 0.34 to 0.43, while in rural areas it increased from 0.27 to 0.32 (the higher number representing the increased

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<sup>vii</sup> DALYs: Disability-adjusted life years

inequality if tobacco expenditures are not included) (Tran et al. n.d.). What is interesting is that since GINI is calculated based on total household expenditure, when expenditure on tobacco is included in overall expenditures, it appears that poor households have a higher level of expenditure. This makes the difference in total expenditure between the rich and the poor appear smaller and the GINI coefficient lower. However, when tobacco expenditure is excluded from the total expenditure, the difference in expenditures *on basic needs* between the rich and the poor becomes larger and the GINI is increased. Thus, expenditure on tobacco creates a false impression of less inequality.

In Vietnam, tobacco spending causes many households to fall below the poverty line. According to the World Bank and the General Statistic Office, the food poverty<sup>viii</sup> line in Vietnam in 1998 was 1.287 million VND per person per year. After separating tobacco spending from total household expenditures, 1.5% of the population whose living standards used to be above the food poverty line fall into the category of food poor households, i.e., whose income is insufficient to meet minimum caloric requirements. It can therefore be concluded that tobacco expenditure contributes as a causal factor to poverty. If the amount spent on tobacco was instead used to purchase food commodities, then 11.2% of current food poor people could emerge from poverty (Nguyen et al. n.d.).

Tobacco spending thus contributes to poverty in two ways: tobacco expenditure is welfare-reducing, and at the same time reduces welfare-enhancing expenditures for education, health or nutrition. Tobacco spending also contributes to widening the gap between the rich and the poor, because the poor have higher rates of smoking and spend a higher proportion of their income on tobacco.

In a study evaluating the economic impact of tobacco expenditure on poor households in Vietnam using data from the Vietnam Living Standard Survey 1997-1998 (VLSS 1998) with a national representative sample of 6,000 households, Lam and colleagues classified households by expenditure quintile into five groups based on household expenditure per capita, with quintile one having the lowest expenditure per capita. Households falling into expenditure quintiles one and two are defined as poor, with those in expenditure quintile one representing the food-poor population (those unable to afford at least 2,100 kcal per person per day). Lam calculated tobacco expenditure by type of tobacco (cigarettes and water-pipe/chewing tobacco) and compared it with total and “essential” household expenditure.<sup>ix</sup> Calculations were made both for the national average and within each quintile. Finally, Lam used multiple regression to examine the relationship between tobacco expenditure and non-tobacco expenditure among cigarette smoking households in each expenditure quintile (Lam et al. n.d.). Error! Bookmark not defined.

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<sup>viii</sup> Food poverty level is the level of household expenditure required to ensure that the household can buy a basket of food to provide 2,100 kcal per person per day.

<sup>ix</sup> Essential is defined as food, education, health, and rent.

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The authors found that households that use pipe and chewing tobacco spend only about 1.2% of total household expenditure on tobacco, whereas “cigarette user” households spend as much as 5.3% of their total expenditure on tobacco.<sup>x</sup> In absolute terms, of course, the richer households spent more money on tobacco than did the poorer households, but it is clear that the proportion of income spent on tobacco was highest among the poorest households. Further calculations demonstrated that an average poor cigarette smoker “burns away” an amount of money equal to between 19.1% (quintile 2) and 24.8 % (quintile 1) of the total average expenditure of one member in his household. That amount of money could have been used instead to purchase about 500 calories of a standard 2100-calorie-a-day diet. This additional amount of calories is more than enough to bring one (in quintile 1) or two (in quintile 2) members of the poor smoking households into food sufficiency.<sup>xi</sup>

The researchers’ regression results also indicated that among cigarette smoking households in quintiles 1 to 4, higher tobacco expenditure per capita is associated with lower other household expenditure per capita when compared with non-smoking households in the same quintile (after controlling for major socio-demographic characteristics of households). Thus, the study found that the poorest households spend 2.2 times more on cigarettes than they do on education and 1.6 times more than on health care. These ratios are presented in Table 5 below.

**Table 5: The ratio of cigarette expenditure versus expenditure on health and education by income groups**

	Ratio of expenditure on cigarettes vs education	Ratio of expenditure on cigarettes vs health care
Overall	0.9	1.6
Quintile 1	2.2	1.6
Quintile 2	1.1	1.4
Quintile 3	1.1	1.5
Quintile 4	0.8	1.4
Quintile 5	0.6	2.0

In another study using data from the VLSS 1992-1993 and 1997-1998, Bales and Hoang examined the opportunity cost of smoking in terms of low-income families’ spending on tobacco versus on education or health. Table 6 shows the study’s results in terms of average ratios of total household tobacco expenditures to household expenditures on children’s education, for all household education expenditures, and for household expenditures on health.

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<sup>x</sup> The results for each quintile were as follows: quintile 1: 5.3%; quintile 2:4.5%; quintile 3: 4.5%; quintile 4: 4.2%; and quintile 5: 3.9%.

<sup>xi</sup> The higher number of people emerging from food poverty in quintile two is a reflection of the fact that they are less food poor to begin with; 500 additional calories could be divided between two people to bring both over the 2,100 calorie threshold, while in the poorest households, it would be needed by one person to rise above the threshold.

Only households that actually spent money on education were included in the analysis. Households without tobacco expenditures were also included, so the results represented the average across all households, not just those containing at least one smoker.<sup>xii</sup> As can be seen in the table, the authors found that the poorest group spent 2.6 times as much on tobacco as they spent on education for small children; that figure was only 1.2 for the average household in the highest quintile. The ratio of tobacco versus health expenditures showed little variation between quintiles, with the poorest families spending 1.5 times the amount on tobacco versus health, and the wealthiest spending over twice on tobacco what they spent on health (Bales and Hoang forthcoming). The report does not provided any direct explanation on the finding (that the wealthy spent twice as much on tobacco as they did on health); however, elsewhere in the report the authors provided evidence that the wealthier smokers buy more expensive cigarettes. The average price of products consumed by this groups is double the price of products consumed by the poorest group (5.2 vs 1.7 thousands VND/pack in males and 3.9 vs 1.2 in females) while the average consumption of cigarettes per day is much less variable (10.3 in quintile V vs 12.4 cig/day in quintile I in males and 8.7 vs 9.8 respectively in females). Another potential explanation is that the richer are healthier and have higher insurance coverage rates than the poor so they may also have less out-of-pocket expenditure for health care.

**Table 6: Ratio of tobacco expenditure versus education and health expenditures**

	Tobacco/child education	Tobacco/teenager education	Tobacco/education	Tobacco/health
Overall	1.7	1.1	0.9	1.5
Quintile 1	2.6	2.9	1.8	1.4
Quintile 2	1.4	0.9	0.9	1.3
Quintile 3	1.5	0.7	0.7	1.2
Quintile 4	1.3	0.7	0.7	1.3
Quintile 5	1.2	0.5	0.5	2.2

Hoang et al. conducted a study that compared tobacco spending with spending on other basic needs such as education, health care, shelter, and food, using data from VLSS 1997-1998 (Hoang et al. 2006). They found that rural households have a higher ratio of tobacco spending versus education spending than do urban households (the respective figures are 71% and 42%). The ratio of tobacco spending to health care spending, tobacco spending to food spending, and tobacco spending to total expenditure of rural households was also higher than that of urban households. Low income households' tobacco spending was equal to one-and-a-half times their educational spending and was equivalent to health care spending. The proportion of tobacco

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<sup>xii</sup> 65% of households in the survey have at least one smoker; unfortunately the study includes both those households with smokers and those without one, so this is one limitation of the study's results.

