

The vector of the tobacco epidemic: tobacco industry practices in low and middle-income countries

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Received: 16 January 2012 / Accepted: 3 February 2012
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Abstract

Purpose To understand transnational tobacco companies' (TTCs) practices in low and middle-income countries which serve to block tobacco-control policies and promote tobacco use.

Methods Systematic review of published research on tobacco industry activities to promote tobacco use and oppose tobacco-control policies in low and middle-income countries.

Results TTCs' strategies used in low and middle-income countries followed four main themes—economic activity; marketing/promotion; political activity; and deceptive/manipulative activity. Economic activity, including foreign investment and smuggling, was used to enter new markets. Political activities included lobbying, offering voluntary self-regulatory codes, and mounting corporate social responsibility campaigns. Deceptive activities included manipulation of science and use of third-party allies to oppose smoke-free policies, delay other tobacco-control

policies, and maintain support of policymakers and the public for a pro-tobacco industry policy environment. TTCs used tactics for marketing, advertising, and promoting their brands that were tailored to specific market environments. These activities included direct and indirect tactics, targeting particular populations, and introducing new tobacco products designed to limit marketing restrictions and taxes, maintain the social acceptability of tobacco use, and counter tobacco-control efforts.

Conclusions TTCs have used similar strategies in high-income countries as these being described in low and middle-income countries. As required by FCTC Article 5.3, to counter tobacco industry pressures and to implement effective tobacco-control policies, governments and health professionals in low and middle-income countries should fully understand TTCs practices and counter them.

Keywords Tobacco · Transnational tobacco companies · Tobacco industry activity · Tobacco control · Low and middle-income countries

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Introduction

Non-communicable disease (NCDs), mainly cancer, stroke, heart disease, and chronic respiratory disease, cause nearly two-thirds of deaths worldwide, and in low and middle-income countries, NCDs account for 80% of mortality [1]. In September 2011, the United Nations held a high-level meeting to elevate NCDs on the global development agenda and adopted a declaration that the most prominent NCDs are “linked to common risk factors, namely, tobacco use, harmful use of alcohol, an unhealthy diet, and lack of physical activity” [2]. Tobacco accounts for one in six NCD deaths [3, 4] and large-scale tobacco-control policies

are rapidly followed by large drops in heart disease and other NCDs [5]. Because tobacco use is rising rapidly in many low and middle-income countries in response to the global expansion of transnational tobacco companies (TTCs), their often uncontrolled practices to create demand for tobacco has been shown to weaken tobacco-control polices [6–8].

The four major TTCs—Philip Morris International (PMI), British American Tobacco (BAT), Japan Tobacco International (JTI), and Imperial Tobacco—controlled approximately 69% of the global market (excluding China) in 2008 [9]. These major companies have acquired other TTCs or local companies. In 2002 Imperial Tobacco bought the German company, Reemtsma (one of the big five global tobacco companies during the 1990s) and in 2008 acquired the Spanish tobacco company Altadis. JTI bought RJ Reynolds' international operations in 1999 and Gallagher, the UK's third largest tobacco company, in 2007 [9]. This consolidation has made the remaining TTCs more powerful and prosperous.

The TTCs have long recognized the importance of opening new markets globally, especially in low and middle-income countries, where there may have been little recognition that smoking causes diseases, and where tobacco-control policies were weak [10]. As TTCs successfully established new markets, they adapted aggressive marketing strategies used in high-income countries, for example free sampling, billboards, sponsorship, target marketing, and introducing new types of cigarette to create demand for their brands [11–22]. Many of these strategies are illegal or severely restricted in high-income countries. For example, in Japan in the mid and late 1980s, Philip Morris (PM) used television advertising to introduce and promote its Marlboro brand because Japan did not ban such advertising at the time [23]. To circumvent a ban on tobacco advertising in Thailand, BAT advertised on television and radio in neighboring countries that broadcast into Thailand [19]. While these efforts were tailored to local conditions [24], the TTCs developed standardized global identities and global promotion strategies for brands that were popular in high-income countries, typified by PM's standardized market research on young adults, aged 18–24 years in different regions and countries to build Marlboro into a global brand [22].

