

# TOBACCO CONTROL

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## Editorials

### Tobacco and deforestation in the developing world

Throughout the world, concern for tobacco's consequences for the health of both its voluntary and involuntary consumers has dominated the policy contexts in which health advocates have sought to control its use. The medical, public health, consumer, and life insurance constituencies have all largely centred their policies on tobacco around concerns for health. These groups were joined in 1992 by the World Bank, which introduced a non-economic criterion into its lending policies by announcing that it would no longer support tobacco-related projects in developing countries because of health considerations.<sup>1</sup>

Governments' needs for revenue have also shepherded tobacco taxation and trading policies, which have only rarely been explicitly linked to public health policies. Nonetheless, tax policies influence consumption, and thus the health of populations. For many years, state-owned tobacco monopolies, especially in Eastern Europe and Asia, were able to prevent imports from the transnational tobacco companies and the aggressive marketing campaigns that would have accompanied them. These restrictive trade policies were usually quite disconnected from any explicit concern for the health of the local populations. For many years, Egypt banned cigarette imports, again not out of concern for health, but in order to prevent scarce foreign exchange from leaving the country in payment.

There remains a third perspective on tobacco control policy that has so far been comparatively neglected and yet which holds enormous potential to draw on the energies of a whole new and powerful constituency, adding further weight to tobacco control efforts. I refer to the environmental consequences of tobacco use, and in particular to the impact of flue- and fire-curing on indigenous forests in impoverished nations where wood is the principal fuel used to cure tobacco prior to its sale.

In this issue of *Tobacco Control*, we publish three case reports on the environmental and social consequences of tobacco growing in Kenya, Tanzania, and Uganda.<sup>2-4</sup> These papers, produced from researched field trips under PANOS Foundation grants, were highlights of the All-Africa Conference on Tobacco and Health held in Harare, Zimbabwe in November 1993.<sup>5</sup> Not only does their publication mark the first significant break in a 10-year drought of information on the issue of deforestation caused by tobacco growing and curing in developing countries, but we also believe them to be the first published papers to examine the vulnerable underbelly of tobacco industry propaganda on the alleged socio-economic benefits of tobacco growing to peasant farmers in some of the world's poorest nations.

At the 5th World Conference on Smoking and Health held in Winnipeg, Canada, in 1983, John Madeley, a British developmental agriculture journalist, delivered a paper on tobacco-caused deforestation in Kenya.<sup>6</sup>

Madeley's claims created a wave of concern in the international tobacco control community, but unfortunately have until now been the subject of largely uncritical recitation (see below).

Being wrapped in paper and sold in packets, cigarettes are voracious users of paper and cardboard. With paper comprising approximately 5% of the weight of a typical cigarette, and 5391 971 million cigarettes weighing an average 1.3 g each manufactured in 1992,<sup>7</sup> an estimated 350 478 tonnes of paper is currently used in cigarette wrappings each year. However, according to a tobacco-industry-commissioned report, only 16% of the tobacco industry's overall use of forest resources occurs through paper and cardboard products. Curing is by far the major culprit in the industry's exploitation of wood, with 69% of wood consumed by the tobacco industry going to fuelwood used in curing and 15% to poles and sticks used in curing-barn construction.<sup>8</sup>

Flue-cured tobacco currently constitutes 64% of all tobacco grown worldwide.<sup>9</sup> With flue-curing, the green leaf must be kept at high temperatures by the circulated heat for about a week. The process can use a variety of fuels including coal, liquid petroleum gas, or oil, fuels generally available to growers in more affluent countries or to those in nations with abundant natural resources in these fuels. But in most less developed countries, local wood is the main fuel used.

