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Social disruption caused by tobacco growing

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“Tobacco and cigarettes are not just a health concern. It’s also a matter of child labor and child mortality. It’s a matter of underdeveloped economies and poverty. It’s a matter of the cynical behavior of the tobacco industry.”¹

“[It is] not a mercenary act to try to make money out of other people's misery. What we're offering is a natural product.”²

Background

Tobacco farming involves severe, arguably irreversible costs to farmers and their families. Some of these costs of tobacco farming are child labor, bonded labor and environmental degradation, all leading to worsen and perpetuate the conditions of poverty of the farmers (Figure 1). Men, women and children who cultivate tobacco experience long hours of stoop labor, harassment in work activities, abject poverty, staggering debt, exposure to nicotine and pesticides, and poor health.³ Tobacco farming costs increase poverty and economic underdevelopment of individual farmers as well as families, communities and countries. Tobacco growing developing countries, particularly developing countries are vulnerable to child labor and deforestation.

Tobacco farming in developing countries occurs in remote rural areas with polluted water sources and nonexistent health facilities. From 1970 to 2000, tobacco leaf production decreased 36% in developed countries but more than doubled in developing countries. Developing countries produce 90% of the world’s tobacco leaf.⁴ Tobacco occupies 3.8 million hectares of global land, with a 1% increase each year.⁵ Tobacco companies benefit from low cost tobacco in developing countries and the lack of or inadequate enforcement of social, health and environmental laws in developing countries.^{5,6}



Figure 1. Images of the social, economic, and environmental consequences of tobacco farming in Malawi and other developing countries are strong counter messages to imagery in tobacco industry corporate responsibility schemes that promote the benefits of tobacco farming and ethical practices of tobacco companies. Parents send children as young as five years old to tobacco fields instead of school, preventing children from attaining an education (left). Inflated costs for seeds and fertilizers and low tobacco prices paid by global tobacco companies contribute to farmer indebtedness to farm landlords and tobacco companies (second left). Tobacco farmers and environments are vulnerable to poisoning from pesticides and fertilizers (third left). The image of tobacco-related deforestation informs viewers that tobacco destroys land and aggravates food insecurity through the farming of tobacco instead of less harmful export crops or food crops (fourth left). Photo credits: Marty Otañez, 2003

Communities and countries experiencing poverty, high unemployment, and economic reliance on tobacco growing are vulnerable to predatory tobacco industry behaviour. This analysis presents a cross-national survey of social disruption in tobacco farming to illustrate the association between tobacco companies and tobacco-related child labor, poverty and environmental destruction. The health risks of tobacco farming are beyond the scope of the study. Data on social disruption in tobacco farming was obtained through newspaper stories, published and unpublished reports, scholarly literature, documentary films, and tobacco industry publications such as annual reports and websites. The analysis shows that in all World Health Organization regions (Eastern Mediterranean, Africa, Europe, the Americas, South East Asia and Western Pacific) tobacco farming involves child labor and deforestation as well as tobacco industry behaviour promoting disruption in social and environmental life in tobacco farming communities. Tobacco companies generate huge externalities forcing farmers and consumers to pay the costs and concealing the actual cost of tobacco leaf and other tobacco products.⁷

Tobacco Growing and Poverty

Tobacco growing has detrimental effects on poverty and development.⁸⁻¹¹ Developing countries that experienced an expansion of tobacco growing in the 1970s witness economically active people turning to tobacco growing and land transformed into tobacco farms, diverting valuable human and environmental resources. Tobacco jobs characterized by unfair contract arrangements, bonded labor, and child labor push vulnerable, primarily rural, populations deeper into economic disenfranchisement. Tobacco-related deforestation and pesticide poisoning contribute to the cycle of poverty and health insecurity of tobacco farmers. Poverty related to tobacco growing is compounded by rates of smoking of tobacco farmers that are higher than people who are not tobacco farmers,¹² putting added pressure on weak health care systems in tobacco growing developing countries from the eventual appearance of tobacco-related death and disease.

Tobacco farming is labor intensive. Each harvest requires 200 days of work per person per year, nine times as much work as in the production of beans, for example.¹³ One tobacco farmer may tend up to 400,000 individual leaves in a nine month growing season.¹⁴ Since casual agricultural workers are nearly impossible to find, farmers are forced to use their families to help them cultivate and perform other physically demanding tasks in the fields. Tobacco farmers have little or not time and land to grow food or non-tobacco cash crops. Ogaya Bade, a tobacco farmer for more than 10 years in Kenya, explained the difficulties of tobacco growing and its impact on food crops, when he said, "To get something out of this crop one has to dedicate all his time for the proper management of the crop, otherwise you will get nothing," and experience perpetual famine, and have no time to produce food crops.¹⁵ In Kenya, 80% actually lose money from growing tobacco.¹⁶ In Malawi, where tobacco accounts for 70% of the country's foreign

earnings),¹⁷ people eat fried mice, corn husks, and poisonous plant roots to survive during frequent maize shortages while tobacco exports remain uninterrupted.¹⁸⁻²⁰

Contractual Arrangements

Tobacco farmers sell their crop at auction or on a contract basis. A tobacco auction is a marketplace where buyers bid for the tobacco in open competition, in Malawi and Zimbabwe, for example. Under contract farming a tobacco farmer agrees to grow tobacco for a buyer who, in turn, provides seeds, pesticides and other inputs on loan, deducting the costs from earnings. Cigarette manufacturers such as British American Tobacco (BAT) and leaf companies such as U.S.-based Universal Corporation and Alliance One International buy tobacco directly from farmers. Two emergent patterns exist in the global tobacco farming sector: the auction system is being replaced by the contract system; and global leaf companies operate farms and contract with farmers on companies' farms in India and Brazil, for example.

Tobacco leaf selling arrangements contribute to the poverty of tobacco farmers. Tobacco farmers require unpaid labor from wives and children to meet contract requirements. Global tobacco companies through direct contract arrangements with Mexican farmers make harsh demands on farmers while contractually exonerating themselves from responsibilities for tobacco farm working and living conditions.²¹ In Nigeria, BAT requires farmers to increasingly cover production and transportation costs, leaving farmers few choices such as a strike to express their grievances.²²

Contract farming is linked with poverty in Uganda. Uganda is a world supplier of tobacco. Tobacco accounts for 3 percent of the country's export earnings (World Health Organization, 1997 #121). In Uganda over 600,000 people out of a population of 25 million derive their livelihood from tobacco.²³ 22,000 tobacco farmers are contracted to supply tobacco

directly to BAT in exchange for loans for inputs like seeds, fertilizer, and other supplies.^{24, 25}

The case of Angiepabo, a 24 year old tobacco farmer in Uganda shows the links between poverty and contract farming in Uganda. Angiepabo “sold 200 kilos of his crop to BAT. After paying the union dues and deduction of the BAT loans and offsetting the cost of the wood fuel he was left with approximately \$1.00 to carry home. Maybe my daughter or son will one day win a BAT scholarship is the answer Angiepabo gives as to why he keeps growing tobacco”²⁶

In Kenya, BAT operates contracts with tobacco farmers. The number of farmers contracted by BAT in Kenya increased by 67% from 7,000 in 1972 to 11,000 in 1991, and by 36% from 1991 to 1993.²⁷ As the number of tobacco farms increased in Kenya, the average per capita incomes decreased 67% from 1971 to 1991.²⁸ In Migori, Kenya, where BAT is based, 52% of the population suffer from chronic or acute hunger and malnutrition.¹⁶ Food production in the major tobacco-growing areas has decreased as farmers have shifted from food crops to tobacco for BAT and other companies, increasing the income vulnerability for the farmers households. According to Kenya’s Green Belt Movement, “Many of the farmers were forced to switch from producing food, most commonly maize to growing tobacco, in the case of [BAT]. Now that they can no longer grow maize for personal use, and the return on the hard labor given to BAT are extremely low, [farmers] are now unable to either produce food crops to eat or buy food due to their low returns.”²⁸

Why do tobacco farmers agree to grow the crop when farming does not have the benefits claimed for it? Debra Efroymsen, regional director of HealthBridge in Bangladesh, explained that tobacco companies offer inducements to economically disenfranchised people to grow tobacco, and that companies

make it easy to get seeds. To get loans. So it's very easy to get involved and then become in debt to the tobacco industry. We are not saying force them to not to grow tobacco. But there are a lot of people who would very much voluntarily switch. They want to stop growing, but they don't have the needed resources. They are in debt to the industry or they don't have money to buy the inputs. If someone were helping them, we would see the switch and the family would directly benefit. There is always something leftover to feed your family. If all you have in your land is tobacco and you have no money lying around to buy food, your out of luck. Your family is not eating.¹

Bonded Labor

Bonded labor, also called debt servitude, in tobacco farming exists in Brazil,^{14, 29, 30} Malawi,^{31, 32} Uganda,^{26, 33} India,³⁴⁻³⁷ and other developing countries. The United Nations Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery (1956) defines bonded labor as “the status or condition arising from a pledge by a debtor of his personal services or those of a person under his control as security for a debt if the value of those services as reasonably assessed is not applied towards the liquidation of the debt or the length and nature of those services are not respectively limited and defined.”³⁸ Bonded labor occurs in tobacco farming when a person who wants a loan but has no security to obtain a loan agrees to provide his labor or someone under his control as security to obtain a loan.³⁶ The person may be unable to repay the loan when the loan interest is too high or inflated. In some cases, the person's work is sufficient to cover the interest but not the principle. Individuals become trapped by debt when it is passed on to future generations. The International Labor Organization Convention 182 describes bonded labor as one of the worst forms of child labor. Forced child labor in the production of Ganesh bidis from Mangalore, India, prompted the U.S. Customs Department to issue a ban on the import of the Indian bidis to the U.S.³⁶

Debt servitude originates from labor arrangements between landless farmers and landholding farmers, and between farmers and tobacco companies. In the landless farmer-

landholding farmer arrangement, a landless farmer agrees to grow tobacco on land provided by the landlord. The landless farmer agrees to sell tobacco to the landlord who agrees to provide on loan inputs such as seeds, fertilizers, hoes, watering cans, and plastic sheeting. At the end of the tobacco-growing season, the landlord deducts the input prices from earnings of the farmer.