The TTCs' global market expansion succeeded: cigarette consumption increased by 33% in Africa and 24% in Latin America between 1970 and 1980 [25]. In Asia, tobacco sales grew by 33% between 1991 and 2000, after the TTCs' efforts in the mid and late 1980s [26]. In the former Soviet Union (FSU), from 1991 to 2000, per capita cigarette consumption increased by 51% in countries where TTCs invested resources to drive demand [27].

As of January 2012, the World Health Organization Framework Convention on Tobacco Control (FCTC) has

been ratified by 174 countries and other parties [28] to address the global tobacco epidemic. Indeed, low and middle-income countries were important in the development and enactment of the FCTC, often overcoming opposition from the United States, China, Japan, and Germany [29]. However, effective implementation of the FCTC and the UN's declaration on the prevention and control of NCDs [2] requires understanding the TTC's tactics in low and middle-income countries.

Methods

We systemically reviewed published research on tobacco industry activities to promote tobacco use and oppose tobacco-control policies in low and middle-income countries, including papers analyzing previously secret tobacco industry documents. These documents have been made available in the United States as a result of litigation against the tobacco industry (freely accessible at the Legacy Tobacco Documents Library, <http://legacy.library.ucsf.edu>). We reviewed a bibliography of papers based on industry documents (<http://www.library.ucsf.edu/tobacco/docsbiblio>), searched PubMed and Google Scholar beginning with “tobacco industry” and “activities/strategies/tactics” between September and November 2011, and reviewed the bibliographies of the papers we located to identify all studies describing tobacco industry tactics in low and middle-income countries; the initial search yielded 342 papers. We excluded studies focusing on industry practices in high-income countries and those on topics unrelated to tobacco industry strategies. A total of 114 studies (74 papers analyzing industry internal documents and 40 papers analyzing other data sources) met inclusion criteria for this review.

We organized the research by four themes (Table 1) adapted from a previous study [30] of TTCs' strategies in Southeast Asia—economic activity; marketing, promoting, and advertising; political activity; and deceptive/manipulative activity. The TTCs' practices were classified into 11 sub-themes: foreign investment, smuggling, direct and indirect tactics, targeting particular populations, introducing new types of cigarette, lobbying, voluntary self-regulatory code, corporate social responsibility (CSR), opposing smoke-free laws, using third-party allies, and litigation.

Economic activity

The TTCs have used direct investment and smuggling [31, 32] to gain a foothold in new markets. In countries where governments welcomed foreign investment and treated the tobacco industry as a source of economic development, the

Table 1 Examples of transnational tobacco company practices in low and middle-income countries and comparison with high-income countries

Theme	Sub-theme	Country or region	Practice in low and middle-income country	Practice in high-income country
Economic activity	Foreign investment	Moldova (since 1992 [33])	The TTCs have used direct investment to gain a foothold in new markets	
		Hungary (1992 [37]) The former Soviet Union (FSU) (1990s [11, 34, 35]) Uzbekistan (1990s [36]) China (since 1975 [32]) Indonesia (1908 and 1971 [21]) Philippine (1995 [40]) Vietnam (1990s [14]) Cambodia (1990s [39])	In countries where governments welcomed foreign investment and treated the tobacco business as a source of economic development, joint venture agreements and leaf development with monopolies or local tobacco companies were selected as market-softening techniques Once the local tobacco companies were dependent on foreign capital and technology, the TTCs acquired the local tobacco companies	
Marketing, promoting and advertising	Smuggling	Turkey (until 1983 [45])	Smuggling has been an important component of TTCs' market entry tactics	
		Lebanon (since 1970 [95])		
		China (1980s–1990s [16])	The smuggled cigarettes were initially used as a way to circumvent restricted access to the closed markets	
		Africa (1980s [42])	Smuggling was then used to build market presence	
		Ghana (1970s [96])	Through smuggling, the TTCs gained leverage in negotiating with the government for tax concessions, joint venture agreements, or licensing agreements	
		Asia (1980s–1990s [44])		
		Taiwan (Until 1987 [97, 98])		
		Vietnam (1990s [14])		
		FSU (1990s [34])		
		Eastern Europe (1990s [99])		
		Former Soviet Union (1990s [11, 34])		
		Africa (1990–2001 [100])		
Asia (1980s–1990s [13])				
China (1980–1999 [24])				
Taiwan (1990s [18])				
Thailand (1990s [19], 1990s [101])				
Malaysia (1980s–1990s [20])				
Philippine (1970s–1990s [40])				
Cambodia (1990s [39])				
South Korea (1990s [12])				
Argentina (1995–2004 [102])				
Argentina (1990s [15])				
Moldova (year unknown [33])				
Turkey (Until 1983 [45])				
China (1990s [106])				
South Korea (1990s [12])				
Argentina (1995–2004 [102])				
Taiwan (1990s [17])				
Indonesia (1990s [21])				
South Korea (1990s [12])				
China (2000s [50])				
	Targeting a particular population		To create demand for their brands, TTCs initially conducted market research and selected the particular target population Young adults, women and youths were targeted	The tobacco industry conducted careful and extensive research to target youth, concerned smokers, older smokers, and particular immigrants, including Asian American (USA [46, 47])
	Developing/introducing new types of cigarette		"Mild", "light", and "low-tar" cigarettes were introduced to encourage women, youth, and those with health concerns to smoke	Cigarettes with candylike flavors were introduced (USA [49]) Through "low tar" or "light" cigarettes, the industry contributed to the illusion that such cigarettes were "safer" (USA [48])

