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ECONOMIC ROLE OF TOBACCO PRODUCTION AND EXPORTS IN COUNTRIES DEPENDING ON TOBACCO AS A MAJOR SOURCE OF INCOME

Study by the UNCTAD secretariat

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CONTENTS

TABLES

ANNEX

INTRODUCTION

1. The purpose of this study is to review the role of tobacco in the economies of developing countries that depend on tobacco as a major source of income, and to draw implications for diversification into alternatives to tobacco agriculture.

2. The study has been prepared in response to resolution 1993/79, entitled "Multisectoral collaboration on tobacco or health", of the Economic and Social Council of the United Nations (ECOSOC).[1] In addition to expressing concern about the serious health consequences of tobacco use, the resolution also expressed concern about the economic effects of reduced production in the tobacco-producing countries which are still unable to develop viable economic alternatives to tobacco production.

3. The resolution calls for a review of and recommendations concerning the impact of tobacco production on the economies of tobacco-producing countries, in particular those that depend upon tobacco as a major source of income. It invites Member States and organizations of the United Nations system to develop a range of options, including bilateral and effective multilateral collaboration on agricultural diversification or development of other economic alternatives to tobacco agriculture, as appropriate, to assist economies for which tobacco is a major export, where demand for their tobacco products has decreased as a result of successful strategies for tobacco control.

4. Subsequently, ECOSOC resolution 1994/47 reiterated the need to address all the issues raised in resolution 1993/79, with national plans of action to be developed, upon request, taking into account the economic and social aspects of tobacco production and consumption and the serious health consequences of tobacco use.[2] These subjects and ways of strengthening tobacco control policies and programmes have recently been summarized by the World Health Organization (WHO).[3] World Bank economist, Howard Barnum, has estimated that the world tobacco market gives rise to an annual global loss of US$ 200 billion, taking into account costs associated with mortality and morbidity as well as value of consumer satisfaction and producer profits, and that about half of this loss occurs in developing countries.[4]

5. The study consists of four chapters. Chapter I reviews tobacco production, exports and export earnings by country. An analysis identifies those developing countries and countries of Eastern Europe which depend on tobacco as a major source of income as measured by three criteria, namely, the magnitude of export earnings based on tobacco of each country, the share of tobacco in total export earnings of each country, and these earnings expressed as a share of GDP in each country.

6. Chapter II analyses the economic role of tobacco production and manufacturing in those developing countries identified as dependent on exports of tobacco as a major source of income. It deals with earnings from tobacco in relation to the balance of trade and debt service situation in each country, domestic income and employment provided by tobacco, government revenues from tobacco production and exports, and environmental aspects of tobacco production.

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[1] United Nations, *Official Records of the Economic and Social Council, 1993, Supplement No.1*, E/1993/93.

[2] United Nations, *Official Records of the Economic and Social Council, 1994, Supplement No.1*, E/1994/94.

[3] World Health Organization, "World No-Tobacco Day 1995", *Tobacco Alert*, special issue, 1994.

[4] *Ibid.*, pp. 6 and 13.

7. Chapter III compares returns on tobacco with those of alternative crops and investigates dependency on tobacco in this context.

8. Chapter IV presents some conclusions and recommendations based on the study, while noting that further study and development efforts are needed on alternatives to tobacco production and trade.

Chapter I

TOBACCO PRODUCTION, EXPORTS AND EXPORT EARNINGS

9. Tobacco is grown commercially in more than 100 countries spread across all the continents and located in all the climatic zones except cold temperate regions and arid areas. For some of the producing countries, exports of tobacco leaf and, to a lesser extent, exports of manufactures as cigarettes, cigars and other products, are significant.

10. A starting point in this study is the identification of the developing countries that depend on tobacco as a major source of income. The countries of Eastern Europe are also considered in this context.

11. The magnitude of the value of exports of tobacco leaf and manufactures is a measure of a country's dependence on these exports as it indicates the size of economic activity connected with the production and manufacturing of tobacco for export. Large exports imply considerable income and employment, even when tobacco exports are small in relation to all exports or the whole national economy.

12. Table 1 shows that Brazil, Bulgaria, China, Malawi and Zimbabwe are countries in the above-mentioned category with annual exports of leaf and manufactures greater than US$ 300 million in the 1990 to 1992 period. Leaf exports predominated over manufactures except for Bulgaria and China where manufactures were greater than leaf exports. Turkey, with annual exports of US$ 449 million, is not included, as it is a middle-income country and a member of the OECD. It is noteworthy that countries with annual exports of between US$ 100 million and US$ 180 million comprise: Argentina, Cuba, India, Indonesia and Thailand.

13. In relative terms, the share of exports of leaf and manufactures in all exports of a country is an important measure of dependence on tobacco as a source of income. As seen in table 1, in 1990-1992 tobacco leaf and manufactures accounted for more than 10.0 per cent of all export earnings in two countries. Tobacco represented 73.3 per cent of Malawi's export earnings and 40.9 per cent of Zimbabwe's export earnings. These tobacco exports consisted almost entirely of leaf. Tobacco accounted for 8.4 per cent of the export earnings of Albania and 5.2 per cent of those of the United Republic of Tanzania. For other countries listed in table 1, tobacco represented between 0.4 per cent and 3.3 per cent of all export earnings in the period.