The labor arrangement is unequal and favors the landowning farmer. Prices for seeds, chemicals are often higher than retail prices, increasing the likelihood that tobacco farmers actually lose money. In Kenya 90% of tobacco farmers sign contracts without a clear understanding of the contract language, and 80% of tobacco farmers lose money.³⁹ In the contract arrangement, the landlord sets tobacco prices and the agreement is oral, making it virtually impossible for farmers to find remedies when they have been treated unfairly.

In India, 60 million children work full time and one million children are in bonded servitude.^{37, 40} Children, mostly girls, as young as 4 years old, are in bonded labor in the bidi sector, some working 10 hours a day and still attending to domestic chores and sometimes experiencing physical abuse from their employers.³⁶

In Africa, evidence of tobacco farming bonded labor exists in Nigeria, Tanzania, and Uganda. Anna White with Global Partnerships for Tobacco Control in Essential Action in Washington, D.C., reported that a tobacco farmer in Nigeria did not earn a profit in four years and explained that indebtedness to BAT prevented him from ending tobacco farming.²² In Tanzania, tobacco farmers require pesticides purchased on loan from global leaf companies, perpetuating farmers' entrapment in a cycle of poverty.²⁰ John Waluye, a Tanzanian environmental journalist, in the 2003 documentary film "Smoke Sacrifice: Blue Haze-Forest Raze," said that tobacco farmers in Tanzania are "slaves of tobacco" due to debts to U.S. leaf companies, who try to reduce the price of tobacco.²⁰ Many tobacco farmers in Uganda receive

low earnings from tobacco, experience food insecurity, and continue to grow tobacco because of debts to tobacco companies.⁴¹

Honduras and Brazil have evidence of tobacco industry bonded labor. In Honduras tobacco farm workers experienced extreme dependency and near servitude in their relationships with farm authorities.⁴² Tobacco farmers in Brazil experience debt servitude through direct contracts with global tobacco companies that manipulate leaf classification (which pushes down leaf prices) and provide farm inputs at inflated prices on loan.^{43, 44} Jauri, a tobacco farmer in Brazil, said, “Tobacco demands a lot of work, but makes you very little money. If the companies started paying more for the tobacco that would, of course, change things. If we could, we’d change business. But first we’ve got to pay our bills.”¹ Cecilia, a tobacco farmer in Brazil said, “Tobacco growing is like slave labor. It’s worse. A slave gets food and doesn’t have to go to work on an empty stomach. We suffer a lot, producing this crop.”¹

Child Labor

Child labor has existed in developed and developing countries since the early phases of development the global tobacco industry (Table 1).⁴⁵⁻⁴⁹ The tobacco sector and many other sectors such as mining, construction, and clothing use child labour. Child workers in tobacco fields face unique health hazards through exposure to tobacco, nicotine, and pesticides used during its cultivation.^{33, 50-54, 55} In tobacco growing developing societies, child labor occurs in tobacco farm work tasks such as constructing nursery beds, applying agricultural chemicals (pesticides) to seedlings, transferring seedlings to land plots, weeding, applying agricultural chemicals (pesticides and fertilizers) to tobacco plants, suckering (removing the tobacco flowers from the top of the plants to ensure growth of large leaves), harvesting, stringing, sorting, and baling. Child labor harms child health, physical development, and educational attainment as well

as undermining community and economic development by harming future productive members of society.⁵⁶⁻⁵⁸

Table 1. Child Labor in Tobacco Farming in World Health Organization Regions	
Region	Facts
Eastern Mediterranean	Lebanon: 25,000 children work in the tobacco growing sector. ⁵⁹
Africa	<p>Kenya: A study of 50 farmers revealed that children are involved in tobacco growing in virtually all farms.⁶⁰</p> <p>Malawi: 78,000 children as young as 5 years old in tobacco families clear fields, harvest tobacco, and perform a range of potentially hazardous tasks.³¹</p> <p>Mozambique: A tobacco-industry funded study reported that 80% of tobacco families used their children as young as 6 years old on tobacco farms.⁶¹</p> <p>Nigeria: School age children harvest and help to cure tobacco, earning little or no money and are denied education.⁶²</p> <p>Uganda: Children from tobacco families are kept from school and sent to fields to weed, water, string and sew bunches of tobacco leaves together for drying in flue-curing barns.⁴¹</p> <p>Tanzania: Children who weed and harvest tobacco experience nausea, vomiting and faintness due to nicotine poisoning as well as spine injuries from heavy lifting and repetitive strains.⁵⁷</p> <p>Zimbabwe: Children involved in weeding and planting tobacco suffer health problems from the use of the pesticide ethylene dibromide.⁶</p> <p>Zambia: A tobacco industry funded study reported that over 6,000 children work on tobacco farms and performs tasks such as lifting heavy loads and working excessively long hours.⁶³</p>
European	<p>Kazakhstan: Children as young as six years old work in tobacco fields and experience malnutrition inadequate rest time, and little or no access to health care.^{64, 65}</p> <p>Kyrgyzstan: Some schools have required students to harvest tobacco in fields on school grounds.⁶⁶</p> <p>Macedonia: Child labor is a major labor requirement in the cultivation of tobacco.⁶⁷</p> <p>Moldova: Tobacco farm families rely on child labor in the tobacco production process.⁶⁸</p>
Americas	<p>Argentina: 7% of the workforce is child labor (a total of 1.9 million children between 5 and 14 work) doing tobacco harvesting and other manual labor.⁶⁹</p> <p>Brazil: 200,000 farm families cultivate tobacco and many families make their children work in fields, exposing children to toxic chemicals and nicotine.^{44, 57}</p> <p>Dominican Republic: A tobacco industry funded study reported that child laborers on tobacco farms have low performance and attendance levels in schools.⁷⁰</p> <p>Guatemala: 1.4 million children between 7 and 14 years old work, doing hazardous tasks in tobacco fields and in other sectors.⁶⁹</p> <p>Honduras: 241,000 children between 11 and 17 years old work, harvesting tobacco and performing hazardous jobs in other sectors.⁶⁹</p> <p>Mexico: In a study of 171 migrant working children in Nayarit State, Mexican researchers reported that 56 children (33%) were exposed to unacceptable levels of pesticides.²¹</p> <p>Nicaragua: 18% of the workforce is child labor, harvesting tobacco and performing hazardous jobs in other sectors.⁶⁹</p>

	United States: A 15 year old was fatally wounded in a tobacco field when the rear wheel of the tractor he was driving went over the edge of a ravine and the tractor rolled and crushed him. ⁵⁶
South-East Asia	<p>Bangladesh: 82% of 6 million child laborers work in agriculture, cultivating tobacco and monitoring drying barns at night for “free” and performing hazardous tasks on other crops.^{6, 71}</p> <p>India: 225,000 children (8.4% of the total labor force) work in the bidi industry,³⁶ and suffer from poor psychosocial development and sever punishment for infractions committed while working.⁷²</p> <p>Indonesia: Child labor is common on tobacco plantations.⁶⁶ Children, mostly girls, cultivate tobacco and, if they are paid at all, earn \$0.60 a day, well below the legal minimum wage.⁵⁷</p> <p>Nepal: Children assist in tobacco cultivation on plantations.⁷³</p> <p>Thailand: Migrant children from Burma, Cambodia and Laos work in tobacco curing factories in Thailand.⁷⁴</p>
Western Pacific	<p>Cambodia: Overall, 45% of children aged 5-14 work. The majority of working children are employed in the agricultural sector, performing hazardous tasks such as stringing tobacco leaves.⁶⁶</p> <p>Fiji: In a tobacco industry funded study, researchers reported that 18% of children of tobacco farm families missed school due to harvesting, and 12% used backpack sprayers with toxic chemicals.⁷⁵</p> <p>Philippines: In a study funded by Philip Morris International, researchers reported that 16% of children plow, weed, cultivate leaf or assist adults in chemical spraying in tobacco fields.⁷⁶</p>

Child labor in tobacco farming is a human rights issue.⁷⁷ The United Nations Convention on the Rights of the Child includes principles that protect children from exploitation. 192 of 194 countries (excluding the U.S. and Somalia) have ratified the UN Convention on the Rights of the Child. The Minimum Age Convention 138 was adopted by the United Nations in 1973 to establish a minimum age at which children can work. 142 countries (but not the U.S.) have ratified Convention 138. The World Forms of Child Labor Convention 182 was adopted in 1999 and ratified by 157 countries, including the U.S. Categories of child labour to be abolished are labour performed by a child who is *under a minimum age* specified in national legislation for that kind of work, labour that jeopardizes the physical, mental or moral well-being of a child, known as *hazardous work*, and the *unconditional worst forms of child labour*, which are internationally defined as slavery, trafficking, debt bondage and other forms of forced labour, forced recruitment for use in armed conflict, prostitution and pornography, and illicit activities.⁷⁸

Tobacco-related child labor persists due to lack of enforcement mechanisms and weak national labor laws.⁶ Many cases of child labor often go unreported because tobacco farm

families fear retaliation from farm authorities or families are unfamiliar with child labor violations.¹⁸ Tobacco farmers and their families experience inadequate labor inspection services.^{79, 80} Labor inspection services, if they exist at all, are poorly funded, inadequately staffed and trained, and suffer from the lack of specialized technical advice.⁸¹

In Africa, where BAT and other tobacco companies obtain low cost tobacco, child labor exists in countries such as Malawi, Kenya, and Nigeria. In Malawi, 78,000 children as young as 5 years old in tobacco families clear fields, harvest tobacco, and perform a range of potentially hazardous tasks.³¹ A study of 50 farmers in Kenya revealed that children are involved in tobacco growing in virtually all farms.⁶⁰ In Uganda, children from tobacco families are kept from school and sent to fields to weed, water, string and sew bunches of tobacco leaves together for drying in flue-curing barns.⁴¹ In Nigeria, school age children harvest and help to cure tobacco, earning little or no money and are denied education.⁶² Tobacco industry funded studies reported that in Mozambique 80% of tobacco families used their children as young as 6 years old on tobacco farms,⁶¹ and in Zambia over 6,000 children work on tobacco farms and perform tasks such as lifting heavy loads, spraying chemicals, and working excessively long hours.⁶³