In the US, the world's third largest flue-cured tobacco producer, little if any of the crop is cured by fuelwood; Zimbabwe, the fourth largest producer, uses mostly coal; while Brazil, the second largest producer, cures all its crop by burning wood, as do most other African and Third World producing countries.<sup>10</sup> China, easily the world's largest producer of flue-cured tobacco, in 1993 produced 61% of the world's flue-cured crop.<sup>9</sup> A 1986 industry-funded study of tobacco fuelwood use in developing countries stated somewhat cryptically "There are no records that indicate that wood is used for fuel [in China]".<sup>8</sup> However, in the absence of any information on the use of other fuels, one might reasonably ask whether there are any records that show that wood is *not* used in China.

#### How much deforestation is caused by tobacco curing?

Startling claims featuring wide disparities have been made about the extent of deforestation caused by felling wood to cure tobacco. In 1976, Muller claimed that wood fuel curing requires about one tree per 300 cigarettes,<sup>11</sup> a claim repeated in a World Health Organisation publication.<sup>12</sup> Madeley<sup>6</sup> suggested that 12% of all world deforestation was caused by tobacco curing, plainly an extravagant claim. An Earthscan report claimed that the crop from a hectare of tobacco requires the felling

of one hectare of the adjacent savannah woodland each year.<sup>13</sup> Another report suggested double that ratio ("Trees from a hectare of land are needed to cure half a hectare of tobacco").<sup>14</sup> The latter report made the astronomical claim, without documentation, that one tree in every 12 cut globally for all purposes was used to cure tobacco, a figure that has been repeated in numerous press reports. It also stated "Kenyans are going hungry because millions (sic) of hectares that could grow food are given over instead to growing trees for the curing barns", adding that 12 million trees are cut each year in Kenya to cure tobacco and that "the country is in danger of being turned into a desert". However, even in 1993, Kenya had only 8805 ha under tobacco cultivation.<sup>91</sup>

In semi-arid Malawi, the tobacco-caused deforestation problem is probably more severe than in any other country. In 1984, a World Bank report<sup>15</sup> predicted that in Malawi "cutting and burning of all wooded areas is expected within eight years"—a situation that clearly did not eventuate. However, in 1988, the US Department of Agriculture concluded about the Malawian situation, "Despite all of the advances it is doubtful the wood shortage problem will be solved in the near future".<sup>16</sup>

Very little information is available on the contribution of tobacco to deforestation in Latin America. A review<sup>17</sup> of the major causes of deforestation in Central America named cattle ranching and land colonisation by slash-and-burn subsistence agriculturalists as the principal causes. Tobacco growing was not named. Brazil appears to be the only Latin American country where tobacco-caused deforestation is acknowledged as a major problem. A 1988 *Tobacco International* report stated that in Southern Brazil there were 93 361 curing barns and, despite some recent efforts with reforestation programmes, the author described "the devastation of the forests" as looking "less deplorable now than it did 10 years ago".<sup>18</sup>

### The tobacco industry commissions a report

Systematic and detailed country-by-country estimates of tobacco-related fuelwood use are not available from any independent research or monitoring agency. To date, the major source of information on the subject has been a report (the International Forest Sciences Consultancy (IFSC) report) published in 1986<sup>8</sup>, commissioned by the tobacco-industry-funded and directed International Tobacco Information Centre (INFOTAB). An acknowledgment in the report states that "information about the study [was sent by INFOTAB] to tobacco organisations and companies in the countries where fieldwork was to be carried out."

In the context of rising international concern about deforestation, desertification, and the greenhouse effect, any industry accused of making a major contribution to these problems would understandably be motivated to "manage" their response to such criticism in the best interests of the industry. In the face of persistent criticism about the role of tobacco in disease causation, the tobacco industry has consistently denied that there is any causal link between active or passive smoking and disease. It also consistently disputes claims that tobacco advertising may be a factor in persuading the young to take up smoking. In each of these areas of dispute, it has often commissioned "independent" researchers to produce reports. Invariably these reports have drawn conclusions that support the tobacco industry's official position, thus placing them at odds with the consensus of scientific opinion determined by major international health agencies. Against this background, tobacco-industry-funded consultants' reports on controversial subjects should be read cautiously.