## ***Tobacco and poverty: Evidence from Vietnam***

spending in total household expenditure of low income households was also higher than that in higher income households (5.3% vs 3.6%, respectively). Table 7 presents the results of the survey.

**Table 7: Comparison between spending on tobacco versus education, health care, food, and total expenditure of households, by quintile (%)**

	Tobacco/ education	Tobacco /health care	Tobacco /food	Tobacco /total expenditure
<b>Total</b>	<b>62.5</b>	<b>56.2</b>	<b>6.4</b>	<b>3.5</b>
<b><i>Urban-rural</i></b>				
Rural	71.4	56.9	6.4	3.7
Urban	42.3	53.8	6.1	2.9
<b><i>Income</i></b>				
Very low Income	150.7	97.1	7.8	5.3
Low	108.2	87.0	7.3	4.6
Middle	94.2	67	7.4	4.3
Mid-High	68.1	72.7	7.7	4.1
High	46.4	68.9	8.8	3.6

A cross-sectional survey conducted by HealthBridge in five Vietnamese provinces further demonstrated the economic and social consequences of tobacco use, especially for people living with a smoker. The survey examined patterns of household expenditures on tobacco and basic needs (food, education, clothing, and healthcare) by collecting household expenditure data from a representative sample of smoking and non-smoking households to identify linkages between tobacco use and opportunity losses (Hoang et al. 2004).

The researchers defined opportunity losses as expenditures on tobacco that could have been used to improve quality of life for the individual and/or household. Such improvements could include better nutrition, shelter, healthcare, education, and access to basic household amenities. The study looked at expenditure data for 478 non-smoking households (defined as households with no annual tobacco expenditures or with no smokers) and 680 smoking households (defined as households with tobacco expenditures or households with smokers). Key findings of the study included:

- Fifty-four percent of adult men in the study sample smoked.
- The mean annual household expenditure on tobacco was 626,000 VND (approximately US\$40).
- Households without smokers spent more on education per student than did households with smokers. Spending on tobacco comprises a disproportionate amount of smoking households' expenditures when compared with expenditures on

more useful items such as education for children. Smoking households classified as very poor spent 2.3 times more on tobacco than on education per pupil. Reallocation of tobacco expenditures to food expenditures could potentially raise 11.3% of all smoking households above the food poverty line if tobacco expenditures were used to buy food.

### ***1.5 Tobacco use increases government and household health care expenditures***

Only one study was identified that investigated the health cost of smoking (Ross et al. 2007). This study attempted to measure the smoking-related costs of hospitalization of three major smoking-related diseases: lung cancer, COPD, and ischemic heart disease. The average cost of hospitalization was estimated based on a survey of hospitalized patients in major hospitals in Hanoi. Some indirect costs related to hospitalization were also included; however, the study did not examine the cost of treatment of many other tobacco related diseases, the opportunity cost of premature deaths, or expenditures related to outpatient care. The researchers suggested that the numbers given were likely an under-estimation of the actual costs, given that other tobacco-related diseases were not studied. The results of the study confirmed that smoking leads to large economic losses for society as a whole and imposes a substantial burden on both government and household budgets. On average, the cost for one in-patient episode was 31,399,800 VND (USD 1,960), 12,358,200 VND (USD 772), and 3,744,400 VND (USD 234) for ischemic disease, lung cancer and COPD, respectively.

A macro-level analysis revealed that about 72.5% of social costs related to the treatment of the three diseases in 2005 could be attributed to smoking, which equaled 1.2 billion VND (USD 75,950), representing about 4.3% of total healthcare expenditures and about 0.22% of the Vietnam GDP in 2005. Smoking-related COPD creates the greatest financial burden, costing society about 1,033,541 million VND per year, followed by smoking-related lung cancer (78,143 million VND) and smoking-related ischemic disease (50,145 million VND). These costs fall most heavily on the government, which bears 51% of smoking-related costs. Families and the insurance sector bear about 34% and 15% of these costs, respectively. The study demonstrated that tobacco smoking has an enormous economic impact on Vietnamese society, imposing costs of at least 1,162 billion VND annually. The data indicate that Vietnam might be in the early stages of a tobacco epidemic, meaning that these costs will rise rapidly with economic growth and increased smoking rates among women.

### ***1.6 Impact of tobacco growing on the life of farmers***

One of the arguments used frequently by “pro tobacco industry” people, is that tobacco production is an important income and job generating industry and that tobacco is a “poverty eradicating” crop. To investigate the level of reliability of this argument, some studies have been conducted in Vietnam to evaluate the impact of tobacco growing on the life of farmers.

Tobacco production in Vietnam has steadily and steeply increased over the decades (see Figure 1) (World Bank 1999). Vietnam now ranks among the top 20 countries producing tobacco, at 4-4.5 billion packs per year (Minh et al. 2006). Between 2000 and 2005, Vietnam produced between 23,000 and 33,000 tonnes of tobacco leaves annually (GSO 2006). Tobacco cultivation employed about 72,000 fulltime equivalent (FTE) workers in 2006, or about 0.2% of the workforce, while cigarette production employed around 18,000 workers, or 0.05% of Vietnam's workforce (Minh et al. 2009). Employment in tobacco trading is not included in the above figures, as the number of people involved is unknown.

The most significant study that has investigated the impact of tobacco cultivation on growers was conducted by researchers from the Hanoi School of Public Health and the Hanoi Medical School (Minh et al. 2009). This study employed both qualitative and quantitative methods, specifically in-depth interviews, focus group discussions, and a household survey, to examine different aspects of the impact of tobacco growing on the life of farmers. The study was conducted in two districts, one in the North and the other in the South. In each district, two communes were selected, one tobacco farming and one non-tobacco farming, with similar geographical and socio-economic characteristics. In total, 960 farmers aged 16-60 from 480 households were recruited for the quantitative survey. For the qualitative study, eight in-depth interviews and eight FGDs were conducted. The following outlines the study's primary findings.

*Low benefit and satisfaction:* Growing tobacco does not bring much benefit to the planters. To minimize the costs to the family associated with tobacco cultivation, the labour force primarily consists of family members of tobacco-growing households. When the labour opportunity cost was taken into consideration, meaning the amount that should have been paid to labourers but was not earned by family members, using US\$2 per day as the accepted rate of pay for manual labour, the originally calculated net annual benefit of \$US275 (expenditure of US\$238 vs. revenue of US\$ 513) was significantly reduced to a much lower value in the Southern communes of \$US32 (expenditure of US\$ 481 vs. revenue of US\$513). In the tobacco farming communes in the North, after including labour opportunity costs, the expenditure on tobacco cultivation was actually higher than the revenue (expenditure of US\$ 609 vs. revenue of US\$ 467). In two of the four studied communes, 17.2% and 30.2% of households reported that tobacco cultivation resulted in debt following the last harvest.