In India 225,000 children (8.4% of the total labor force) work in the bidi (tobacco) industry.³⁶ In a study in 10 blocks in Malda District in Bengal State, Indian researchers reported that 6,100 children with an average age of 10 years old perform bidi production tasks.⁸² Child workers in the bidi industry suffer from poor psychosocial development, addition to tobacco, and severe punishment for infractions committed while working.⁷² In Indonesia the majority of child work occurs in rural areas and child labor is common on tobacco plantations.⁶⁶ In a tobacco industry funded study of 100 child laborers in Indonesia, researchers reported that 78 children work in tobacco fields, 33 children experienced work related accidents, and 24 children had been

treated poorly by their parents or farm authorities.⁸³ Children, mostly girls, cultivate tobacco and, if they are paid at all, earn US\$0.60 a day, well below the legal minimum wage.⁵⁷

In the Americas, tobacco-related child labor is a problem in countries such as Mexico, Honduras, Argentina, and Brazil. In Mexico, children as young as 5 years old assist their parents in harvesting, threading and hanging tobacco leaves on tobacco plantations.^{21, 54, 55, 84} In a study of 171 migrant working children in Nayarit State, Mexico, researchers reported that 56 children (33%) were exposed to unacceptable levels of pesticides.²¹ In Honduras, children under 15 without protective clothing dip their hands and arms into bags of pesticides (e.g. Mocap) to fill small cap containers and apply pesticides to tobacco plants.⁴² In Kentucky, U.S., children as young as 10 years old drive tractors for transporting equipment, hauling crops, and loading hay on average ten days a year on farms.⁵²

Tobacco industry funded studies reported child labor in Fiji and the Philippines. Eighteen percent of children of tobacco farm families in Fiji missed school due to harvesting, and 12% of children on tobacco farms used backpack sprayers with toxic chemicals and carrying capacities heavier than believed safe.⁷⁵ In the Philippines, a study funded by Philip Morris International reported that 16% of children is engaged in economic activity and that participation of children in tobacco production is a common feature in tobacco growing regions.⁷⁶ Child workers plow, weed, cultivate leaf and assist adults in chemical spraying in tobacco fields in the Philippines.⁷⁶

In Brazil, where child labor emerged with the development of the tobacco industry,⁴⁶ 200,000 farm families cultivate tobacco and many families make their children work in fields, exposing children to toxic chemicals, nicotine, snake bites, and tobacco loads to carry that are far beyond their capacities.^{44, 57} According to the report “Brazil: Child Labor Rampant in the

Tobacco Industry,” children as young as 6 years old tie tobacco bunches.¹³ The report includes details of work performed by Daniel Lopes Lencine, a 6 year old child laborer in Porto Alegre, Brazil, who

nimbly grasps the yellow leaves of dried tobacco and in one swift, agile movement, ties them up in a bigger leaf. Tying bunches of tobacco here is dubbed "making dolls" by the tobacco workers, a term that makes it sound almost like play. This is the way the adults and children of Camaquan, a municipal area in Rio Grande do Sul, Brazil, cope with the heavy work they have performed since time immemorial. Daniel, his two little sisters and his cousin have spent the bulk of their childhood in this storeroom full of dried leaves, where the smell of tobacco is almost overwhelming.¹³

In Bangladesh, child laborers cultivate tobacco and monitor drying barns at night for “free” and performing hazardous tasks on other crops.^{6,71} Child labor is widespread on tobacco plantations where boys under 14 spray agricultural chemicals on tobacco fields and girls cut and pack tobacco leaves.⁶ Two percent of children ages 5 to 17 work in the production and selling of tobacco products in Bangladesh.⁸⁵

In the documentary film “Tobacco’s Children,”¹ Ruble, a 10 year old tobacco worker in Bangladesh, described the harmful effects of tobacco work on child health, education, nutrition, and poverty, and on tobacco families. Rubles in a discussion about his night job tending fire of a curing barn, said, “I feel unwell. It’s been like that since I was very small. If I run, my heart pounds. My heart pounds and makes a lot of noise. And I get short of breath. I have to work at night and mustn’t fall asleep.”¹ According to Aklima, Ruble’s mother, “I suffer to see my son working so hard, stoking that fire in the heat. But I have no choice. He has a lot of trouble with his chest. But we can’t afford to take him to Dhaka for medical treatment. When he comes to me and asks me to make him better, I feel powerless. How is he to manage his future?”¹ Ruble and Ratan, Ruble’s father, discuss food security and health in an excerpt from *Tobacco Children*,

Ratan: Mostly we eat rice. Aubergine, potato and fish- poor people can't afford them. So we often have chili. So how are children to be healthy? My son started school, but had to stop going. I needed his help, working with the tobacco.

Ruble: I like going to school. But we can't afford pencils and exercise books. A pencil costs 3 taka [69 taka is equivalent to US\$1.), and an exercise book 4 or 5 taka.

Ratan: We saw farmers were growing tobacco. We felt we'd like to try it, too [and] make money. But we lost lots. My family has been stoking the fire for five days, without any sleep, to dry the tobacco. We own no land. We're poor. It costs 4,000 taka to buy land. We can't cough up that kind of sum. I make 40 to 50 taka a day, and I buy rice and lentils for the children.¹

Debra Efroymsen, in a discussion of child labor, inequality, and poverty in Bangladesh, said, "These children are dying. Of course, they are dying of diarrhea. They are dying of pneumonia. They are dying of malnutrition. But really, they are dying of inequality. If you look around Dhaka, you see people driving around Lexuses, driving SUVs. You see incredible wealth. And you see children living in absolutely abominable poverty. So, the question is, how do you address the inequality? One of the answers is to prevent the tobacco industry from exploiting the poor."¹

Global Tobacco Companies and Tobacco Farming

The global tobacco farming industry is comprised of cigarette manufacturers such as BAT, Philip Morris, and Japan Tobacco, and leaf buying companies such as Universal Corporation and Alliance One International. BAT and Universal exemplify the farming dimension of the tobacco industry. In addition to being a cigarette manufacturer, BAT is the third largest global leaf buyer (Universal Corporation and Alliance One International are the first two global buyers). BAT obtains through its own vertically integrated operations 65% of its tobacco through direct contracts with 280,000 farmers in developing countries.^{86, 87} BAT uses

\$40 million worth of tobacco each week.⁸⁸ Universal Corporation sells tobacco through pre-arranged contracts with five companies that purchase 80% of Universal's leaf (Philip Morris, Japan Tobacco, Imperial Tobacco, BAT, and House of Prince [Denmark]). Universal has 56 subsidiaries, including Santa Cruz do Sul, Rio Grande do Sul, Brazil; Universal Leaf in Guntur, Andhra Pradesh, India; and Tanzania Leaf Tobacco Company in Morogoro, Tanzania. In Brazil, Tanzania, and other non-auction markets, Universal operates direct contracts with tobacco farmers. India has an auction and direct contract arrangements with tobacco farmers and Universal.

The concentration of a few powerful tobacco companies in the global economy provides companies with control over leaf prices, markets and governments. Companies have exerted monopoly and monopsony power in tobacco sectors in Bangladesh,⁸⁹ Brazil,⁴⁶ Malawi,⁹⁰ and other developing countries.^{91, 92} In Bangladesh, tobacco companies "operate like a cartel, sharing among themselves all market-related information."⁸⁹ Tobacco companies' cartel and collusion over prices at auction depresses tobacco prices in Malawi.⁹⁰ A 2005 study by Malawi's Anti-Corruption Bureau concluded that Limbe Leaf (a subsidiary of Universal Corporation) and Alliance One operate a tobacco cartel and collude with each other, reducing competition and decreasing prices at auction.⁹³ Limbe Leaf and Alliance One privately agree on percentages of tobacco that each company is supposed to buy each day at auction, cautioning each other when either of them purchased more than the percentage allotted to them.⁹³ According to Malawi's Anti-Corruption Bureau,

Those who are cautioned respond by just walking on the line of buying [at auction] pretending as if they are buying. They bid in such a way they should leave the bales to those buyers who are low in terms of percentage so that they should catch up. This behavior triggers a reduction in prices as competition is defeated.⁹³

Global tobacco companies have a monopoly on the leaf procurement system, as well as the marketing and distribution of tobacco products.³ Companies determine what price they pay farmers, and therefore the pay and conditions of field workers. This system with layers of subcontracts is designed to avoid responsibility for what happens down the tobacco leaf commodity chain. With their economic and political influence, tobacco companies could increase prices and pay living wages. Companies have decided to ignore tobacco farmer poverty and health insecurity in the drive for greater profits.³ Tobacco companies through monopoly power in leaf buying contribute to an imperfect global tobacco market,⁸⁹ where companies' buying practices defy economic laws of supply and demand.