In addition, because there is little published evidence available against which its findings may be compared, the IFSC report is difficult to assess critically. It provides information on fuelwood consumption in seven countries (Argentina, Brazil, Kenya, Malawi, Zimbabwe, India, and Thailand). Extrapolations were then made to the 69 main less developed countries that grow tobacco.

The IFSC report assessed the much-publicised claims that one tree is burnt to cure 300 cigarettes and that one hectare of trees are felled to cure each half hectare of tobacco. A standard way of expressing the quantity of wood used in curing is Specific Fuel Consumption (SFC), which is the number of kilograms of wood required to cure one kilogram of tobacco. The IFSC report suggests that an average cigarette contains 1.3 g of tobacco and an average mature tree in the African savannah has a volume of 0.12 m<sup>3</sup> and weighs about 90 kg, thus the SFC implied by the "one tree for 300 cigarettes" claim is 230 kg wood/kg tobacco. Similarly, the report argues that if an average tobacco yield is 1200 kg/ha and a typical savannah forest hectare contains 80 m<sup>3</sup> or 60 tonnes of wood, then an SFC of 100 kg wood/kg tobacco would apply if the "one hectare of wood to each half hectare of tobacco" claim were correct.

The IFSC report cites studies which show SFCs ranging from 2 kg/kg (Brazil), 12 kg/kg (Uganda), 13–15 kg/kg (Philippines), to 15–20 kg/kg (Malawi). Each of these figures is radically lower than the 230 kg/kg and 100 kg/kg values implied by the popular claims summarised above and well below those reported in the cases studied in this issue of *Tobacco Control*. In the IFSC's own study, the average SFC found in 300 barns in the seven countries studied was a remarkably low 7.8 kg/kg, with a range of 2.5–40 kg/kg among the farms. Factors including the moisture content of the wood, the quantity of wood packed into barns, and the varying constructions of barns were suggested as being responsible for these differences.

After extrapolating to 69 developing countries that grow tobacco, the IFSC's main conclusions included:

\* "The total annual consumption of fuelwood by the tobacco industry in the 69 countries represents 0.7% of all fuelwood consumed for all purposes in these countries and equates to 6.4 million m<sup>3</sup> per annum. Additional wood is required for curing barn structures and for packaging products, raising the total consumption of wood by the tobacco industry in these countries to about 9.25 million m<sup>3</sup> per annum ... still fall[ing] below 1% of all wood consumption. However, this is a global picture, and the situation in many developing countries is far more alarming." (our emphasis)

\* "The area of all types of forest in most African and Asian countries is now below the level at which it is capable of meeting current and future fuelwood demand on a sustainable basis. This means that accelerating deforestation can be expected, with potentially serious ecological consequences."

\* "Tobacco growers, like other wood users, still tend to regard wood as a 'free good', though in some countries they have taken steps toward becoming self-sufficient. In other countries, however, most notably Malawi and Thailand ... inefficient use of fuelwood at present and only modest or non-existent efforts to establish supplies for the future are contributing towards a generally serious national situation." (our emphasis)

### Afforestation and reforestation

In 1977, British American Tobacco (BAT) Kenya commenced an afforestation programme allegedly involving each tobacco farmer and in 1987 boasted of afforestation and reforestation programmes in Sri Lanka, Bangladesh, Nigeria, Sierra Leone, Zimbabwe, Costa Rica, Uganda, Pakistan, India, Chile, Brazil, and Kenya.<sup>19</sup> *Tobacco*

*International* noted "Each flue-cured farmer is expected to eventually establish a total of no less than 3000 surviving trees while the target for each fire-cured farmer is 1500 surviving trees."<sup>20</sup> BAT Kenya requires their contract farmers to plant 1000 eucalyptus trees on their land for three consecutive years. Three thousand trees require 1.5 ha, but the average Kenyan farmer has only between half and one hectare.<sup>21</sup>

BAT engages in "ceremonies" of tree planting in Zimbabwe where a writer in *Tobacco International* noted "The objective is to create fuel woodlots which will hopefully ease the pressure from natural woodlands which are being devastated by illegal tree cutting."<sup>22</sup> (our emphasis).