Table 1 continued

Theme	Sub-theme	Country or region	Practice in low and middle-income country	Practice in high-income country
Political activity	Lobbying	Argentina (1980s–1990s [69, 92, 107])	Lobbying was used to achieve market access, to block or delay implementation of strong tobacco-control regulations, to keep tobacco tax low, and to manipulate the policymaking process The TTCs used extensive high-level political connections to enter new markets	The tobacco industry directly and indirectly lobbied individual policymakers and political parties to influence the legislative agenda on tobacco control(USA [51], EU [52], Australia [53]) The TTCs and local tobacco companies collaborated for lobbying activity (Nordic countries [54])
		Moldova (1990s [33])		
		Hungary (1990s [108, 109])		
		Turkey (1990s [45])		
		Uzbekistan (1994 [55])		
		Kenya (1980s–1990s [56])		
		China (1990s [44, 110]),		
		Hong Kong (1973–1997 [111])		
		Hungary (1990s [109])		
		Costa Rica (2008 [71])		
Voluntary self-regulatory code	Voluntary self-regulatory code	Argentina (1977 [69])	Voluntary self-regulatory advertising codes have been a key component the TTCs have used in low and middle-income countries to delay or prevent legislation or regulation for tobacco marketing and promotion At the same time that the TTCs promote the code, they often break it	The TTCs proposed voluntary self-regulatory codes to delay or obviate the need for legislation or regulation on tobacco control (USA [57, 58, 62, 63], EU [52], WHO FCTC [68], UK [64], Austria [67], Japan [23, 66], Germany [65])
		Lebanon (1996 [70])		
		Uzbekistan (1994 [55], 1993–1997 [112])		
		Malaysia (1980s [72])		
		Costa Rica (2000 [71])		
		Malaysia (1992 [113])		
		Malawi (year unknown [82])		
		Africa (2000s [81])		
		Latin America (Since 1990s [75])		
		Costa Rica paper (1997 [71])		
Corporate social responsibility (CSR)	Corporate social responsibility (CSR)	Malaysia (1992 [113])	The TTCs' CSR programs aim at re-establishing the industry's credibility, achieving a more favorable public opinion, and building goodwill to protect their power to influence policymaking Youth smoking prevention programs were adopted by the TTCs to shift public attention away from the fact that the industry's marketing activities promoted youth smoking On the surface, the industry promoted programs to discourage youth smoking, however, the actual purpose of the tactic was to advertise the tobacco industry themselves as a responsible corporate, in turn to undermine effective tobacco-control intervention	The TTCs used CSR programs not only to improve their public image, but also to gain access to politicians, influence agendas, and shape public health policy to best suit their own interests (UK [114], USA [76–80]) Youth smoking prevention programs have long been used as part of the tobacco industry's CSR programs to argue that government programs to reduce tobacco use are unnecessary and to appeal that the industry makes efforts to prevent children from smoking (USA [58–61], Australia [73])
		Malawi (year unknown [82])		
		Africa (2000s [81])		
		Latin America (Since 1990s [75])		
		Costa Rica paper (1997 [71])		
		Malaysia (1992 [113])		
		Malawi (year unknown [82])		
		Africa (2000s [81])		
		Latin America (Since 1990s [75])		
		Costa Rica paper (1997 [71])		