Environmental Impact

Tobacco-related deforestation rates are close to criticality worldwide, with the exception of Europe (Table 2).⁹⁴ The production of one kilogram of tobacco consumes 20 kilograms of fire wood for curing, directly contributing to deforestation.²⁰ Between ten and forty tons of dry wood are used to cure one ton of processed tobacco.¹⁴

Region	Impact	Country
Eastern Mediterranean	Serious	Jordan, Syria
	High	Iran, Morocco, Tunisia
	Medium	Lebanon
Africa	Serious	Malawi, Zimbabwe
	High	Burundi, Tanzania
	Medium	Nigeria, Togo, Ethiopia, Uganda, Zambia
Europe	Serious	NA
	High	NA
	Medium	NA
Americas	Serious	Uruguay
	High	Argentina, Chile, Columbia, Cuba, Dominican Republic, El Salvador, Haiti, Trinidad and Tobago
	Medium	Guatemala, Honduras, Jamaica
South-East Asia	Serious	Bangladesh, Pakistan
	High	NA
	Medium	Thailand, Vietnam, Sri Lanka
Western Pacific	Serious	China, Republic of Korea
	High	Philippines
	Medium	NA
NA, Not Applicable		

Tobacco farmers use trees to process tobacco in flue-curing barns that require wood fuel. Trees are used to construct poles for hanging tobacco and barns for air drying tobacco. Tobacco families use wood for cooking and heating purposes. As forests are depleted, women and children have to travel even greater distances to obtain firewood, adding pressure to work routines focused on domestic chores and tobacco cultivation. Many families are unable to get firewood and turn to charcoal, so the charcoal producers cut even more forest. The money spent on fuel further erodes the income of families to buy food. Desperate to survive, tobacco farmers expand production into the forest.^{14, 20, 94-97}

In the article “Tobacco growers at the crossroads: an international comparison (Brazil, Tanzania, Taiwan, Germany),” geographer Helmut Geist et al. discussed deforestation in Brazil and Tanzania, where

all tobacco growers use fuelwood for curing Virginia in brick- or brick/wood-built barns. The farmers obtain 50% of the wood from their own lands and purchase another 50% (Brazil), or gather 30% of the wood from private and 70% from general lands, including forest reserves (Tanzania). In both growing zones, about a dozen tree species are used. In Brazil, eucalyptus as an exotic species is the main type of wood, either used solely (44%) or in combination with native tree species such as ovenho, ambotó, canela, angico, cavhalho and gambotó (66%). In Tanzania, indigenous trees of the miombo species (e.g., *Brachystegia speciformis*) are mainly preferred by tobacco growers. The rates of wood consumption are similar in both growing zones, i.e., 2.8 cubic m (Brazil) and 3.4 cubic m (Tanzania) of fuelwood per (one) curing charge, but total wood consumption on a farm level is higher in Tanzania (24 cubic m) than in Brazil (14 cubic m).⁵

In Pakistan, tobacco curing requires one and a half million cubic meters of wood and in the 1990s the tobacco production process accounted for 19% of the country’s deforestation. In “BAT’s Big Wheeze: The Alternative Report,” Lisa Rimmer reported that BAT inadequately addressed tobacco-related environmental destruction in Pakistan.

[In Pakistan] BAT runs its familiar eucalyptus planting schemes. The companies' efforts to replant the forests are a welcome sign that the industry recognizes the environmental costs of cultivating tobacco. But its policy of planting eucalyptus is disastrous as the plantations are an agricultural crop and bear no resemblance to the indigenous woodland habitat they replace. In arid Pakistan these thirsty trees are particularly unwelcome. Farmers believe plantations have contributed to a dramatic decrease in water levels.¹⁴

Tobacco-related deforestation destroys vegetative cover that contributes to soil erosion, flooding and famine,^{15, 98} and contributes to global warming (Box 1).^{99, 100} In Yunnan Province, one of China's most important tobacco growing areas, soil erosion is as a major environmental problem.¹⁰¹ The decline of flue-cured production is associated with a process of gradual reforestation.⁴² According to researcher Bryan Farrell, deforestation "affects the atmosphere, by raising the level of carbon dioxide emissions responsible for global warming. Scientists affiliated with the climate research group Global Canopy Program in England have reported that the 51 million acres cut down every year account for nearly 25 percent of heat-trapping."^{99, 100} In Tanzania some tobacco farmers stop farming intermittently due to changing climate conditions.⁵

**Box 1. British American Tobacco's Footprint on the Environment
(excerpt from "BAT's African Footprint," Action on Smoking and Health, London, England, April 2008)**

Malawi has one of the highest rates of deforestation in the world and tobacco growing is a contributing factor. In 1999 over 26% of Malawi's total annual deforestation was related to tobacco production.^{94, 102} In 2004 New Internationalist magazine interviewed a Kenyan tobacco farmer who spoke about the effect of deforestation in the area where he lives: "We were never told that tobacco growing would clear the forest that we relied upon for firewood. Today the land is bare. The trees were cleared to meet the high demand for wood fuel required in tobacco curing and a local stream – a major source of water - has gone dry due to deforestation."³⁹

BAT makes much of its environmental credentials and is keen to boast of reforestation projects both on its own and other CSR websites.¹⁰³ In its 2004 Social Report BAT boasts of a tree planting program of more than five million eucalyptus trees in Uganda while the Ethical Performance website notes that in BAT's reforestation programs: "Most of the species used– such as acacia, eucalyptus, ipil ipil, neem and shishu– grow quickly to provide the small farmers with a sustainable fuel source for cooking and tobacco-curing."¹⁰⁴

What the Social Report fails to mention is that eucalyptus trees lower the water table, adversely affect the nutrient cycle and soil properties, and that growing large quantities of such trees in place of indigenous trees has a monumental and anti social effect upon the natural African habitat.^{105, 106}

BAT is aware these fast growing trees do not promote biodiversity but has done little to redress the difficulties they caused. Although BAT has run a few high profile small-scale schemes such as one in Chile which returned eighty hectares of its eucalyptus plantations back to indigenous woodland, such schemes are a drop in the ocean compared to the 267,000 hectares of fast growing plantations BAT has been responsible for over the last thirty years.^{104, 107}

Tobacco Farming and Agricultural Chemicals

“Selling prices haven’t been good these last years. We hope they’ll improve. It’s complicated. Many of the farms have run up high debts. Costs are very high. Fertilizer has gone up a lot since [2006]- and all the poisons. We need lots of agro-toxics and they’re very expensive. Nothing’s easy, growing tobacco. It’s insane” (Jauri Haag, a tobacco farmer in Brazil).¹

Tobacco growing requires heavy applications of fertilizers (burley tobacco farmers in Malawi use about 1,000 kilograms of fertilizer per hectare of tobacco)¹⁰⁸, and pesticides like methyl dibromide and ethyl-bromide that harm workers and pollute drinking water. In Pakistan, “Up to 48 different chemicals are used between the processes of sowing the seed to its implantation at the sapling stage. Inadequately trained and lacking in proper gear the farmers continue to expose themselves to the dangers of chemical and pesticide exposure year after year.”¹⁴ Nicotine poisoning (“green tobacco sickness”) threatens adults and children who cultivate tobacco (Box 2).

In Mexico children aged 0-14 years who work in tobacco fields are exposed to potentially harmful and toxic amounts of pesticides (organophosphorous and carbamic). Children and adults are harmed by polluted drinking water from pesticide run-off. Most tobacco families in Mexico are financially unable to afford protective clothing and bottled drinking water.^{21, 55, 84} A federal law passed in Mexico in May 2002 requires farmers to train their workers in pesticide use. But government health workers acknowledged that the law is difficult to enforce, particularly among Mexican Indian workers, many of whom cannot read the Spanish-language warnings on the pesticides. Protective equipment, if available at all, is too expensive for most farmers who are unable to spend \$100 for a protective suit. "I guess I could use a mask, if I could find one," said Rafael Fausto, who was spraying the pesticide Acrobat, which is reported

to cause sterility and birth defects, on a tobacco field near Santiago Ixcuintla, Mexico. The tank on his back was separated from his skin only by a thin flannel shirt. "They say this one is better, but how do I know?" Fausto said of the chemical. He spoke of how he had quit spraying pesticides for four years after he was poisoned while spraying Lannate in the mid-1990s. Fausto was biding his time before he could return to Kentucky's tobacco fields, where he has worked as a migrant laborer for four years. "There, they take care of people," he said, describing an airy cabin with a kitchenette that he shared with other Mexican migrants. In Mexico, Fausto said Philip Morris, British American Tobacco and other tobacco "companies never offer to help. They just let you die."⁷⁹

Many tobacco farmers in Nyanza, Kenya, make similar health-related claims about growing tobacco for BAT Kenya. Three brothers, who, between them, have worked for BAT Kenya for 60 years, complain of poor information about the potential harm the pesticides they use might do to their health. They also complain of health problems and poor pay. The three live in a family compound close to their curing house. 'The kind of illnesses we have we can link to work,' says one. 'We have skin irritations, coughs and aching joints. During curing time the children sneeze a lot.'...The figures for children helping out on the farms are equally worrying. Only one per cent wore overalls and less than one per cent wore boots.¹⁶

In Brazil, tobacco growing destroys fauna, biodiversity, forests, soil nutrients, and water tables.⁵ Helmut Geist et al. reported that 48% of family members in tobacco growing areas in Brazil suffered chemical-related health problems such as persistent headaches and vomiting, and 42% knew of someone with physical birth defects.⁵ Maicol, a tobacco child laborer in Rio Grande do Sul, Brazil, works in close proximity to pesticides in tobacco fields. Describing the chemical spraying process, Maicol said, "You remove the bud and then pump a liquid into them

with a machine filled with 20 litres of water mixed with 250 cc of poison [tobacco pesticides]. We use the poison to kill the small tobacco insects. It feels suffocating. The smell and the poison grow in your mouth. Yes, it is dangerous. If you actually get it in your mouth you can die. It can cause poisoning. I don't use protective clothing as it's very suffocating.”¹ Davi, a 13 year old youth worker in Brazil's tobacco industry, discussed his experience with pesticides in tobacco fields when he said, “For me it's out of the question going near that poison [tobacco pesticides]. My father doesn't let me do the poison now because of what happened once. So now it's just him that does the poison. I got the poison pump and started pumping poison out, all around the field. Then I got ill. I got a stomachache. Blood came out of my mouth and nose and I peed blood. Then Mum took me to the doctor's.”¹

Box 2. Green Tobacco Sickness: Nicotine Toxicity in Wet Tobacco Fields

Green tobacco sickness (GTS) is an illness among tobacco farmers who are poisoned by nicotine through skin from nicotine absorption during cultivation and harvesting.¹⁰⁹⁻¹¹¹ Tobacco farm workers with GTS experience vomiting or nausea and dizziness or headaches during or after exposure. The cumulative seasonal exposure to nicotine is equivalent to smoking at least 180 cigarettes.¹¹⁰ Compared with adults, children may be especially vulnerable to GTS because their body size is small relative to the dose of nicotine absorbed, they lack tolerance to the effects of nicotine, and they lack knowledge about the risks of harvesting tobacco, especially after a recent rain.¹⁰⁹ Tobacco farmers and their families in developing countries have little or no access to primary care, emergency, and poison center services.¹⁰⁹ In India, farmers contracted GTS through processing raw and cured tobacco leaves.¹¹² A study of 19 tobacco farm workers in India showed that 89% of the workers suffered from GTS.¹¹² The most effective prevention measure against GTS is preventing children and adults from working in the fields altogether.¹⁰⁹

Evidence from the U.S. shows that nicotine increases body temperature and increases dehydration, creating fatal consequences in some cases.³ In 2006-7, six field workers died in tobacco fields in North Carolina, U.S., most of them due to heat stroke.³ GTS have been found in tobacco child laborers as young as 9 years old in Florida, Kentucky and North Carolina.¹⁰⁹ Three groups of child laborers are at risk for GTS: members of farm families, migrant youth laborers (primarily Latinos), and other hired local children.¹⁰⁹

Research Needs on Social Disruption Produced by Tobacco Growing Practices

Information on injuries, accidents, and fatalities of child laborers in tobacco farming needs to be collected, analyzed and disseminated. Children who work in tobacco fields experience backaches, broken bones, snake bites and other risks. Research is needed on risks

facing child workers and the influence of risks on their educational and psychological development. Researchers can apply Helmut Geist's⁵ multi-method approach of statistical analysis, meta-analytical study and (descriptive) narratives to conduct investigations of child laborers in tobacco growing developing countries.