A 1989 report in a tobacco industry journal<sup>23</sup> claimed that between 1982–88 inclusive, 112.6 million trees were cut in Brazil for tobacco curing from 78 360 ha, and that 1543.1 million trees were planted on 617 250 ha as replacement, a ratio of 1:13.7 in favour of reforestation. If this is to be believed, it would mean that on average, 603 953 new trees were planted adjacent to the tobacco-growing areas of Brazil on each day of the seven years 1982–88! Since tree planting is seasonal and does not occur year round, actual rates during planting seasons would need to be much higher than these already massive calculated averages.

Pamphil Kweyuh's report in this issue<sup>2</sup> reports equally fatuous BAT Kenya data on reforestation: between 1987 and 1992, BAT Kenya claims that the number of surviving trees resulting from its reforestation activities rose from 13 million to 31 million. In other words, 18 million extra trees in five years – a continuous 365 day-a-year planting rate of 9863 trees when the total area under tobacco cultivation in Kenya is only 8805 ha! Such rates of planting are plainly preposterous and a testimony to the ineptitude of BAT Kenya's lame attempts at hosing down environmental concern.

Despite such cavalier efforts to publicise the success of industry's reforestation efforts, as shown by the three case studies, there remain significant barriers to the production of sustainable yields from reforestation projects. The tree-planting season coincides roughly with that for tobacco and food planting, with the latter two getting priority. With trees bringing no yield for 10 years, little attention is given to replanting. As *The Economist Intelligence Unit* reported in 1980: "farmers are naturally reluctant to tie up their land for ten years or more to provide fuel which, even now, is still obtainable – albeit with increasing difficulty – from outside the farm."<sup>24</sup>

Land tenure, so variable and insecure throughout much of the Third World, also has implications for reforestation projects, for only people with secure title to land are likely to consider making the long-term investment required for tree growing. Southgate<sup>25</sup> suggests that the general failure of poor farmers to participate in land and forest conservation programmes and their suboptimal use and management of natural resources are explained largely by the tenure regimes they face. Concerning the related problem of soil conservation he suggests that "... their tendency not to adopt conservation measures, for example, is explained by tenurial conditions and price signals that cause the short term economic sacrifices individual farmers associate with erosion control to exceed the present value of the future benefits to them of soil conservation." He adds that "if a farmer does not own a parcel in perpetuity but rather possesses only a leasehold, he will be unwilling to incur these short term costs for the sake of benefits realised after the terminal date of that leasehold."<sup>25</sup>

The Carter Administration's Global 2000 report named deforestation as the most serious environmental problem

facing the developing world.<sup>26</sup> The 1980 Food and Agriculture Organisation report on tobacco<sup>27</sup> concluded that 39% of populations of developing countries live in "deficit" fuelwood areas and thus face a looming crisis. A 1984 World Bank report on deforestation in Africa stated: "The rapid depletion of tree stocks is causing unprecedented – and, without remedial policies, irreversible – changes in the ecology of rural areas, principally in the carrying capacity or fertility of the soil."<sup>28</sup>

The above review and the three case studies published in this issue show that there is ample evidence, even from the cautious writings of tobacco industry journals and commissioned reports, to suggest that the tobacco-caused deforestation problem is of major proportions in particular parts of the developing world, most notably in Malawi, and in parts of Brazil (Rio del Sol), Zimbabwe, Uganda, Tanzania, and Kenya. The situation in China and in other tobacco-growing parts of Asia remains unknown, although ominous. However, our information on the extent of the problem, the rate at which it is changing, and the real impact being made by efforts at reforestation is extremely poor. This is a very neglected area for research in tobacco control and one that seems likely to prove of immense strategic importance in the years to come.