Table 1 continued

Theme	Sub-theme	Country or region	Practice in low and middle-income country	Practice in high-income country
Deceptive/ manipulative activity	Opposing smoke-free laws	Latin America (1990s [86])	The TTCs expanded their international ETS consultants programs to Europe, Asia, and Latin America where they foresaw SHS restrictions to influence policy makers, media, and the public	To counter the spread of health concern on SHS and to delay smoke-free laws, the TTCs formed ICOSI/INFOTAB to build a global network of tobacco companies and to counter the increasingly effective political and communications efforts of tobacco control advocates (USA [83])
		Argentina (1980s–1990s [69, 92])		
		Asia (since 1987 [85], 1990s [115], 1996–2001 [88])	PM’s “Latin Project” in Latin America and “ARTIST” in Asia were part of the international ETS consultants programs to shift public attention away from tobacco issues to other environmental issues and manipulate scientific evidence on smoking and SHS	The TTCs developed international ETS consultants program, which recruited scientists and consultants, and funded research to counter scientific claims regarding SHS, to protect the industry from international and regional threats of smoking restrictions (USA [83, 84, 119, 120], Germany [121], EU [87])
	Using third-party allies	Costa Rica (1990s [71]) Mexico (2000s [93]) Latin America (1990s [92]) Argentina (since 1970s [69])	To counter smoke-free laws and other tobacco-control policies, the tobacco industry collaborated with the hospitality industry and smokers’ rights groups to argue that the laws and policies ruined small businesses	The tobacco industry has many business allies and third parties to block implementation of effective tobacco-control legislation and programs. Hospitality, gambling, and transport have been close allies with the tobacco industry (USA [89–91])
	Litigation	Argentina (1979–2003 [122])	PM introduced Courtesy of Choice, the international version of PM’s US Accommodation Programs to prevent meaningful smoke-free laws in low and middle-income countries	The industry often threatens or sues local communities in the USA when they are the first place to enact local tobacco control legislation in a given state. The industry uses arguments of equal protection and implied preemption (USA, [123])
			The tobacco industry closely monitored development of litigation, hired legal consultants from prestigious international and Argentinian law firms, developed litigation prevention research programs, monitored legal academic congresses, controlled the development of new product liability legislation, contacted important legal authors to obtain favorable opinions	

TTCs used direct investment in the form of joint venture agreements or leaf development agreements with state monopolies or local tobacco companies as market-softening techniques [10, 31]. Once the local tobacco companies were dependent on foreign capital and technology, the TTCs acquired the local companies. These tactics enabled TTCs to gain access to the FSU countries in the early 1990s, including Russia, Uzbekistan, and Moldova [11, 33–38], Indonesia in 1971 [21], Cambodia in the 1990s [39], and The Philippines in 1995 [40].

The International Monetary Fund (IMF) often facilitated this foreign investment. The IMF pressured several countries to privatize their state-owned (often monopoly) tobacco companies by making privatization a prerequisite for loans [41]. For example, in 1999 the IMF promised to loan \$35 million to the Moldovan government on the condition of privatization of the wine and tobacco sectors. There was strong public and political sentiment against privatizing the tobacco industry, so the Moldovan parliament rejected privatization and the IMF suspended its loan to Moldova. In 2000, in response to a deteriorating economic situation, the parliament capitulated to the IMF pressure and passed a law to privatize the tobacco monopolies [41].

Smuggling has also been an important component of the tobacco industry's global market expansion. The TTCs' initially used smuggling as a way of circumventing restricted access to closed markets. For example, in Malawi and Uganda, where cigarette imports were not permitted, contraband was the only route for BAT to enter these markets [42]. Since the 1980s, BAT has used illegal channels [42] to supply its brands to the African tobacco markets and attempted to gain leverage in negotiations with governments for improved market access and foreign investment [42]. Once established, the TTCs gained leverage in negotiating with the government for tax concessions, joint venture agreements, or licensing agreements [16, 38, 43].