The study also found that 51% of tobacco farmers in the North and 39% in the South reported not being satisfied with tobacco growing. Although tobacco cultivation brought additional income to their households and made use of land and leisure time of farmers and family members, including that of children, the instability of tobacco prices, little capacity to select and

negotiate with buyers, the labour intensive nature of this crop, the negative health effects resulting from tobacco cultivation, and the low real benefits if personnel costs are included in growing costs were listed as significant causes of low satisfaction.

*Health effects:* The study found that tobacco farmers had significantly more illnesses than farmers who did not grow tobacco. Tobacco growers had significantly higher rates of 10 of 16 investigated symptoms; tiredness/weakness, nausea, increased perspiration/sweating, chill, poor appetite, itch and rashes were markedly higher among the tobacco cultivation group. There was also an independent dose-response relationship between tobacco cultivation and self-reported illness among growers.

*Child labour:* The study defined “child labourer” as those below 15 years of age engaged in any of the phases of tobacco farming, whether on a full-time or part-time basis, for their family or for others in the community. The results of the qualitative research showed that the involvement of children in tobacco production is a common feature in two communes and more intensive in tobacco farming than in other crops. The study participants believed that it was the children’s responsibility to help with tobacco production. Most children started to work at the age of 10 or even earlier, at six years of age. The majority of the children in tobacco farming communes are not paid for their work. Where children are paid, wages are low. For most of the children, work is part-time and seasonal. They work before or after school, on week-ends, and during school breaks. Children are engaged in a variety of tobacco cultivation activities but mostly in sticking tobacco leaves on bamboo sticks and sun drying.

*Labour of women:* Women are vital at almost all stages of tobacco farming. The results from the study’s in-depth interviews and FGDs showed that much of the tobacco farm work is done by women; women perform 60-70% of the total work involved in tobacco production. Tobacco farming burdens were exacerbated if the husbands find a job outside the home and village. In this case, women are solely responsible for managing tobacco growing.

### ***A case study on life changes after switching from tobacco growing to other crops***

Tran explored one village that switched from tobacco growing to other substitute crops (Tran 2004). The observations and a survey were conducted in Phong Lai, a commune that has a long history of tobacco growing, possibly from late 18<sup>th</sup> or early 19<sup>th</sup> century. Tobacco was the main source of income of Phong Lai households. People had stopped growing tobacco for a couple of reasons, noting in particular that it was labour-intensive and that it was difficult to make a profit due to the high labour costs and low selling prices. As a result, tobacco cultivation was replaced by higher value products such as peanuts, chili peppers, and fish. Further, young women formerly employed in tobacco cultivation found that they had time to start small businesses, which proved more lucrative than tobacco farming, while other young people had

the freedom to leave and seek better livelihoods elsewhere as their labour was no longer required for family tobacco cultivation.

The implication from this case study is that a shift in incentives, despite the apparent profitability of tobacco cultivation, led to a decline in tobacco cultivation. This suggests that even where tobacco cultivation is profitable, other alternatives may prove even more so—but dependence on growing tobacco may prevent the implementation of such alternatives.

### ***1.7 Negative impacts of tobacco on environment***

There is as yet very little information available on the costs of tobacco to the environment in Vietnam. The study conducted by Minh et al. (2009) found that tobacco farmers often used pesticides with high toxicity such as aldicarb, chlorpyrifos and 1, 3-dichloropropen (1,3-D) for their tobacco harvest. These pesticides can lead to acute poisoning in humans and 1,3-D is known to cause different types of cancer. The fertilizer commonly used by tobacco farmers, maleic hydrazit, can also cause skin and eye irritations. The study also found that most of the tobacco farmers used coal or wood to cure tobacco leaves. 75% of the tobacco farmers reported that they took wood for curing tobacco from the forest. Geist, in his work related to global tobacco-related deforestation, estimated that in Vietnam, 1.4% of forest area has been destroyed due to tobacco cultivation and that Vietnam ranks among those with “heavy to medium level of deforestation due to tobacco” (Geist 1999).

## **2. Evidence of the impact of tobacco control policies on reducing tobacco consumption and its consequences**

### ***2.1 Impact on tobacco consumption and its consequences***

Imposing taxes on tobacco has been identified as one of the most effective methods of reducing tobacco use. Vietnam's tax structure – with different rates applied to different types of cigarette – has implications for the level of cigarette prices, economic burden of smoking, effect on tobacco use, and effect on tax revenues (World Bank 1999). Error! Bookmark not defined.

In their study on price elasticity, Eozenou and Fishburn used cross-sectional household survey data with information on quantities and expenditures to derive the spatial price elasticity of cigarette demand in Vietnam. The estimated direct price elasticity of cigarette demand is -0.53. This suggests that tobacco taxation in Vietnam is likely to have a significant impact on cigarette consumption. Middle-aged wealthy men would mostly bear the burden of such tax, as this is the population among which cigarette consumption is most prevalent. Moreover, since the estimated price elasticity is less than 1 in absolute value, the introduction of cigarette taxation would also generate additional revenue for the government budget (Eozenou and Fishburn 2009).

## ***Tobacco and poverty: Evidence from Vietnam***

Kinh and colleagues (2006), in a study using data from VLSS 1998, examined the characteristic of tobacco consumption of different income groups and how the multi-level tobacco tax policy affects low-price cigarette smokers. Regression analysis was employed to estimate the price elasticity of smoking participation and quantity smoked by income groups. Finally, the researchers used standard tools of tax revenue analysis to analyze the effect of imposing a single uniform tax of 65% on consumption and government revenue. The results showed that low-priced cigarette smokers (those who consume cigarettes costing less than 5,000 VND per pack) account for a large share (78%) of total cigarette consumers. Most consumers of low-priced cigarettes are poor and live in rural areas or small towns. The price elasticity of male smoking participation is -0.9 for the whole population, and higher for the low income group (-1.16); the elasticity with respect to quantity is -0.5 for all smokers and -0.6 for low income smokers. Imposing a uniform tax of 65% on tobacco will result in a 32% rise in the prices of low-priced cigarettes and a 16% rise for the domestic filtered category, potentially leading to a decrease of tobacco consumption by 25% and an increase of more than 11% in the tobacco tax revenue of the government.

**Table 8: Change in price, consumption and government tobacco revenue from imposing a uniform high tobacco tax rate of 65%**

	Change in price (%)	Change in Tobacco Consumption		Change in Tobacco Tax Revenue <sup>(2)</sup>	
		Quantity (Million packs)	%	Value (Billion VND)	%
Non-filtered cigarettes	32%	-80.8	-46.1	14.1	40.2
Filtered cigarettes produced using domestic materials	16%	-363.0	-23.0	113.4	10.5
Total		-443.8	-25.3	127.5	11.5

*Source:* Author's estimation

The researchers concluded that in Vietnam, the poor are likely to smoke low-priced cigarettes and those who smoke low-priced cigarettes are particularly responsive to cigarette prices. Consequently, the current low level of taxation on non-filtered cigarettes contributes to high smoking prevalence among the lowest income population group and creates a large economic burden on the poor. Social equity and public health goals would dictate moving toward a higher uniform tax.