Researchers need to devise measurements to determine soil degradation and downstream effects of pesticides and use the measurements to understand tobacco-related destruction of soil nutrients and pollution of water tables.⁵ Research findings could be used to devise workshops and study circles (focus groups) on health and pesticide education, building on worker education infrastructure already created by agricultural trade unions.⁸¹

Studies are needed on tobacco industry corporate social responsibility schemes focused on child labor and deforestation. The studies need to analyze how actual tobacco industry practices contradict corporate schemes and their messages. Research is also needed to understand farmer and consumer perceptions of "ethically produced" cigarettes and how tobacco companies through these cigarettes undermine health policy, pass on misinformation, and build public faith in tobacco.^{1, 113} Research is needed on how health policymakers and advocates view and participate in tobacco industry responsibility schemes.¹⁰⁹

Research is needed on the direct links between tobacco industry practices and child labor, deforestation, and other realities of tobacco farming that clash with farmer welfare. Do tobacco companies knowingly purchase tobacco produced with child labor? What evidence is needed to verify that tobacco companies knowingly purchase tobacco produced with child labor? To what extent do companies' policies and practices allow them to buy leaf produced with child labor? Policymakers and advocates need to examine opportunities for excluding imports of tobacco produced with child labor.

Health policymakers and tobacco control researchers need to find a balance between building corporate accountability and recognizing tobacco companies' efforts to cultivate tobacco and sell cigarettes. How should public health and tobacco control policymakers attempt to make tobacco companies accountable to child labor and other socially disruptive behavior without pressuring companies to move into more vulnerable societies where labor costs are lower and environmental standards are less restrictive or non-existent?

Tobacco farmers and tobacco companies use contract farming to meet economic needs. What are experiences of tobacco farmers who contract directly with leaf companies and cigarette manufacturers? Is there transparency in contract agreements between farmers and tobacco companies? What remedies exist for tobacco farmers who have been entrapped through debts for marked up inputs from tobacco companies? What is the impact of contract farming on social development and environmental health in tobacco farming communities? Policymakers and researchers need to pressure tobacco companies to publicize details of tobacco farming contracts, average and enforced prices for inputs, and loans granted and collected to ensure fairness in contract arrangements.

Cultural attitudes that support child labor need to be examined. What cultural attitudes, practices, and beliefs of tobacco farmers justify or sustain child labor? What cultural changes need to happen to mainstream, standardize, and normalize tobacco growing free from child labor and environmental destruction?

Research is needed on experiences of tobacco farmers and tobacco farm workers, recognizing that these economic groups have contradictory and overlapping interests. How many casual or day laborers work in the global tobacco growing sector? To what extent do farm workers use child labor and harm environments?

How can public health policymakers and tobacco control advocates overcome ambivalence toward trade unions of tobacco farmers and farm workers that promote fair and decent work? Do health policymakers, advocates, and researchers develop partnerships focused on food security and sustainable agriculture with tobacco farm worker trade unions that lend support to tobacco industry social responsibility child labor projects? To what extent do health policymakers call upon trade unions that accept tobacco industry money and promote living wages to justify their policy of accepting tobacco money?

Best Practices

The best practices for addressing tobacco-related child labor, deforestation and poverty involve equity and inclusivity. Equity in social protections such as quality education, health care, and housing and inclusivity of tobacco farmers in policy making processes and research activities in tobacco farming are major goals of best practices. The aims of best practices are to ensure prosperity and welfare of tobacco farmers, reduce the influence of tobacco companies on child labor and environmental projects, and in cases where tobacco companies financially support projects, obtain commitment from companies to support a program of outside, independent monitoring of compliance with global standards such as the International Labor Organization Convention No. 182 on the Worst Forms of Child Labor, 1999. Best practices to reduce tobacco-related child labor, deforestation and poverty are most effective when balanced with specific country experiences and policy priorities. Child labor in Malawi and child labor in India are different, requiring analyses of local contexts, stakeholder interests, and country needs. Deforestation in tobacco growing sectors in Tanzania and Brazil is not the same. The best practices below need to be examined in specific country contexts and implemented to ensure compatibility between best practices and policy environments.

The International Labor Organization, International Program on the Elimination of Child Labor (ILO-IPEC) with projects in 88 countries, including many tobacco growing countries, is an example of best practices to address child labor in tobacco growing.¹¹⁴ The Dominican Republic provides a representative case of ILO-IPEC tobacco related research.⁷⁰ In 2004, research was conducted to generate data on the extent and nature of youth and their families working in tobacco plantations in the Dominican Republic. One hundred children performing tobacco-related jobs were interviewed and fifty focus groups discussions were conducted on 35 farms. The main finding of the study is that child laborers perform poorly in school and have low attendance rates in schools because of their involvement in tobacco cultivation. The researchers recommended that non-tobacco agricultural development needs to be created and mechanisms to monitor and inspect child labor on tobacco plantations are required. The study provides a best practice approach to research that could provide basic information on the child labor problem in order to assess the extent and impact of child labor in tobacco growing countries.

ILO-IPEC works in partnership with and receives financial support from global tobacco companies through the Elimination of Child Labor in Tobacco Growing Foundation (ECLT), a tobacco industry funded group, raising the issue that tobacco control policymakers and researchers need to weigh the advantages and disadvantage of involvement with social, development, and environmental groups that collaborate with tobacco companies. Beginning in 2002, ECLT financially supported ILO-IPEC projects to reduce tobacco-related child labor in countries such as the Dominican Republic,⁷⁰ Indonesia,⁸³ and Tanzania.^{115, 116} ILO-IPEC/ECLT studies appear to document child labor problems in a reasonable manner. The major weakness of ILO-IPEC/ECLT studies is the absence of information and comment on tobacco companies'

tobacco growing practices that harm farmers, children and environments, and companies' strategies to use corporate social responsibility schemes to build faith in the tobacco and deflect criticism of tobacco companies' practices.^{31, 113} ECLT on its website states that the International Labor Organization plays an advisory role to ECLT.¹¹⁷ On ILO-IPEC website, ECLT is listed as a donor to ILO-IPEC in 2002-3 and 2006-7.¹¹⁸ ECLT through ILO involvement obtains legitimacy for ECLT and tobacco companies social responsibility schemes focused on child labor to sidestep labor exploitation in Malawi and other countries where ECLT operates child labor projects.³¹ The WHO is not a participant to ILO-IPEC.

Industry funded child labor projects create a unique problem for health policymakers and tobacco control researchers that support WHO's Framework Convention on Tobacco Control. Involvement of health policymakers and researchers in ILO-IPEC/ECLT projects could enhance legitimacy of tobacco industry efforts to promote goodwill and build public faith in tobacco through child labor projects. Refusal of health policymakers and researchers to participate in ILO-IPEC/ECLT child labor schemes creates a gap between the goals of policymakers and researchers to promote farmer prosperity and resources (e.g. people, knowledge, networks) to reduce inequalities and improve living standards on tobacco farms. Wardie Leppan, the senior program specialist with Canada's Development Research Center, stated two goals of global tobacco control focused on farmer issues that support the position to refuse to work with groups supportive of tobacco industry interests:

Firstly, to undermine the economic arguments used by tobacco companies to stall the implementation of tobacco control policies; and secondly, from a development perspective, to help farmers improve their lot and avoid debt cycles, children being pulled from school to work, women going sleepless to run curing kilns, environmental degradation and health hazards such as families sleeping under the same roof as their toxic harvest.¹¹⁹

Health policymakers and researchers need to consider these issues in decisions to apply best practices from tobacco industry funded child labor schemes.