BAT struggled to access the Chinese market through a joint venture agreement with the Chinese state-owned tobacco company, the Chinese National Tobacco Company (CNTC), after reopening of the market after the 1975 Cultural Revolution [16]. However, such efforts failed because of bureaucratic complexity and restrictions on foreign investment in China [44]. After this failure, BAT intensively increased smuggling of its brands in the early 1980s, while the CNTC severely limited legal imports of foreign cigarettes [16]. By 1996 the CNTC estimated that 99% of the foreign brand cigarettes sold in China were smuggled [44]. Smuggling has also been used by the TTCs to create demand for their brands. For example, in 1983, before market liberalization, PM smuggled Marlboro into the Turkish market. The cheap, tax-free contraband Marlboros were distributed to bars and discos targeting Turkish students and women [45].

Marketing, promotion and advertising

The TTCs' formal entrance into new markets (as opposed to informal entry through smuggling) is typically accompanied by detailed market research and sophisticated advertising and promotional activities to create demand for their products. These tactics include aggressive advertising and promotion targeting particular population groups, including young adults and women, and the introduction of "mild", "light", and "low-tar" cigarettes.

In countries without restrictive tobacco-control policies, because of political instability or corruption, for example the FSU [34], The Philippines [40], Taiwan [18], and Cambodia [39], TTCs used direct marketing tactics. BAT advertised its brands on street billboards in the FSU [34]. PM promoted their brands across all media in The Philippines, making cigarettes their eighth largest advertiser [40]. By contrast, in countries where the governments restricted tobacco marketing in broadcast media, for example Thailand, South Korea, and Malaysia, TTCs used indirect marketing strategies, for example sponsorships and trademark diversification (e.g. brand stretching, use of tobacco brands on non-tobacco products, for example clothing and footwear). In Thailand, which has some of the world's strongest tobacco-control legislation, BAT sponsored sports events to build awareness of its brand among youth and advertised in imported magazines and in television and radio broadcasts produced outside the country but that could be accessed in Thailand [19]. Similarly, in 1982 when advertising restrictions on direct advertising were imposed in Malaysia, TTCs sponsored popular music concerts, movies, and sports appealing to young people [20].

As in high-income countries [46, 47], TTCs targeted particular populations to create demand. In Argentina, TTCs used psychographic population segmentation to develop youth-focused advertising strategies [15]. BAT targeted opinion leaders among young adult urban smokers to promote expensive international filter brands in Moldova [33]. In China, BAT image advertising targeting young adults and women suggested that imported brands reflected youthful, active, and western lifestyles [16]. In addition, BAT and PM promoted their expensive cigarette brands in China as gifts during the Chinese New Year and Mid-Autumn Festival to tie the brands into values such as friendship and to use them to build relationships and social status [24].

As in high-income countries [48, 49], the tobacco industry introduced new "mild", "light", and "low-tar" cigarettes to target women, youth, and health-concerned smokers. In Asian countries including South Korea and Taiwan, where the prevalence of smoking among women in the 1980s was low, the industry introduced new "light", "low-tar", and "mild" brands to the markets to appeal to women [12, 17, 21]. In China, as tobacco-related health

concerns grew in the 2000s, the CNTC followed the TTCs' lead and started promoting "low-tar" cigarettes [50].

Political activity

As in high-income countries [51–54], low and middle-income country political activity has been key to protecting the TTCs' interests by producing a favorable policy environment that would allow them to maximize their profits by limiting marketing restrictions and taxes, maintaining the social acceptability of tobacco use, and preventing or countering tobacco-control efforts. The TTCs worked politically through lobbying, offering voluntary self-regulatory codes, and mounting corporate social responsibility public relations campaigns.

Political activity is also important for TTC efforts to enter new markets by investing and smuggling. In Uzbekistan, in 1994 the domestic tobacco company was privatized with a BAT deal, enabling BAT to establish a production monopoly. During this deal, the Ministry of Health issued a strong tobacco control decree that banned tobacco advertising and smoking in public places, and introduced health warnings on cigarette packages [55]. BAT met with key policy makers and health officials and urged withdrawal of the decree. BAT delayed completion of its financial investment until the health decree was replaced with BAT's ineffectual voluntary advertising code [55].

Kenya provides another example of by use of extensive high-level political connections to influence governments. BAT used longstanding close relationships with successive Kenyan Presidents to block tobacco-control legislation proposed by the Ministry of Health in 1999 [56]. BAT Kenya and a local tobacco company also successfully challenged tobacco-control legislation in Kenya's High Court in 2006 [56].