In order to project future trends in smoking rates and to examine the potential effect of tobacco control policies on future smoking rates in Vietnam, Levy and colleagues (2006) developed a tobacco control policy simulation model called Vietnam SimSmoke (VNSS). VNSS uses population and smoking data from Vietnam to project trends in smoking prevalence over time,

and estimate the number of smoking attributable deaths. The model then estimates how much smoking rates may be changed under the impact of tobacco control policies. VNSS includes a population model, a smoking model, a smoking-attributable death model, and policy modules. The year 2002 was chosen as the baseline, because this year had large scale data from the National Health Survey. In addition, tobacco control policies changed little in the preceding years, so that smoking patterns should have been relatively stable.

To develop the population model, data on total population by age and gender was projected from the 1999 census to the baseline year 2002. Data from a 3% sample of the 1999 census was tabulated and the share within 5-year age groups was used to reallocate the projected population from 5-year age groups to individual ages for 2002. Data on mortality rates and adjusted data on births by age and by gender were also obtained.

For the smoking model, data on smoking prevalence, initiation, and cessation was collected from the 2001–2002 National Health Survey (VNHS). Questions about tobacco use were asked of anyone aged 6 and older. One hit (inhalation) on a tobacco pipe is considered to be equivalent to one cigarette. Individuals who had not smoked 100 cigarettes (hits) during their life were considered never smokers. Smokers included anyone who had ever smoked 100 cigarettes (hits) or more in his/her life, and had smoked at least 7 cigarettes (hits) in the past week. Ex-smokers include anyone who has ever smoked 100 or more cigarettes (hits), and either no longer smokes or currently smoked less than 7 cigarettes (hits) in the past week. Ex-smokers are categorized by years since quitting. Data from the VNHS for ages 15 and above indicate that 56.1% of males and 1.8% of females smoked in 2002.

Smoking-attributable deaths in the SimSmoke model are predicted using standard attribution measures based on smoking prevalence rates and the total mortality risks of smokers and ex-smokers relative to non-smokers. A relative risk of 1.35 is used in the model for all ages (this is the middle point of RR found in studies conducted on Chinese population, the patterns of smoking of those believed to be similar to that of Vietnamese).

Policy changes included one-time tax increases with three scenarios 10%, 30%, 50% and 100%, introduced in 2004, and maintained thereafter, as well as clean indoor air laws, mass media policies, advertising bans/warning labels and strategies to reduce youth access.

The study's results showed that if no tobacco control policy was implemented, smoking-related deaths in 2003 would total 29,892 in males and 3,981 in females. By 2033, total deaths would be 67,000.

If tobacco tax was increased by 10%, the prevalence of smoking would decrease by 2.6% in males and 1.3% in females in 2004. After 30 years, it would be decreased from 56.1% to 48.7% in

males and from 1.9% to 0.8% in females. If the tax was increased by 100%, in 2004 the prevalence of smoking would be decreased by 17.4% and 9.6% respectively in males and females, and by 24.5% and 14.5% in 30 years.

If a comprehensive smoke-free policy was implemented and enforced in both work and public places from 2002 forward, the prevalence of smoking would be decreased from 56.2% in 2002 to 52% by 2004; furthermore, it would decrease to 46.2% by 2033 (or 12.6% relative reduction as compared to the status-quo). The number of deaths avoided through such a policy would be 3,111 males and 117 females in 2033. A sustained heavily publicized media campaign is predicted to lead to a 6.4% immediate reduction in smoking prevalence after 1 year, increasing to a 7.3% reduction by 2033. By 2033, 3,818 lives could be saved per year. Adding publicity and greater enforcement to the current advertising ban is projected to yield a 2.2% immediate reduction in the male smoking rate and a 2.5% reduction by 2033. This policy is projected to save 1,678 lives per year by the year 2033. Introducing strong health warnings rather than the currently weak warnings is projected to yield a 1.1% immediate reduction in male smoking rates and about a 1.5% relative reduction by 2033, and is projected to save 770 lives in the year 2033. With the implementation of a policy that bans youth access to tobacco in addition to strict retail compliance checks and penalties for non-compliance, adult rates decline imperceptibly after 1 year, because those under the age of 18 are a particularly small segment of the smoking population. By the year 2033, the effects are projected to grow to a 1.7% (2.7%) reduction for males (females) in 2033 as youth age. Reductions in youth smoking rates do not affect deaths from smoking until age 36, but even with the small relative declines in adult prevalence, 578 lives would be saved per year by the year 2033.

The final scenario projects the effect for a combination of policies, representing a 100% tax increase, comprehensive worksite and restaurant smoking bans with enforcement and publicity, a high-intensity media campaign, greater enforcement and publicity of the total ban on cigarette advertisements and strong health warnings, and strict youth access controls. The smoking prevalence is projected to drop by about 29.6% for males and 22.4% for females in the immediate future. By 2033, the smoking prevalence is projected to drop by 38.5% for males and 31.8% for females relative to status quo in 2002. 17,049 fewer deaths are projected per year by 2033. If the number of lives saved each year is added up for all years, more than 231,500 (221,000 male and 10,500 female) lives would be saved by the year 2033 using a relative risk of 1.35. The number saved increases to 325,000 lives with a relative risk of 1.55.

Only one study examined the association between the decision to initiate or quit smoking and the price of tobacco products. Using a sample of Vietnamese smokers and non-smokers, Laxminarayan and Deolalikar (2004) studied the association between the odds of quitting or initiating cigarette and waterpipe tobacco smoking between 1993 and 1998 and changes in the

prices of the two tobacco products. They found that changes in the price of cigarettes were significantly and negatively associated with the decision to initiate cigarette smoking (elasticity:  $-1.175$ ). Changes in the price of waterpipe tobacco, however, were not found to significantly affect the decision to initiate waterpipe tobacco smoking. Changes in the price of waterpipe tobacco were found to be significantly and negatively associated with the decision to quit cigarette smoking (elasticity:  $-1.41$ ) but not waterpipe smoking. Laxminarayan and Deolalikar also examined the possible effect that changes in prices may have on substitution between tobacco products and found that changes in the price of cigarettes were significantly and positively associated with the decision to switch from cigarette smoking to waterpipe smoking. Changes in income were found to be significantly and negatively associated with the decision to initiate waterpipe smoking and to switch from cigarette smoking to waterpipe smoking. Among waterpipe smokers, changes in income were positively associated with the decision to switch to cigarette smoking or quit.

Following the methodology of Ranson et al., Guindon and colleagues estimated the impact of tobacco price increases on tobacco-related deaths for Vietnam. For cigarettes, using a lower-bound elasticity of  $-0.25$ , they found a 33% increase in cigarette prices would lead to a reduction in tobacco related deaths of 170,000 by 2050 while a price increase of 70% would prevent 360,000 tobacco related deaths. If such price increases were applied to all tobacco related products, the reductions in tobacco related deaths would range from 100,000 to 500,000. Using an upper-bound elasticity of  $-0.75$ , a 33% increase in cigarette prices would lead to a reduction of 508,000 tobacco-related deaths by 2050, rising to nearly 1 million fewer deaths for a cigarette price increase of 70%. If such price increases were applied to all tobacco products, the reductions in tobacco-related deaths would be range between 710,000 and 1.4 million by 2050 (Guindon et al. 2010) .