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- 1 World Bank. *World development report*. Washington: World Bank, 1993: 89.
- 2 Kweyuh PHM. Tobacco expansion in Kenya – the socioecological losses. *Tobacco Control* 1994; 3: 248–51.
- 3 Waluye J. Environmental impact of tobacco growing in Tabora/Urambo, Tanzania. *Tobacco Control* 1994; 3: 252–4.
- 4 Muwanga-Bayego H. Tobacco growing in Uganda: the environment and women pay the price. *Tobacco Control* 1994; 3: 255–6.
- 5 Chapman S, Yach D, Saloojee Y, Simpson D. Conference report: All Africa Conference on Tobacco Control, Harare, Zimbabwe, November 1993. *BMJ* 1994; 308: 189–91.
- 6 Madeley J. The environmental impact of tobacco production in developing countries. *Proceedings of the 5th World Conference on Smoking and Health, Winnipeg, Canada, 1993*. Vol 2: 287–90.
- 7 US Department of Agriculture. *World Tobacco Situation*. Foreign Agriculture Service Circular Series FT 8–92, August 1992: 52.
- 8 Fraser AI. *The use of wood by the tobacco industry and the ecological implications*. Edinburgh: International Forest Science Consultancy, 1986: 20.
- 9 US Department of Agriculture. *World Tobacco Situation*. Foreign Agriculture Service Circular Series FT 6–93, June 1993: 15.
- 10 Akehurst BC. *Tobacco*, 2nd edn. London: Longman, 1981: 250.
- 11 Muller M. *Tobacco in the Third World: tomorrow's epidemic?* London: War on Want, 1976.
- 12 World Health Organisation. *Save the rain forests*. Bull IUCN 1980; 11(5).
- 13 Eckholm E, Foley G, Barnard G, Timberlake L. *Fuelwood: the energy crisis that won't go away*. London: Earthscan, 1984.
- 14 International Agricultural Development. Kenya's trees go up in smoke – for smokers. *Int Agric Dev* 1984; September/October: 9–10.
- 15 World Bank. *World Bank tobacco financing: the environmental/health case: background for policy formulation*. Washington: Office of Environmental and Scientific Affairs, World Bank, 1984.
- 16 US Department of Agriculture. *World Tobacco Situation*. Foreign Agriculture Service Circular Series FT 2–88, February 1988.
- 17 Leonard HJ. *Natural resources and economic development in Central America*. New Brunswick: Transaction Books, 1987.
- 18 Jungbluth GA. Southern Brazil: a survey of devastation and conservation. *Tobacco Int* 1988; June 24: 15.
- 19 Shelton A. 200 million new trees – and growing! *Tobacco Reporter* 1987; July: 30.
- 20 Hose CP. Kenya's practical dark-fired plan allows self-sufficiency, exports. *Tobacco Int* 1988; June 10: 30–1.
- 21 Currie K, Ray L. Contract farmers: a case study from rural Kenya. *Dev Res Digest* 1983; winter: 10.
- 22 Kille T. BAT Zimbabwe in the business and social life of the nation. *Tobacco Int* 1988; June 10: 36–8.
- 23 Cresenti R. Farmers in Brazil set example in ecology. *Tobacco J Int* 1990; March/April.
- 24 Economist Intelligence Unit Limited. *Leaf tobacco – its contribution to the economic and social development of the Third World. An EIU Commodity Monograph*. London: EIU, 1980.
- 25 Southgate D. *The economics of land degradation in the Third World*. Environment Department Working Paper No 2. World Bank, Policy Planning and Research Staff, May 1988.
- 26 Barney GO. *The global 2000 report to the President of the US. Entering the 21st century*. London: Pergamon 1981.
- 27 Food and Agriculture Organisation (FAO) of the United Nations. *The economic significance of tobacco*. Rome: FAO, 1983.
- 28 Anderson D, Fishwick R. *Fuelwood consumption and deforestation in African countries*. World Bank Staff Working Paper 704. Washington: World Bank, 1984.