As used in high-income countries, [23, 57–67] and in efforts to block the development of the FCTC [68], weak and unenforceable voluntary self-regulatory advertising codes have been a key strategy TTCs have used in low and middle-income countries to delay or prevent policies restricting tobacco marketing and promotion. For example, TTCs established voluntary self-regulation of their marketing activities in Argentina [69], Lebanon [70], Uzbekistan [55], Costa Rica [71] and Malaysia [72]. In Malaysia in 1977, the tobacco industry attempted to convince the Deputy Prime Minister and the Minister of Trade and Industry that the industry's voluntary self-regulatory code could replace proposed tobacco advertising policies, and successfully delayed advertising restrictions for over five years [72]. At the same time that the TTCs promote these codes, they often break them, as they did targeting youth with psychographic segmentation in Argentina [15], or in

Lebanon by using indirect sponsorship and brand stretching, which includes the use of tobacco brand names on non-tobacco products [70].

The TTCs complement their voluntary self-regulation codes with so-called "youth smoking prevention" programs. These programs were used in the United States [58, 59] and Australia [73] to argue that government programs to reduce tobacco use are unnecessary. In the United States, exposure to PM's youth smoking prevention program was associated with lower perceived harm of smoking, stronger approval of smoking, and stronger intentions to smoke in the future among high school students [74]. These programs were also used as part of the tobacco industry's corporate social responsibility program, as exemplified in Project Cerberus, an effort led by BAT (and including PMI and JTI) that combined the industry's voluntary self-regulation codes with youth smoking prevention programs in an unsuccessful effort to derail the FCTC between 1999 and 2001 [68]. Although TTCs failed to stop the FCTC, they still continued their youth smoking prevention programs throughout the world.

For example, youth smoking prevention programs were carried out by BAT and PMI in Costa Rica [71]. In 1997, BAT and PMI sponsored a program with retailers to help prevent the sale of cigarettes to minors and, in effect, shift public attention away from the fact that the industry's marketing activities promoted youth smoking [71]. Similarly, in Latin America, in the early 1990s, PMI launched youth smoking prevention programs with non-profit educational organizations and with education and health ministries to reduce the increased pressure from tobacco-control activities in Latin America. Ostensibly, the industry promoted a program to discourage youth smoking, however, these activities helped advertise the tobacco industry as responsible corporate citizens, enabling them to undermine effective tobacco control intervention required by the FCTC [75].

After the announcement that the US Food and Drug Administration (FDA) was considering regulating nicotine as a drug and cigarettes as drug-delivery devices, and the initiation of tobacco litigation in multiple states during the early to mid 1990s, PM recognized that the tobacco industry was losing broad social and political credibility. In response, PM began a broad effort to propose CSR in an effort to re-establish its credibility as a political and commercial organization, and to build goodwill to protect its power to influence policymaking [76–81].

Similarly, in 2000, BAT, joined by PM, founded the Eliminating Child Labor in Tobacco Growing Foundation (ECLT) as a CSR campaign to distract public and policy makers attention from how the tobacco industry profits from low wages, child labor, and cheap tobacco [82]. ECLT's initial projects in Malawi (including building

schools and wells) were budgeted at US \$2.3 million over 4 years while the tobacco companies received nearly US \$40 million dollars in economic benefit by use of unpaid child labor in Malawi during the same period. In response to complaints that the tobacco industry's growing practices harmed the environment, broader CSR activities expanded to include tree planting and other environmental actions. The TTCs' expenditure in these areas, however, was dwarfed by the economic benefits they received through unpaid child labor and tobacco-related deforestation [81]. In addition, in 2004, PM launched "Good Agricultural Practices", a CSR program encouraging tobacco farmers to participate in reducing tobacco-related environmental harm to water and land. However, the Good Agriculture Practices program helped to undermine the argument of crop diversification and alternative livelihoods for tobacco farmers as required by FCTC Articles 17 and 18, which recommend parties build up rural development programs that cover all aspects of alternatives to tobacco growing, including economic viability and environmental protection [81].

Deceptive/manipulative activity

The tobacco industry has long understood that broad acceptance of the scientific evidence that secondhand smoke (SHS) is harmful to health undermines its ability to maintain political support for a pro-tobacco industry environment.