**Table 9: The impact of increasing cigarette prices on tobacco-attributable mortality and government revenue**

	Base values	Projected values (approximate % increase in Retail Price)		
		10%	33%	50%
Retail Price (per pack of 20)	5,250	5,850	7,000	7,800
Special Consumption Tax (SCT) (%)	65%	85%	125%	150%
Total Tax (as % of Retail Price)	42.6%	48.5%	57.7%	61.5%
<b>Reduction in Number of Smokers (thousands) by 2050</b>				
Price Elasticities				
-0.25		-152.0	-501.4	-759.8
-0.50		-303.9	-1,002.9	-1,519.5
-0.75		-455.9	-1,504.6	-2,211.4
<b>Number of Lives Saved (thousands) by 2050</b>				
Price Elasticities				
-0.25		-51.3	-169.4	-256.7
-0.50		-102.7	-338.8	-513.4
-0.75		-154.0	-508.3	-744.3
<b>Additional Total Tax Revenue (millions of VND)</b>				
Price Elasticities				
-0.25		2,152,183	5,463,498	7,173,110
-0.50		1,903,335	4,293,086	5,069,394
-0.75		1,654,487	3,122,674	2,965,679
<b>Additional Total Tax Revenue (millions of USD)</b>				
Price Elasticities				
-0.25		134.5	341.5	448.3
-0.50		119.0	268.3	316.8
-0.75		103.4	195.2	185.4
<b>Total Tax Revenue (millions of VND)</b>	<b>7,552,900</b>			
Price Elasticities				
-0.25		9,705,083	13,016,398	14,726,010
-0.50		9,456,235	11,845,986	12,622,294
-0.75		9,207,387	10,675,574	10,518,579
<b>Total Tax Revenue (millions of USD)</b>	<b>472</b>			
Price Elasticities				
-0.25		606.6	813.5	920.4
-0.50		591.0	740.4	788.9
-0.75		575.5	667.2	657.4

*Note: Total tax revenue includes revenue from the Special Consumption Tax and from Vietnam's 10% VAT. The Total Tax Revenue base value is from 2008. For total cigarette sales, a base value of 3,510 million packs is used (based on 2008 production and export figures). See Appendix C for additional details regarding methodology and assumptions of the projection model.*

### 2.3 Impact on tax revenue

Increasing tobacco taxes will nearly always generate higher government tax revenue (World Bank 1999). Higher tobacco taxes, by and large, lead to higher prices. And higher prices, as seen earlier, reduce the quantity of tobacco products demanded. However, the percentage reduction

in quantity is generally less than the percentage increase in price (i.e. price elasticity is less than 1, in absolute terms). Moreover, as taxes account for a small share of the price paid by smokers, a tax increase will translate into a smaller percentage change in retail price. For example, if tax constitutes 40% of the retail price (as is the case in Vietnam), doubling the tax rate (i.e. a 100% increase) would increase price by less than 60% (Guindon et al. 2010).

The study done by Guindon et al. in 2010 estimated the impact of tobacco price increases on government revenue. Table 9 presents the estimated impact of increasing cigarette prices by 10%, 33%, and 50% in terms of changes in the number of cigarette smokers, changes in the number of premature deaths averted, and new revenues generated from cigarette taxes. Three scenarios using different price elasticity estimates are presented (low, mid and high, representing total price elasticity estimates of  $-0.25$ ,  $-0.50$  and  $-0.75$ , respectively). Simulation estimates presented in Table 9 represent the effect of cigarette price changes and hence their impact on tobacco attributable mortality and government revenue only through changes in the number of cigarette smokers and total cigarette sales. When assuming a mid-range total price elasticity estimate of  $-0.50$ , a modest 10% increase in cigarette prices is expected to reduce the number of smokers by about 300,000, avert more than 100,000 premature deaths and generate more than VND 1,900,000 million (US\$ 119 million) in additional tax revenue.

### ***2.4 Impact on tobacco-related employment***

In his tax review, Guindon (2002) mentioned three reasons why higher taxes on tobacco products would not necessarily lead to employment losses. These reasons are: i) the shifts in spending away from tobacco products are bound to generate new employment in other sectors, with the net impact generally positive; ii) employment in tobacco cultivation and manufacturing accounts for a very small share of total employment in Vietnam; and iii) population growth and rising incomes in Vietnam will likely offset any negative impact that higher taxes might have on overall tobacco employment. Another factor mentioned by the author that could affect tobacco employment in Vietnam is the government's explicit policy of expanding exports while at the same time domesticizing tobacco production. Since the tobacco cultivation sector in Vietnam is large and labour-intensive relative to the tobacco manufacturing sector, more workers may be affected by a reduction in tobacco use. To the extent that legal and illegal imports might substitute for domestically-produced cigarettes, domestic tobacco employment might be negatively affected. However, improvements in productivity that lead to reduced imports and higher domestic production may have the potential to more than offset any reduction brought about by tobacco tax increases. Furthermore, industry restructuring undertaken by the government — which has involved the closure of seven factories in recent

years — might have already had a stronger impact on tobacco employment than any tax change could have in the near future.

In a recent study, Hien and colleagues attempted to estimate the likely consequences on Vietnamese employment of implementing comprehensive effective tobacco control policies (Hien et al. 2008). Employment in four sectors was included: tobacco cultivation, tobacco processing, tobacco manufacturing and tobacco distribution. Input – Output Analysis was used to analyze the impact of tobacco control on output and employment in the economy, using the year 2000 as a baseline for the estimations. The study found that in the year 2000, the tobacco industry provided about 122,470 jobs, accounting for 0.32% of total employment in the economy. Of those jobs, 97,600 were in tobacco cultivation (0.26% of the total), 12,400 in tobacco manufacture (0.033% of the total) and 12,470 in distribution of tobacco products (0.033% of the total).

The effects of adapting a comprehensive set of tobacco control policies (consisting of a 50% increase in excise tax, a strong clean air policy, a moderate-sized media campaign, an advertising ban, introduction of strong health warnings, and measures targeting the reduction of youth access to tobacco) were estimated using the VNSimsmoke model<sup>xiii</sup>, and showed a 10% decline in tobacco consumption. Such a decline in consumption would, in turn, result in an estimated decline in tobacco output of 11.16% and in the overall national output of 0.0039%. The model suggests that employment in tobacco manufacture would decline by 11.18% but would be more than compensated for by an increase in *national* employment of 0.058% (21,853 full-time jobs). If excise taxes were increased 100% and other tobacco control policies were implemented, then national output would increase by 0.07% (665,169 million VND) and employment would increase by 0.399% (150,029 jobs).