The hazard rating matrix developed to assess work performed by children in vegetable farming in the Philippines provides a simple tool tobacco control policymakers and researchers could use to assess work performed by children in tobacco cultivation (Box 3).⁷⁸ The hazard rating matrix is a specialized checklist and classification scheme comprised of work environment, materials and equipment used, and contact with social and water. The hazard rating matrix of the degree of safety of working conditions (light, moderate, heavy) and the intensity of work (safe, moderately safe, unsafe) could allow policymakers and researchers to identify hazardous work of children in tobacco growing that should be banned.⁷⁸

Box 3. The Hazard Rating Matrix⁷⁸			
	Work Intensity		
Degree of Safety	Light	Moderate	Heavy
Safe	Totally allowed for young workers	Conditionally allowed for young workers	Very hazardous; should be banned
Moderately Safe	Conditionally allowed for young workers	Very hazardous; should be banned	Very hazardous; should be banned
Unsafe	Very hazardous; should be banned	Very hazardous; should be banned	Very hazardous; should be banned

Promoting the creation and dissemination of documentary films about tobacco in Argentina as well as films about tobacco related child labor, deforestation, pesticide pollution and nicotine poisoning in Malawi, Tanzania, Mexico, Brazil, and Bangladesh.^{1, 20, 51, 54, 120, 121} is a best practice to create awareness of tobacco growing issues, particularly in non-literate populations, and build public support for the Framework Convention on Tobacco Control. The Instituto de Ciencia y Tecnologia Regional in Jujuy, Argentina, coordinates projects to develop leadership among the youth regarding tobacco control through research, identify risk factors such

as poverty that factor in the uptake of tobacco use in displaced aboriginal youth, and to raise community awareness and support for improved livelihoods of tobacco farmers in Argentina. In 2004, the Instituto de Ciencia y Tecnologia Regional produced the documentary film “Tabaco, Voces Desde El Surco” (“Tobacco, Voices From The Fields”) on tobacco farmers and workers in Jujuy to educate Argentines and the international community about the social and environmental costs of tobacco farming.¹²² The video is available for viewing on the Internet, providing visual imagery of human experiences of tobacco farming to researchers, policymakers, and individuals with Internet access throughout the world. In the video, a tobacco farmer standing with a hoe in a tobacco field says, “One starts learning from very young when you are eight or nine years old and gets together with friends. We play to put the tobacco leaves on the cane [drying sticks], and in this way you are brought up doing this work. Then, when you are twelve you do the work of an adult.”¹²² The video imagery of farming, child labor, and environmental destruction from tobacco farming augments text-based reports and statistical analyses of tobacco work to more fully assess the extent and characteristics of tobacco-related child labor and biodiversity loss.

In Malawi, the Guernsey Adolescent Smokefree Project established in 2006 the project “Ana a topa” (“The children are tired” in the Chewa language in Malawi) to support children who work in the tobacco farming sector.¹²³ Guernsey is a British Crown dependency in the English Channel near Normandy, France. “Ana a topa” involves a partnership between the Guernsey Adolescent Smokefree Project and the Tobacco Tenant and Allied Workers Union of Malawi, the main tobacco farm worker organization in the country. “Ana a topa” is in its beginning stages of a crop diversification scheme that directly supports children in Malawi and a research project with local advocates to assess the frequency of child labor abuses in Malawi.

The project is a unique tobacco farmer union-public health group alliance to raise awareness of child labor, reduce the factors that force parents to send their children to tobacco fields instead of schools, and strengthen the tobacco farm worker union's child labor committees in tobacco farms to confront the child labor problem. The project is cross-national and involves a media campaign in Guernsey to educate youth on the working practices imposed by the tobacco industry on Malawi and the demands placed on children to work in tobacco fields.

In Uganda in 2004, the Environmental Action Network developed a project to create a database of information on deforestation and other issues affecting tobacco farmers.¹²⁴ The project filled a local knowledge gap on environmental problems relating to tobacco by systematically collecting and organizing data specific to Uganda, allowing researchers and advocates to reduce dependency on data from other countries. Researchers and advocates in Uganda used data on deforestation, costs and benefits of tobacco farming and other issues to develop public support for effective tobacco control policies and for the Framework Convention on Tobacco Control. In February and March 2004, researchers with the Environmental Action Network conducted a survey among farmers in Uganda focusing on deforestation and economic and health status. Researchers interviewed government officials on the same issues. Findings revealed that farmers in Uganda suffer worsening poverty and poor health associated with tobacco growing. The project is a best practice to retrieve and organize data on the social and environmental costs of tobacco growing.

In the U.S., tobacco farmers and tobacco control advocates committed to reducing disease caused by tobacco and ensuring the prosperity and stability of tobacco farmers, their families and communities.¹²⁵ Beginning in 1994, national groups such as the National Black Farmers Association and the Campaign for Tobacco-Free Kids, state groups such as the

Coalition for Health and Agricultural Development in Kentucky and the North Carolina Council American Cancer Society, and regional groups such the Burley Tobacco Growers Cooperative and the New England Society of Public Health Education participated in meetings with representatives of all groups affected by tobacco, provided expertise to educate participants of similar and opposing positions, and encouraged tobacco dialogue to strengthen alliances between farmers and health advocates. Cooperation and commitment to promote tobacco farmer prosperity and public health renders false the dichotomy between policies for tobacco agriculture development and policies directed at the reduction of tobacco use. The common ground established by farmers and health groups in the U.S. is a best practice that could be used to build partnerships for tobacco farmer welfare and tobacco control in developing countries.

Conclusion

Tobacco farming contributes to poverty and insufficient economic development in developing countries. Farmers under contractual obligations to tobacco companies or farm landlords are vulnerable to leaf downgrading, suppressed tobacco prices, and inflated prices for inputs. Bonded labor prevents farmers from receiving earnings to cover costs for inputs, food requirements, and health care needs. Child labor undermines children's education and threatens their health and physical growth, pushing children into a cycle of poverty. Tobacco farming involves wood use for curing and pesticides and fertilizers that destroy forests and pollute soils and water tables. Tobacco farming erodes the lives of present and future generations of farmers, harming human and land capital, key assets for rural development, that could otherwise be devoted to healthy crops and environmentally friendly agriculture.

REFERENCES

1. Irving S. Tobacco's children (videorecording). 2007. www.nordicunited.com (accessed 23 Feb 2008).
2. Checkout. Cigarettes to be launched in UK by impoverished Navajo. Mar. 2005. www.ash.org.uk/ash_jhzjvzt8.htm (accessed 23 Feb 2008).
3. Farm Labor Organizing Committee. FLOC seeks justice to extend labor rights to Reynolds tobacco farm workers in North Carolina. 2008. www.floc.com/RJR%20Campaign.htm (accessed 19 Apr 2008).
4. Food and Agriculture Organization of the United Nations. FAOSTAT data. 2008. <http://faostat.fao.org/site/408/default.aspx> (accessed 5 May 2008).
5. Geist HJ, Chang K-t, Etges V, Abdallah J. Tobacco growers at the crossroads: an international comparison (Brazil, Tanzania, Taiwan, Germany). Land Use Policy submitted.
6. United States Department of Labor. By the sweat and toil of children: The use of child labor in U.S. agricultural imports and forced and bonded child labor, volume 2. 1995. www.dol.gov/ilab/media/reports/iclp/sweat2/overview.htm (accessed 12 Feb 2008).
7. Passas N. Lawful but awful: 'legal corporate crimes'. Journal of Socio-Economics 2005;34:771-786.
8. World Health Organization. Tobacco and poverty: a vicious circle. 2004. www.who.int/tobacco/communications/events/wntd/2004/en/wntd2004_brochure_en.pdf (accessed 24 Feb 2008).
9. World Health Organization. The millennium development goals and tobacco control. 2004. www.who.int/tobacco/publications/mdg_final_for_web.pdf (accessed 2 June 2008).

10. de Beyer J. [The economic impact of tobacco consumption in Africa]. *Promot Educ* 2005;Suppl 4:12-7, 55.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16190256 (accessed 2 June 2008).
11. Yach D, von Schirnding YE. Towards a higher priority for health on the development agenda. *Public Health Rev* 1994;22(3-4):339-74.
12. Torres L. The smoking business: tobacco workers in Malawi. 2000.
www.fafno.no/pub/rapp/339/339-web.pdf (accessed 3 June 2006).
13. Newsedge. Rights- Brazil: child labor rampant in tobacco industry. 1999.
<http://lists.essential.org/intl-tobacco/msg00033.html> (accessed 2 May 2008).
14. Rimmer L. BAT's Big Wheeze: The Alternative Report. 2004.
www.foe.co.uk/resource/reports/bats_big_wheeze.pdf (accessed 29 Aug 2005).
15. Kweyuh P. Tobacco farming in Kenya: the profits deception. 1997.
www.ftc.org/docs/documents/atom-1997-tobacco-farming-in-kenya.pdf (accessed 30 Jan 2008).
16. Christian Aid. Behind the mask: the real face of corporate social responsibility. 2004.
http://core.live.poptech.coop/module_images/Christian%20Aid%20Report%20-%20Behind%20the%20mask%202004.pdf (accessed 22 Apr 2007).
17. International Monetary Fund. Malawi: Poverty Reduction Strategy Paper- Growth and Development Strategy. 2007. www.imf.org/external/pubs/ft/scr/2007/cr0755.pdf (accessed 1 Mar 2007).
18. Otañez M. 'Thank you for smoking': corporate power and tobacco worker struggles in Malawi [dissertation]. Irvine: University of California; 2004.

19. Marmion S. Living on a dollar a day in Malawi. National Public Radio 2006 Oct 1.
www.npr.org/templates/story/story.php?storyId=6167846 (accessed 11 January 2008).
20. Heiler P. Smoke Sacrifice (Rauchopfer): Blue Haze-Forest Raze (videorecording). 2003.
www.filmkraft.net (accessed 2 Jan 2006).
21. Gamlin J, Hesketh T. Child work in agriculture: acute and chronic health hazards. *Children, Youth and Environments* 2007;17(4):1-23.
22. White A. The plight of tobacco farmers in Nigeria. 2004.
<http://tobaccocontrol.bmj.com/content/vol11/issue3/images/data/DC1/WhiteTobaccoFarmers.zip>
(accessed 1 May 2008).
23. World Health Organization. Tobacco or Health: A Global Status Report. 1997. (accessed 25 Feb 2008).
24. The Nation. BAT invests Sh500m to produce new brands. (Kampala, Uganda) 2004.
25. Olaki E. Tobacco firms renew feud for farmer's leaf. *New Vision* 2003.
26. Karugaba P. Focus on Uganda: Big Tobacco's Overseas Expansion. 2001.
www.globalink.org/tobacco/docs/af-docs/0105karugaba.shtml (accessed 1 May 2008).
27. Kariuki J. Tobacco cultivation threatens food security in Kenya. 1999.
<http://lists.essential.org/intl-tobacco/msg00111.html> (accessed 24 Mar 2008).
28. Green Belt Movement. Deforestation and the cash crop. 2002 (estimated).
www.filebox.vt.edu/users/vscholla/environment.htm (accessed 1 May 2008).
29. Wanja J. The impact of the tobacco industry on rural development and farming systems in Arua, Uganda. In: Haswell M, Hunt D, editors. *Rural households in emerging societies: technology and change in sub-Saharan Africa*. Oxford: Berg; 1989.