Beginning in the 1970s, as Nordic countries started adopting advanced tobacco-control policies, PM and BAT started to recruit scientists and commission research to undermine the science related to the health dangers of SHS and in effect, oppose tobacco-control policies. This cooperation successfully delayed smoke-free indoor air laws and undermined advertising bans in the region [54].

Led by the US TTCs, and modeled on the US domestic lobbying organization, the Tobacco Institute, in 1977 the seven major TTCs formed the International Committee on Smoking Issues (ICOSI) to build a global network of regional and national manufacturing associations that would maintain a common front on scientific and political issues and help counter the increasingly effective political and communication efforts of tobacco control advocates [83]. Renamed the International Tobacco Information Centre (INFOTAB) in 1981; it had 69 members operating in 57 countries by 1984. INFOTAB provided "action kits" to members to counter local tobacco-control regulations and maintain tobacco-friendly political and social environments. In 1992, the TTCs replaced INFOTAB with two organizations, the Tobacco Documentation Centre and Agro-Tobacco Services. The former continued

INFOTAB's activities and the latter supported the International Tobacco Growers Association (ITGA) which supported the TTCs' lobbying activities arguing the economic importance of tobacco in low and middle-income countries where it is grown [83].

To slow acceptance of the scientific evidence on the dangers of SHS that were driving legislation and regulation around the world, the TTCs secretly recruited scientists and physicians from around the world and funded research without publicly disclosing the source of funding to counter scientific claims regarding SHS [84–86]. The TTCs used the US-based law firm Covington & Burling to develop and manage an "International ETS (environmental tobacco smoke) Consultants Program" that operated in Europe, Asia, and Latin America beginning in 1987 to protect the industry from international threats of smoking restrictions [84–86]. The consultants provided research that sought to demonstrate that smoking in public places and workplaces did not cause health problems, that poor indoor air quality was because of problems other than SHS, and that improved ventilation would eliminate any problems that might be caused by SHS [86]. The indoor air research was conducted in Europe, Latin America, and Asia and successfully delayed the adoption of smoke-free laws [85].

Beginning in 1988, the WHO International Agency for Research on Cancer (IARC) started conducting the largest European epidemiological study of lung cancer and SHS, PM was concerned that IARC's study would lead to increased smoke-free laws around the world [87]. PM organized an industry-wide "IARC Task Force" to gather intelligence about and develop a public relations strategy to minimize the impact of the report. They tried to prevent funding of the study and to place consultants friendly to the tobacco industry on the IARC working group. When IARC's findings were published in 1998, demonstrating a 16% increase in the risk of lung cancer associated with secondhand smoke exposure, BAT successfully misrepresented the results in the media as demonstrating no increase in risk [87].

In 1996, Roger Walk, a research scientist from PM who led preparations for an industry response in Asia to the anticipated IARC study, held a meeting in Hong Kong and created the Asian Regional Tobacco Industry Scientists Team (ARTIST) with the region's tobacco companies to organize its Asian regional interests. By 2001 the member countries of ARTIST grew to include state monopolies from South Korea, China, Thailand, and Taiwan. ARTIST has become a forum for PM's scientific and regulatory agenda and has worked to foster relationships with the external scientific and public health community and with policy makers in Asia so that the Asian companies would maintain a unified front with the Western TTCs [88].

As they did in the United States and other high-income countries [89–91], the TTCs partnered third-party allies to

maintain the social acceptability of smoking in low and middle-income countries. In the US, they promoted a voluntary “Accommodation Program” with smoking and no-smoking sections and ventilation systems, as opposed to simply enacting laws making restaurants smoke-free [89]. These efforts were subsequently directed through restaurant trade associations, which acted as “third parties” to oppose legislation and allowed the TTCs to remain out of the public eye (while managing and financing the effort). In the mid 1990s, PM expanded worldwide its US Accommodation Program (rebranded as Courtesy of Choice) in several European, Latin American, and Asian countries by funding the International Hotel Association and local hospitality associations [89, 92]. For example, in 1998, in the public debate in Costa Rica, the hospitality industry, in cooperation with PMI, argued that Courtesy of Choice made good business sense. As a result of the Courtesy of Choice Program, the bill, which proposed to make all workplaces and public places 100% smoke-free, was defeated in 2000 [71].