The authors observed that the implementation of tobacco control policies is likely to lead to two opposite effects: i) The anticipated decline in tobacco consumption and thus production would indeed result in a loss of jobs, assuming no change in technology and; ii) money formerly spent on tobacco would likely be reallocated to other goods and services, so the output of these sectors will increase and the amount of employment in the economy increase correspondingly (Hien et al. 2008). In sum, the study suggests that tobacco control policies result in a reduction in employment in the tobacco industry but to an even larger increase in employment in the economy overall. Any potential reduction in the output of the economy is so minimal as to be insignificant. The authors thus found that there is no need to be concerned about any potential negative impacts of tobacco control on employment and output in the economy.

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<sup>xiii</sup> An adopted-for-Vietnam computer program

### **2.5 Analyzing cost-effectiveness of tobacco control policies**

A recent project implemented by the National Research Institute for Health Strategies and Policies at Queensland University aimed to provide scientific evidence of the cost-effectiveness of different tobacco control policies (NRIHSP 2009). The policies addressed by the research included: health warnings, smoking bans in workplaces and indoor public places, intensive mass media campaigns, and tax increases. The study investigated the activities related to any policy implementation and its cost. “Cost” was interpreted from the government’s perspective. The study also estimated the cost-offset and the opportunity cost where this was relevant. “Effectiveness” was evaluated based on i) reducing the incidence of four major tobacco related diseases (CVD, cancers, COPD, infection of low respiratory tract); ii) the level of impact of the investigated policy on smoking starting and quitting; iii) tobacco related DALY and; iv) the level of depreciation at 3%. Following their analysis, the researchers concluded that all interventions are highly cost effective.

### **3. Current gaps in tobacco control economic research in Vietnam**

- 1) **Tobacco consumption:** The fact that there are periodic nationwide and other large surveys such as the Vietnam Living Standard Survey and the National Health Survey that include questions about tobacco consumption, health care expenditure, and many other socio-economic variables offers a great opportunity to gather information about tobacco consumption in Vietnam and its characteristics. This information is critical for planning and evaluating the effectiveness of tobacco control policies, as well as for research and advocacy purposes. However, to make sense, these data should be collected and analyzed in the same manner across the different surveys. In the previous surveys, questions related to tobacco consumption and the definition of smoking status was not uniform, making the interpretation of trends difficult.
- 2) There is insufficient information about the **health burden of tobacco use** in Vietnam, especially the burden on the poor smokers. No data on tobacco-related morbidity and mortality is available on a regular basis. Data from the Ministry of Health mainly reflects prevalence of hospitalization rather than real disease incidence or prevalence. There are some population-based cancer registries functioning in Vietnam but they cover just a small proportion of the population and the data are not regularly published. Data from large-scale prevalence surveys of other tobacco-related diseases are also limited. There is no medical cause-based death registry. Some studies using verbal autopsy approaches to estimate the causes of death have been published; however, these studies were conducted in rural areas and covered a very small proportion of the population and so are not representative for Vietnam. This poses great barriers for secondary health research in Vietnam, including assessing tobacco-related health costs. Vietnamese researchers also need to conduct more national research to estimate the smoking-related risks at the individual and population levels. The smoking-related fraction of deaths and DALY data are available from some studies, but just for a few diseases. Many economic

research studies measuring the cost of smoking need inputs such as the relative-risk and smoking-attributable fraction of tobacco-related diseases. Adopting data from other countries is not easy, as these data vary from country to country and the assumptions made may provoke a rejection of the findings.

- 3) Waterpipe smoking is still widespread in Vietnam and most of its users are poor; however, there is little available information about the characteristics of users and the health effects of water pipe use. Studies investigating the **health effect of this type of tobacco use** could be very useful.
- 4) Information about the **social costs of smoking-related diseases** is limited in Vietnam. The only study conducted on this topic to date was small-scale and covered only three diseases, while the list of tobacco-related diseases is much longer. The study was also not able to estimate the opportunity cost of premature deaths. When calculating the cost, the study was not able to include data about outpatient care for smoking-related diseases. The estimated cost therefore is much lower than the real cost. The as-complete-as-possible estimate of societal cost of smoking-related-disease, especially the cost incurred by the government, is very important for tobacco control advocacy in Vietnam, because there is a widespread belief among policymakers that the tobacco industry is an “income generating” industry. A project recently initiated by HealthBridge Vietnam and its partners examining the health cost of smoking related diseases would contribute to filling this gap.
- 5) Tax increases were identified as one of the strongest tobacco control measures. The tobacco tax level in Vietnam is far below the best practice standard. One important tobacco control advocacy target in Vietnam is further tax increases. To better document the benefit of tax increases, a reliable and consistent system/mechanism to monitor the **price, market share, and affordability** of tobacco products needs to be set up. More research on tax equity is also needed, including on such issues as the impact of tax increases on household tobacco expenditures and whether such tax should be applied regressively or progressively.
- 6) There was just one small-scale study found that addressed the **impact of tobacco growing on tobacco farming households**. Obviously more studies on this topic are needed. Future studies should try to highlight the lack of “net benefit” of tobacco growing, taking into consideration the labour intensiveness of this type of economy.
- 7) The costs to the environment of tobacco production (tobacco-related deforestation, including fire-related and tobacco curing) remains almost unaddressed in Vietnam.
- 8) Only one study investigating the cost-effectiveness of tobacco control measures has been undertaken to date. This type of research is especially important to help the government to make appropriate allocation of scarce resources for tobacco control.
- 9) The extent of cigarette smuggling and its market share, and the characteristics of its users, also remains unexplored.

### **IV- Conclusions**

The findings from studies conducted in Vietnam confirm many of the findings found in other countries about the link between tobacco and poverty: :

- Tobacco use is socio-economically dependent: Smoking prevalence and the risk of becoming regular smokers are higher among the poor than the economically better-off groups; these risks are also higher among people with lower education than among those with higher levels of education. People living in rural areas smoke more than those living in urban areas. Poor people and those with lower education levels are less likely to quit.
- Tobacco use significantly wastes national financial resource by increasing expenditure on the treatment of tobacco-related diseases. Tobacco use widens social inequality.
- At household level, tobacco use increases poverty by diverting scarce money from basic needs such as food, education, and health care.
- Tobacco growing does not bring many benefits to growers. This is labour intensive work, with the burden falling primarily on women. Children are exploited as unpaid workers.
- Taxation and the enforcement of other strong tobacco control policies would encourage the reduction of tobacco consumption, thereby reducing the tobacco-related health and economic burdens on society and households.