30. International Labour Organization, International Programme on the Elimination of Child Labour. Child Labour in Uganda: A report Based On the 2000/2001 Uganda Demographic and Health Survey; 2001.
31. Otañez MG, Muggli ME, Hurt RD, Glantz SA. Eliminating child labour in Malawi: a British American Tobacco corporate responsibility project to sidestep tobacco labour exploitation. *Tobacco Control* 2006;15(3):224-30.
<http://repositories.cdlib.org/cgi/viewcontent.cgi?article=3299&context=postprints> (accessed 12 May 2008).
32. International Confederation of Free Trade Unions. Report for the WTO General Council Review of Trade Policies of Malawi. 2002.
www.icftu.org/displaydocument.asp?Index=991214742&Language-EN&Printout=Yes (accessed 6 Mar 2008).
33. Action on Smoking and Health. BAT's African footprint. 2008.
www.ash.org.uk/files/documents/ASH_685.pdf (accessed 5 May 2008).
34. Selva Kumar A. Child labour in home based sector. New Delhi: Sonali Publications; 2005.
35. Bagchi J, Mukhopadhyay A, India. Ministry of Labour., Jadavpur University. School of Women's Studies. Child labour in beedi industry, Murshidabad District in West Bengal. Calcutta: School of Women's Studies Jadavpur University; 1996.
36. Panchamukhi P, Woollery T, Nayanatara S. Economics of bidis in India. In: Asma S, Gupta P, editors. Bidi smoking and public health: a monograph. Mumbai, India: Healis Sekhsaria Institute for Public Health; In press. 169-198.
37. Pelley S. Tobacco slaves in India: candy-flavored cigs find favor with U.S. teens. 2000.
www.cbsnews.com/stories/1999/11/22/60II/main71386.shtml (accessed 12 Dec 2007).

38. United Nations. Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery. 1956. www.unhchr.ch/html/menu3/b/30.htm (accessed 6 May 2008).
39. Asila J. No cash in this crop: Kenya's tobacco farmers have been harvesting losses for far too long. *New Internationalist* 2004. <http://newint.org/features/2004/07/01/kenya> (accessed 13 July 2007).
40. Stackhouse J. Kielburger shifts focus to big business: corporations asked to fight child labour. *The Global Mail* 1998. Sep 30;Sect. A14.
41. Madeley J. British American Tobacco: the smokescreen. In: Group UF, editor. *Hungry for power: the impact of transnational corporations on food security*. London, England; 1999.
42. Loker W. The rise and fall of flue-cured tobacco in the Copan Valley and its environmental and social consequences. *Human Ecology* 2004;33(3):299-327.
43. Eidt G. Modern servitude in transnational tobacco industries' practices in southern Brazil [presentation]. Washington, D.C.: 13th World Conference on Tobacco OR Health; 2006.
44. Eidt G. Tobacco: modern day servitude and human rights violations: Land Rights: Civil Organization for Human Rights in Brazil (CURITIBA); 2004.
45. Galvez-Munoz L. Engendering the experience of wages: the evolution of the piecework system at the Spanish Tobacco Monopoly, 1800-1930s. In: Scholliers P, Schwarz L, editors. *Experiencing wages: social and cultural aspects of wage forms in Europe since 1500*. New York: Berghahn Books; 2003.
46. Barickman B. *A Bahian Counterpoint: Sugar, Tobacco, Cassava, and Slavery in the Reconcavo, 1780-1860*. Menlo Park: Stanford University Press; 1998.

47. Chirwa W. Child and Youth Labour on the Nyasaland Plantations, 1890-1953. *Journal of Southern African Studies* 1993;19(4).
48. Daniel P. *Breaking the land: the transformation of cotton, tobacco, and rice cultures since 1880*. Urbana: University of Illinois Press; 1985.
49. van Willigen J. *Tobacco culture: farming in Kentucky's burley belt*. Lexington, Kentucky: University Press of Kentucky; 1998.
50. Parrott R, Polonec L. Preventing green tobacco sickness in farming youth: a behavior adaptation approach to health communication in health campaigns. In: Wright K, Moore S, editors. *Applied Health Communication*. Cresskill, New Jersey: Hampton Press; 2008. p. 341-359.
51. Morris L. *Stolen childhoods* (videorecording). 2004.
www.stolenchildhoods.org/mt/index.php (accessed 12 Feb 2008).
52. Browning S, Westneat S, Szeluga R. Tractor driving among Kentucky farm youth: results from the Farm Family Health and Hazard Surveillance Project. *Journal of Agricultural Safety and Health* 2001;7(3):155-167.
<http://asae.frymulti.com/request.asp?JID=3&AID=5439&ConfID=j2001&v=7&i=3&T=2>
(accessed 12 March 2008).
53. Browning S, Westneat S, Donnelly C, Reed D. Agricultural tasks and injuries among Kentucky farm children: results of the Farm Family Health and Hazard Surveillance Project. *South Med J* 2003;96:1203-1212. (accessed 12 December 2007).
54. Romo PD. *Huicholes and pesticides* (videorecording). 2002.
www.huicholesyplaguicidas.org/huichol_cas/cont/epi.html (accessed 27 Mar 2008).

55. Gamlin J, Diaz Romero P, Hesketh T. Exposure to young children working on Mexican tobacco plantations to organophosphorous and carbamic pesticides, indicated by cholinesterase depression. *Child Care Health Development* 2007;33(3):246-248.
56. Pollack S, Landrigan P. Health hazards of child labor. In: Wallace RB, editor. *Public Health and Preventive Medicine*, 15th Edition. 15th ed. New York: McGraw-Hill Medical; 2008. p. 835-840.
57. United Nations Children's Fund. *The state of the world's children*. 1997.
www.unicef.org/sowc97 (accessed 1 May 2008).
58. Eldring L, Nakanyane S, Tshoedi M. Child labor in the tobacco growing sector in Africa. 2000. www.fafo.no/pub/rapp/654/654.pdf (accessed 17 Oct 2007).
59. Hatoum L. Old before their time: child workers may number 100,000- UN labor body doubts previous figure of 32,000. *Daily Star* 2006. 12 July.
60. Ochola S, Kosura W. Case study on tobacco cultivation and possible alternative crops- Kenya; 2007. www.who.int/entity/tobacco/framework/cop/events/2007/kenya_case_study.pdf (accessed 23 Jan 2008).
61. Eliminate Child Labour in Tobacco Foundation. Assessment of child labour in small-scale tobacco farms in Mozambique. 2006. www.eclt.org/activities/research/mozambique.html (accessed 28 Feb 2008).
62. This Day (Nigeria). How tobacco spreads poverty, misery in Oyo communities. 2004. 5 Dec. www.tobacco.org/news/183936.html (accessed 21 Dec 2007).
63. Mwanamukando C. 6,000 children working on tobacco farms. *The Post* 2006. 9 May.
64. Dosybiev A. Child labour still blights Kazakhstan: too little being done to eliminate the exploitation of minors, new report says. *Times of Central Asia (Almaty, Kyrgyzstan)* 2008.

65. International Labour Office, ILO International Programme on the Elimination of Child Labour. Child labour in tobacco and cotton growing in Kazakhstan. Almaty: ILO/MOT; 2006.
66. United States Department of Labor, Bureau of International Labor Affairs. 2006 findings on the worst forms of child labor. 2007.
www.dol.gov/ilab/media/reports/tda/tda2006/Sierra_Leone.pdf (accessed 23 Apr 2008).
67. Tuna E. The tobacco sector in the Republic of Macedonia: competitive analysis. Uppsala: Swedish University of Agricultural Sciences; 2006.
68. European Environment and Health Committee. Republic of Moldova: Progress on Regional Priority Goal IV on chemicals, noise, other physical agents and occupational health. 2005.
www.euro.who.int/eehc/implementation/20051114_2 (accessed 11 Apr 2008).
69. Tuttle C. History repeats itself: child labor in Latin America. *Employ Respons Rights J* 2006;18:143-154. www.springerlink.com/content/00415h891m846p1j/fulltext.pdf (accessed 12 May 2008).
70. Eliminate Child Labour in Tobacco Foundation. Child labour in tobacco cultivation in Santiago Province in the Dominican Republic. 2004.
www.eclt.org/filestore/ILO%20research%20Child%20labour%20in%20tobacco%20in%20the%20Dominican%20Republic%20-%20Executive%20summary%20-%202004.2004.pdf (accessed 1 Apr 2008).
71. Naher F, Efroymsen D. Tobacco cultivation and poverty in Bangladesh: Issues and potential future directions. 2007.
www.who.int/entity/tobacco/framework/cop/events/2007/bangladesh_study.pdf (accessed 3 May 2008).

72. Sinha D. Current trends in child labour. 2006.
www.nursinglibrary.org/Portal/main.aspx?pageid=4024&pid=8509 (accessed 2 May 2008).
73. Varghese S. Child labor in Nepal: education combating unjust labor. 2004 (estimated).
www.yapi.org/rpchildlabornepal.pdf (accessed 21 Oct 2008).
74. Vungsiriphisal P, Auasalong S, Chantavanich S. Migrant children in difficult circumstances in Thailand. 2005 (estimated).
www.childsdream.org/en/documents/Chula_StudyMigrantChildrenworkinginThailand_000.pdf
(accessed 20 Feb 2008).
75. Cole S. Child labour in the Fiji tobacco industry. 2004. www.eclt.org/filestore/BAT-%20Fiji.pdf (accessed 1 Apr 2008).
76. Partners International. Rapid appraisal of child labor in the tobacco industry: case studies in two Ilocos provinces. 2002.
www.eclt.org/filestore/PARTNERS_Appraisal_CL_Tobacco_Philippines.pdf (accessed 1 Apr 2008).
77. Dresler C, Marks S. The emerging human right to tobacco control. *Human Rights Quarterly* 2006;28(3):599-651.
78. International Labor Organization. A future without child labor: global report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work. 2002.
www.ilo.org/dyn/declaris/DECLARATIONWEB.DOWNLOAD_BLOB?Var_DocumentID=1566 (accessed 1 May 2008).
79. Lloyd M. Tobacco's perils visit a Mexican village: pesticides stake a claim on farmers. *Boston Globe* (Massachusetts) 27 Apr 2003. www.tobacco.org/articles.php?pattern=Pesticides (accessed 5 May 2008).