Conclusions

Although the TTCs use of economic strategies to enter low and middle-income countries (investment and smuggling) was different from their economic strategies in high-income countries, their marketing, political, and manipulative activities were similar. However, because of less stable and less developed political systems and economic situations, the tobacco industry’s practices in low and middle-income countries have been less controlled and monitored. Given this situation, all the FCTC provisions including 100% smoke-free environments, elimination of tobacco advertising, pictorial health-warning labels on cigarette packages, and an increase of cigarette taxes should be urgently implemented in low and middle-income countries.

Targeting particular populations and introducing new products are global strategies used both in high-income [46, 47] and low and middle-income countries to target women and young people. “Mild” and “light” cigarettes have been introduced in both low and middle-income and high-income countries to encourage women and youths to begin smoking, and to encourage older smokers with health concerns to continue smoking [12, 17, 50]. Similar to high-income countries [51–54], the tobacco industry uses lobbying, promotion of weak unenforceable voluntary self-regulatory codes, and CSR campaigns to undermine the introduction or enforcement of tobacco-control efforts and to maintain the social acceptability of smoking. To counter smoke-free laws in high-income and low and middle-income countries, the industry similarly recruited and funded local scientists and consultants.

It is also crucial for effective tobacco control that governments in low and middle-income countries understand the importance of avoiding interaction with the tobacco industry. Costa Rica is a good example. In 2008, the Costa Rican government and non-government anti-tobacco organizations worked together to implement all the FCTC provisions. After this move, PMI and BAT responded aggressively to counter the new tobacco control bill; PMI attempted to convince the government that further smoking restrictions were unnecessary, citing its voluntary self-regulatory code and youth smoking prevention program. BAT claimed that smoke-free laws resulted in economic loss for the hospitality industry. In addition, in 2010, the industry met the Health Ministry. Although the Health Ministry denied influence of the tobacco industry on their decision, the strong tobacco control bill was weakened to allow designated smoking places and reduce pictorial coverage of cigarette packaging from 70 to 30%. The bill was still pending in August 2011 [71].

By contrast, Mexico City provides a successful story of reinforcement of tobacco control despite tobacco industry interference. In 2008, policymakers in Mexico City made efforts to implement a 100% smoke-free law. The tobacco industry attempted to block the implementation of the new regulation by utilizing the hospitality sector and promoting the passage of a federal law that required designated smoking areas. However, strong tobacco-control advocacy activities and increased public support for the smoke-free law led to successful implementation of the new law in Mexico City [93]. It is important that public health advocates demand governments do not work with the industry and also provide information about the tobacco industry’s practices and their actual aims, discussed above, to the media and the public.

This study has two limitations. First, given that most of the papers reviewed were based on analyses of tobacco industry documents, there are associated limitations similar to those of the tobacco industry document database. Industry documents made publicly available may not represent all records of the industry. Second, we were limited to English-language publications, so there may be publicly available information written in other languages that were not included in this review paper.

The FCTC provides a policy framework for countering tobacco industry pressures in low and middle-income countries [94]. In particular, Article 5.3 that requires that “in setting and implementing their public health policies with respect to tobacco control, parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law,” is particularly important for low and middle-income countries. The guidelines, which seek to limit tobacco industry interference in tobacco-control policymaking, recommend several important activities to governments:

- 1 raise awareness of industry interference with tobacco-control policies;
- 2 limit interactions with the industry;
- 3 reject partnership with the industry;
- 4 avoid conflicts of interest;
- 5 require information provided by the industry to be transparent and accurate;
- 6 demoralize and regulate the industry's CSR activities; and
- 7 do not give preferential treatment to the industry.

NCDs are now the global development agenda to save millions of lives around the world, particularly in low and middle-income countries. Tobacco control is the first priority intervention to solve the NCD crisis. Realizing this potential, however, will require that governments, health professionals, and global communities anticipate and counter the predictable opposition from the tobacco industry. The long experience from high-income countries provides strong guidance on what to expect and how to counter industry interference.

Acknowledgments This work was supported by the Hellmann Family Fund and National Cancer Institute grant CA-87472. The funding agencies played no role in the conduct of the research or preparation of the paper.

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