**Appendix 1: Summary of Major Research Papers**

Summary of major research studies providing evidence on the link between tobacco use and poverty in Vietnam

Ref#	Title	authors	Pub. year	Method used	Key findings (only those related to this paper)
<b>Studies investigating smoking prevalence, health burden</b>					
8	Smoking Epidemics And Socio-Economic Predictors Of Regular Use And Cessation: Findings From WHO STEPS Risk Factor Surveys In Vietnam And Indonesia	Minh, H.V et al	2006	Cross-sectional. sample of 2000 from STEPWISE risk factor surveillance in 2002	<ul style="list-style-type: none"> <li>- Smoking rates of surveyed sample</li> <li>- Low education, low income, being farmer are factors related to higher smoking prevalence</li> <li>- Being in low income group has higher chance of starting smoking and lower chance of quitting</li> </ul>
26	Applying verbal autopsy to determine cause of death in rural Vietnam	Dao Lan Huong et al	2003	Verbal autopsy survey on sample of	<ul style="list-style-type: none"> <li>- The leading causes of death were cardiovascular and infectious diseases (accounting for 20.6% and 17.9% of the total)</li> </ul>
	Tobacco use and related factors in Ngu Hanh Son district, Da Nang city	Huynh Ba Tan	2004		
7	Tobacco Vietnam, Country Market Insight	Euromonitor International	2009	Policy review and surveillance	<ul style="list-style-type: none"> <li>- Situation analysis of TC in Vietnam, policies and legislation review</li> <li>- Smoking prevalence 2002-2007</li> <li>- Taxation</li> <li>- Tobacco Trading/import/export</li> <li>- Illicit Trade estimate</li> </ul>
27	The role of public policies in reducing smoking and deaths caused by smoking in Vietnam: results from the Vietnam tobacco policy simulation model	Levy DT	2006	Simulation modeling using prevalence of smoking from NHS 2002 (55%) and RR of mortality adopted from China (1.35)	<ul style="list-style-type: none"> <li>- At least, 35 000 tobacco related deaths would occur in 2004 and about 37 500 in 2008</li> </ul>
28	The burden of disease attributable to tobacco smoking in Vietnam in 2006	Norman R	NP <sup>4</sup>	Modeling using prevalence of smoking from 2006 VLSS and RR of lung cancer, COPD, CVD adopted from Chinese and American study to estimate SIR/PAF and then the number of death distributed to smoking	<p>Estimated: PAF for lung cancer (61%), COPD (46%) ; upper aerodigestive cancers (45%); TB (8%). smoking caused between 66 000-76 000 deaths accounting for 9.7% to 11.1% of total deaths and 6.8%-7.7% of DALYs in Vietnam in 2006</p>
29	Self-reported chronic diseases and associated socio-demographic status and lifestyle risk factors among rural Vietnamese adults	H V Minh et al	2008	cross-sectional survey, 2500 adults aged 25—74 year in a rural area; self administered	<p>prevalence of current smoking in was 59% among men and 0.7% among women tobacco use associated with a higher probability of having at least one chronic disease Economic status negatively related to the risk of NCD in women</p>

<sup>4</sup> NP- Not published

## Tobacco and poverty: Evidence from Vietnam

				questionnaire	
<b>Studies on economic burden of tobacco use</b>					
30	Financial burden of smoking on household in Vietnam	Nguyen thac Minh et al	2004	Use smoking prev VLSS survey 1997-1998 and average cig price to estimate national expenditure for tob and its opportunity cost	In 1998 Vietnamese spent 5,834 billion VND on cig., This money could be used to buy 1.6 million tones of rice that can feed 10,6 million people for one year. 1.5% of population fall below poverty line due to tobacco use 11.2% food poverty household could get out fr poverty if money spent on tobacco was used to buy other basic thing. Tobacco use widen the inequality
31	The Economic Impact of Tobacco Expenditure on Poor Households in Vietnam	Lam N.T et al	2004	Secondary data analysis using data of VLSS 1997-1998	expenditure on tobacco of poor estimated to be 19.1% (quintile 2) and 24.8 % (quintile 1)of total expenditure Poorest household spend on cigarette 2.2 time more than spending on education and 1.6 time more than spending on health care
32	An Empirical Analysis of Smoking Using the Vietnam Living Standard Surveys (draft of paper)	Sarah Bales	NP <sup>14</sup>	Data of VLSS 1993 and 1998 were used to estimate the opportunity cost	the poorest group spent on tobacco 2.6 times more than spent on education for small children and 2.9 time more than spent for high school children ; that figure was only 1.2 and 0.5 for the average household in the highest quintile.
33	The effect of imposing a higher, uniform tobacco tax in Vietnam	H.V Kinh	2006	Data of VLSS 1997-1998 to estimate the opportunity cost of tobacco use	The ratio of expend tobacco/education in rural pople is higher than in urban area (71% vs 42%); the ratio of expend tobacco/food; Tobacco/health care of ruralresidents is also higher than in urban residents
34	Tobacco over Education - An Examination of Opportunity Losses for Smoking Households	Hoang M et al	NP, report produc 2005	Cross sectional survey in five provinces	<ul style="list-style-type: none"> <li>- 54%of adult males smoke</li> <li>- Annual expenditure on tobacco per household is 40 USD</li> <li>- Non smoking householdspend more on education than household with smokers</li> <li>- The poorest smoking household spend 2.3 time more on tobacco than on education</li> </ul>
35	The costs of smoking in Vietnam: the case of inpatient care	Hana Ross	2007	The total health care cost of lung cancer, COPD, ischemic heart dis. was based on the unit cost of direct and some indirect health care exp est. from hospital survey and the est. nat'l # of admissions for each disease. RR was taken from Chinese and US study	in 2005 in Vietnam, at least 1 161 829 000 VND or 72.5% of social costs related to the treatment of the three diagnoses in 2005 could be attributed to smoking representing about 4.3% of total healthcare expenditures and about 0.22% of the Vietnam GDP in 2005 51% of this cost bear by the government; Families and the insurance sector bear about 34% and 15%
36	Tobacco farming in rural Vietnam: questionable economic gain but evident health risks	HV Minh	2009	Cross sectional survey (980 farmers of 480 household), and qualitative approaches	<ul style="list-style-type: none"> <li>- Growing tobacco does not bring much benefit after discounting of labour cost of family members</li> <li>- Nearly half of surveyed farmers are not happy with the business</li> <li>- Tobacco grower have higher risk if illness than other crop grower</li> <li>- Tobacco growing is child and women labour abusing and contributes to deforestation</li> </ul>
38	Global assessment of deforestation related to tobacco farming	Helmut J	1999	Secondary data analysis	Vietnam ranks among the countries with "heavy to medium level of deforestation due to tobacco"