80. Nichter M, Cartwright E. Saving the children for the tobacco industry. *Medical Anthropology Quarterly* 1991;5(3):236-256.
81. Hurst P. Health, safety and environment in agriculture. Top on the agenda: health and safety in agriculture 2000. www.ilo.org/public/english/protection/safework/agriculture/ed118119.pdf (accessed 5 Apr 2008).
82. Chatterjee T. Ray of hope for child labourers. *The Statesman* 2006. 26 May. (accessed 5 April 2008).
83. University of North Sumatra. Study of child workers in tobacco plantations in Sumatra, Indonesia. Sumatra, Indonesia: University of North Sumatra; 2004. www.eclt.org/filestore/Indonesia_Research_ECLT_Oct05.PDF (accessed 5 April 2008).
84. Romo PD, Alvarez SS. Plaguicidas, tabaco y salud: el caso de los jornaleros huicholes, jornaleros mestizos y ejidatarios en Nayarit, México. Oaxaca, Mexico: Proyecto Huicholes y Plaguicidas; 2002.
85. Edmonds E. Child labor. In: Schultz T, Strauss J, editors. *Handbook of Development Economics*, volume 4. Amsterdam, The Netherlands: Elsevier; forthcoming.
86. British American Tobacco. BAT leaf supply chain. 2005. www.bat.com/oneweb/sites/uk_3mnfen.nsf/vwPagesWebLive/7837D83ED42E29F3C1257067003C59C3?opendocument&SID=&DTC= (accessed 12 Feb 2007).
87. British American Tobacco. Social responsibility in tobacco growing. 2007. www.bat.com/group/sites/uk_3mnfen.nsf/vwPagesWebLive/DO6ZXK5Q?opendocument&SKN=1&TMP=1 (accessed 5 May 2008).
88. British American Tobacco. Product development/blending workshop programme. 12 Dec 2000. British American Tobacco. <http://bat.library.ucsf.edu/tid/tz155a99> (accessed 10 Apr 2007).

89. Naher F, Efroymsen D. Tobacco cultivation and poverty in Bangladesh: suggestions for appropriate policies on agriculture, environment and health. In: Efroymsen D, editor. Addressing tobacco and poverty in Bangladesh: research and recommendations on agriculture and taxes. Dhaka, Bangladesh: HealthBridge and WBB Trust; 2008.
90. Otañez MG, Mamudu H, Glantz S. Global leaf companies control the tobacco market in Malawi. *Tobacco Control* 2007;16:261-269.
91. Economist Intelligence Unit. Future market trends in tobacco leaf. 1974. London, England. <http://ltdlimages.library.ucsf.edu/imagesx/x/j/x/xjx64c00/Sxjx64c00.pdf>. 12 Jan 2007.
92. Chapman S, Yach D, Saloojee Y, Simpson D. All Africa conference on tobacco control. *Bmj* 1994;308(6922):189-91.
93. Anti-Corruption Bureau. Allegation of corruption and connivance among tobacco buyers, Auction Holdings Limited and other stakeholders in the tobacco industry. 2005. www.sidewalkradio.net/wp-content/uploads/2007/02/ACB_report.pdf (accessed 6 May 2008).
94. Geist HJ. Global assessment of deforestation related to tobacco farming. *Tobacco Control* 1999;8(1):18-28.
95. Banzinger. Tobacco depletes food-crop land. *Smoke Signals* 1982. <http://medicolegal.tripod.com/preventdeforestation.htm> (accessed 2 May 2008).
96. Chapman S. Tobacco and deforestation in the developing world. *Tobacco Control* 1994;3:191-193.
97. Geist H. How Tobacco Farming Contributes to Tropical Deforestation. In: Abedian I, van der Merwe R, Wilkins N, Jha P, editors. *The Economics of Tobacco Control: Towards an Optimal Policy Mix*. Cape Town: Applied Fiscal Research Center; 1998.

98. Beelman M, Davidson Z. Support for tobacco trade: up in smoke? 1999.
www.afsa.org/fsj/Nov99/TobaccoTradeBeelman.cfm (accessed 12 Feb 2004).
99. Chapman S. The world tobacco industry. In: Wheelwright T, editor. Consumers, transnational corporations and development. Sydney, Australia: Transnational Corporations Research Project and the University of Sydney; 1986. p. 193-227.
100. Farrell B. Tobacco stains: the global footprint of a deadly crop. In These Times 2007.
www.inthesetimes.com/article/3324/tobacco_stains (accessed 16 Dec 2007).
101. Barton AP, Fullen MA, Mitchell DJ, Hocking TJ, Liu L, Bo ZW, et al. Effects of soil conservation measures on erosion rates and crop productivity on subtropical Ultisols in Yunnan Province, China. Agriculture, Ecosystems and Environment 2004;104:343-357.
102. Clay J. World agriculture and the environment: a commodity-by-commodity guide to impacts and practices. Washington, D.C.: Island Press; 2004.
103. British American Tobacco. Afforestation programmes. 2007.
www.bat.com/group/sites/uk_3mnfen.nsf/vwPagesWebLive/DO52APZ6?opendocument&SKN=1&TMP=1 (accessed 30 Oct 2007).
104. Ethical Performance. Greening tobacco. 2006 (estimated).
www.ethicalperformance.com/bestpractice/companyfocus/pages/cs5.html (accessed 6 May 2008).
105. Cossalter C, Pye-Smith C. Fast-wood forestry: myths and realities. 2003.
www.wwf.de/fileadmin/fm-wwf/pdfalt/waelder/umwandlung/Fast_Wood_Forestry_Myths_and_Realities.pdf (accessed 1 May 2008).

106. Njuguna M. Tree threatens water levels, says expert. *The Nation* (U.S.). 21 Jan 2008. <http://allafrica.com/stories/200801210025.html> (accessed 21 Mar 2008).
107. British American Tobacco. Social reporting 2006 British American Tobacco. 2006. www.bat.com/group/sites/uk_3mnfen.nsf/vwPagesWebLive/DO6RZGHL?opendocument&SKN=1&TMP=1 (accessed 1 May 2008).
108. Tobin R. Malawi's environmental monitoring program: A model the merits replication? Washington, D.C.; 1999.
109. McKnight RH, Spiller HA. Green tobacco sickness in children and adolescents. *Public Health Rep* 2005;120(6):602-5.
110. Schmitt N, Schmitt J, Kouimintzis D, Kirch W. Health risks in tobacco farm workers: a review of the literature. *Journal of Public Health* 2007;15:255-264.
111. Wang J. A clinic-based, case-control comparison of green tobacco sickness among minority farmworkers: clues for prevention. *South Med Journal* 2002;95(9):1008-11.
112. Ghosh SK, Parikh JR, Gokani VN, Kashyap SK, Chatterjee SK. Studies on occupational health problems during agricultural operation of Indian tobacco workers: a preliminary survey report. *J Occup Med* 1979;21(1):45-7.
113. Barraclough S, Morrow M. A grim contradiction: The practice and consequences of corporate social responsibility by British American Tobacco in Malaysia. *Soc Sci Med* 2008;66(8):1784-96.
114. International Labor Organization International Program on the Elimination of Child Labor. 2008. www.ilo.org/ipecc/index.htm (accessed 10 May 2008).
115. Eliminate Child Labour in Tobacco Growing Foundation. Combating hazardous child labour in tobacco farming in Urambo District, Tanzania. Geneva, Switzerland: Eliminate Child

- Labor in Tobacco Growing Foundation; 2003. www.eclt.org/filestore/IPECProgramme.pdf (accessed 2 May 2008).
116. International Labor Organization International Program on the Elimination of Child Labor. Building on strengths and common interests: sectoral alliances against child labor, 1995-2005. 2005. www-ilo-mirror.cornell.edu/public/english/standards/ipec/themes/cocoa/download/2005_02_cocoa_sectoral.pdf (accessed 14 May 2008).
117. Eliminate Child Labour in Tobacco Growing Foundation. Foundation members. 2008. <http://eclt.org/members/index.html> (accessed 10 May 2008).
118. International Labor Organization International Program on the Elimination of Child Labor. Donors. 2008. www.ilo.org/ipec/programme/Donorcountries/lang--en/index.htm (accessed 10 May 2008).
119. Shore K. Cutting tobacco down. International Development Research Center. 2007. www.crdi.ca/en/ev-109250-201-1-DO_TOPIC.html (accessed 14 May 2008).
120. Otañez M, Walker C. Up in smoke (videorecording). 2003. www.tve.org/lifeonline/index.cfm?aid=1228 (accessed 9 Jan 2007).
121. Otañez M, Otañez M. Thangata: social bondage and big tobacco in Malawi (videorecording). 2002. www.tobaccoworkers.com (accessed 9 Jan 2007).
122. Alderete W. Tobacco, voces desde el surco (Tobacco, voices from the fields) (videorecording). 2005. www.sidewalkradio.net/?p=25 (accessed 1 Apr 2008).
123. Guernsey Adolescent Smokefree Project. 2008. www.gasp.org.gg (accessed 10 May 2008).
124. American Cancer Society, International Union Against Cancer. Tobacco control seed grant program executive report: 12th World Conference on Tobacco OR Health, Helsinki, Finland.

2003. [www.cancer.org/downloads/AA/12th World Conference Tobacco Seed Grants.pdf](http://www.cancer.org/downloads/AA/12th_World_Conference_Tobacco_Seed_Grants.pdf)
(accessed 10 May 2008).

125. Lindblom E. False friends: the US cigarette companies' betrayal of the American tobacco growers. 1999. <http://tobaccofreekids.org/reports/falsefriends/campaign.pdf> (accessed 24 May 2007).