## Tobacco and poverty: Evidence from Vietnam

Studies investigating the impact of tax and tobacco control policies on tobacco consumption and its consequences					
20	Tobacco Taxation in Vietnam	E.Guindon and al.	2010	Literature review and modeling using secondary data	Review: <ul style="list-style-type: none"> <li>- Tobacco use and prevalence</li> <li>- Policies</li> <li>- Price and tax structure, affordability</li> <li>- Impact of tax</li> </ul> Modeling analysis <ul style="list-style-type: none"> <li>- Prediction the impact of tax increase on deaths and tax revenue up to 2050</li> </ul>
39	Price Elasticity Estimates of Cigarette Demand in Vietnam	EozenouP	2009	Cross sectional survey	price elasticity of cigarette demand is -0.53. The introduction of cigarette taxation would also generate additional revenue for the government budget
33	The effect of imposing a higher, uniform tobacco tax in Vietnam	H.V Kinh	2006	Data of VLSS 1997-1998 to estimate the opportunity cost of tobacco use	<ul style="list-style-type: none"> <li>- low-priced cig smokers account for (78%) of total cig consumers</li> <li>- price elasticity is -0.9 for whole population; -1.16 for the low income group</li> <li>- quantity rel elasticity is -0.5 for all smokers and -0.6 for low income smokers</li> <li>- Imposing a uniform tax of 65% leads to 32% rise in prices of low-priced cig and 16% rise for domestic filtered cig, leading to a decrease of tob consump by 25%, and an increase 11% tobacco tax revenue of the government.</li> </ul>
27	The role of public policies in reducing smoking and deaths caused by smoking in Vietnam: results from the Vietnam tobacco policy simulation model	Levy DT	2006	Simulation modeling using prevalence of smoking from NHS 2002 (55%) and RR of mortality adopted from China (1.35)	If 100% tax increase and other strong TC policies, by 2033, the smoking prevalence drop by 38.5% for males and 31.8% for females relative to 2002 level. In total, over 231,500 lives are saved by the year 2033 using a relative risk of 1.35. The number saved increases to 325,000 lives with a relative risk of 1.55
40	Tobacco Initiation, Cessation, and Change: Evidence from Vietnam	Laxminarayan R	2004		The level of smokers response depend on the income and type of tobacco. It seems like the poor are more sensitive to price change than non poor; the low price cigarette users are more responsive than non cigarette tobacco users. The price increase on cigarette has more impact on decision to initiate cigarette smoking behavior than price of water pipe does on the level of initiation of starting water pipe use. changes in the price of cigarettes are significantly and positively associated with the decision to switch from cigarette smoking to waterpipe smoking
42	Impact Of Tobacco Control Measures On Output And Employment In Vietnam	NTT Hien	2008	Input-output analysis	10% decline in tobacco consumption would result in decline in tobacco output of 11.16% and in the overall national output of 0.0039%. The employment in tobacco manufacture would decline by 11.18% but would be more than compensated by an increase in national employment of 0.058% (or 21,853 full-time jobs). If excise taxes were increased 100% and other tobacco control policies were implemented, then national output would increase by 0.07% (665,169 million VND) and employment would increase by 0.399% (150,029 jobs).
43	Analyzing the cost effectiveness of tobacco control policies (point point presentation)	Nat. Inst Health Strat& Policies	2009	Cost-effectiveness analysis	all interventions including health warning, smoking ban in workplaces and indoor public places, intensive mass media campaign, and tax increase are highly cost effective

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## Appendix 8: Overview of Newly Approved Studies in Latin America and Francophone Africa

The following provides an overview the 8 new studies being undertaken.

Country	Institution	Title	Goal	Objectives
<b>Mexico</b>	Instituto Nacional de Salud Pública	<i>Las repercusiones del consumo de tabaco en los niveles de vida de los hogares mexicanos</i>	Analizar las repercusiones del consumo de tabaco en los niveles de vida de los hogares mexicanos, en particular, de los que cuenten con menos recursos.	<ul style="list-style-type: none"> <li>i. Analizar el gasto real mensual por persona en tabaco según niveles socioeconómicos.</li> <li>ii. Comparar el gasto real mensual por persona en tabaco con el gasto en otros rubros (e.g., alimentos o cuidados de la salud) según niveles socioeconómicos.</li> <li>iii. Comparar el gasto en necesidades básicas de los fumadores con el de los no fumadores de bajos recursos.</li> <li>iv. Analizar el costo de oportunidad del gasto en tabaco por persona de los hogares de menores recursos.</li> </ul>
<b>Honduras</b>	Acción Para la Promoción de Medio Ambientes Libres de Tabaco	<i>Relación Tabaco y Pobreza Impacto en Productores de tabaco de pequeña escala las zonas productoras de Valle de Jamastran, El Paraíso, Honduras</i>	Conocer las condiciones de vida (salud, ingresos, rentabilidad del cultivo, seguridad alimentaria) de los cultivadores de tabaco en el valle de Jamastran, El Paraíso. Honduras	<ul style="list-style-type: none"> <li>i. Conocer las condiciones de vida (salud, ingresos, rentabilidad Del cultivo, seguridad alimentaria) de los cultivadores de tabaco en el valle de Jamastran, El Paraíso.</li> <li>ii. Determinar la prevalencia de consumo de tabaco a nivel nacional y su relación con la pobreza.</li> </ul>
<b>Peru</b>	Centro de Información y Educación para la Prevención del Abuso de Drogas	<i>Impacto económico del tabaquismo en hogares pobres peruanos</i>	Proporcionar información acerca de los gastos que los hogares peruanos destinan al tabaco y los costos que estos gastos representan en pérdida de oportunidades; a fin de promover la aceptación política y pública de las medidas de incremento de impuestos a productos de tabaco.	<ul style="list-style-type: none"> <li>i. Caracterizar el consumo de tabaco de acuerdo al nivel de pobreza en el Perú, a fin de calcular el costo en pérdida de oportunidades que el gasto en consumo de tabaco representa en hogares peruanos.</li> <li>ii. Comparar gasto por consumo de tabaco con gastos realizados en salud, educación, vivienda u otros gastos.</li> <li>iii. Analizar la relación entre los gastos en tabaco y los gastos en alimentos, salud, educación, vivienda u otros gastos y su impacto sobre el bienestar de niños y niñas que viven en hogares de fumadores.</li> </ul>

				<ul style="list-style-type: none"> <li>iv. Demostrar que el ahorro en compra de tabaco repercutirá en la forma en la que las familias peruanas pobres invierten sus ingresos.</li> <li>v. Abogar y buscar asegurar la implementación de políticas fiscales que favorezcan el efectivo control de tabaco en el Perú.</li> </ul>
<b>Argentina</b>	Instituto de Ciencia y Tecnología Regional	<i>Tabaquismo y la economía de los hogares en el noroeste argentino</i>	Contribuir a generar conciencia sobre el impacto del tabaquismo en la economía de los hogares de bajos ingresos.	<ul style="list-style-type: none"> <li>i. Calcular la prevalencia de tabaquismo por género, etnicidad y según niveles socioeconómicos.</li> <li>ii. Calcular la relación entre gastos en productos de tabaco y gastos en alimentos y servicios según nivel de ingresos.</li> <li>iii. Examinar la relación entre la percepción subjetiva, y el impacto objetivo de los gastos en productos del tabaco en la economía del hogar.</li> </ul>
<b>Brazil</b>	Aliança de Controle do Tabagismo	Still being defined		
<b>Cameroon, Mali, Senegal</b>	Association pour la Defense des Droits des Consommateurs	<i>Tobacco and Poverty Research: Studies in Cameroon, Mali, and Senegal</i>	To increase knowledge and understanding of the relationship between tobacco and poverty in Cameroon, Mali, and Senegal	<ul style="list-style-type: none"> <li>i. To increase awareness of local and international research on tobacco and poverty related to Cameroon, Mali, and Senegal and the gaps that exist.</li> <li>ii. To increase the capacity of researchers in Cameroon, Mali, and Senegal to address issues of tobacco and poverty through research that examines how expenditures on tobacco represent opportunity costs related to basic needs such as food, education, and health care.</li> <li>iii. To increase government, civil society, UN agency, and media awareness of and attention paid to the tobacco-poverty connection to support the development and implementation of improved tobacco control policies.</li> </ul>