14. A general indication of the part that exports of tobacco leaf and manufactures constitutes in the whole economy of a country is the ratio of these exports to its GDP. As seen in table 1, two countries had ratios greater than 5.0 per cent in the 1989-1991 period. Malawi's tobacco exports were the equivalent of 13.9 per cent of its GDP while Zimbabwe's tobacco exports were equal to 6.2 per cent of its GDP. For other countries listed in table 1, the percentages varied from 0.1 to 0.7. The actual part that tobacco exports play in the whole economy is greater than the ratios cited through multiplier effects in other economic sectors stimulated by tobacco exports, as discussed in chapter II below. These multipliers are, however, difficult to estimate.

Table 1

Production of tobacco, exports and export earnings on tobacco leaf and manufactures, shares of earnings in total export earnings and earnings on leaf and manufactures expressed as shares of GDP for selected countries (annual averages, 1990 to 1992)

	Production of leaf (1000 metric tons)	Export volumes (1000 metric tons)		Export earnings (millions of US$)			Share of exports of leaf and manufactures in all export earnings (per cent)	Export earnings on leaf and manufactures expressed as shares of GDP[a/] (per cent)
		Leaf	Manu-factures	Leaf	Manu-factures	Total		
WORLD	**7 503.8**	**1621.4**	**901.3**	**5524.2**	**14065.2**	**19 589.4**	**0.6**	**..**
DEVELOPING COUNTRIES of which:	**2 663.3**	**884.3**	**244.3**	**2686.8**	**2750.4**	**5 437.2**	**0.7**	**0.1**
AMERICA	**769.8**	**328.6**	**45.4**	**974.5**	**320.7**	**1 295.1**	**0.9**	**0.1**
Argentina	90.6	48.1	1.9	124.7	10.2	134.9	1.1	0.1
Brazil	480.7	206.9	23.7	683.2	124.6	807.9	2.4	0.1
Colombia	31.4	15.1	1.6	25.1	6.4	31.5	0.4	..
Cuba	44.0	15.6	2.4	40.2	72.8	113.1	3.1	0.7
Dominican Rep.	21.5	11.5	1.2	14.6	6.3	20.9	3.2	0.3
Guatemala	11.1	8.1	0.5	24.3	1.6	25.9	2.1	0.2
Honduras	5.2	1.1	1.5	2.4	9.7	12.1	1.8	0.4
Venezuela	14.5	0.9	9.1	2.4	65.9	68.3	0.5	0.1
AFRICA	**397.9**	**243.4**	**5.9**	**763.1**	**46.5**	**809.6**	**1.1**	**0.2**
Malawi	117.7	94.5	0.0	308.8	0.2	309.0	73.3	13.9
Tanzania	14.9	7.3	0.4	15.1	3.6	18.7	5.2	0.6
Zimbabwe	173.3	131.0	1.9	417.5	5.4	422.9	40.9	6.2
ASIA	**1 442.9**	**294.2**	**187.7**	**885.4**	**2344.8**	**3 230.2**	**0.5**	**0.1**
India	549.3	71.2	15.6	137.4	33.6	171.0	0.9	..
Indonesia	82.4	22.7	25.6	65.8	93.2	159.0	0.5	0.1
Syrian Arab Rep.	17.8	4.5	0.6	10.5	18.4	28.9	0.9	..
Thailand	78.1	45.4	0.1	108.7	1.1	109.7	0.4	0.1
Turkey	285.6	102.6	1.5	430.5	18.5	449.0	3.3	0.5
COUNTRIES IN EASTERN EUROPE	**444.7**	**50.9**	**56.7**	**164.2**	**440.5**	**604.7**	**0.5**	**..**
Albania	12.3	11.9	2.3	18.3	15.7	34.0	8.4	2.1
Bulgaria	79.6	30.1	48.6	128.5	410.2	538.7	8.1	3.5
URSS (former)	248.7	0.6	2.5	2.5	5.5	7.9	..	..
SOCIALIST COUNTRIES OF ASIA	**3 035.1**	**62.8**	**16.5**	**120.6**	**193.7**	**314.4**	**0.4**	**..**
China	2 942.9	59.5	16.5	113.1	193.7	306.8	0.4	..

Source: UNCTAD statistics and UNCTAD, *Handbook of international trade and development statistics*, 1993.

a/ Expressed as percentage of annual average of GDP in period 1989 to 1991.

15. Malawi and Zimbabwe are heavily dependent on tobacco as a major source of income by any of the three criteria (see paragraph 5).

16. For other countries, in terms of the magnitude of exports of tobacco and its manufactures, Brazil can be considered to depend on tobacco as a major source of income since annual exports are US$ 807.9 million and it has a large economic sector dependent on tobacco. Likewise Bulgaria and China rely heavily on this income source with tobacco exports at respectively US$ 538.7 million and US$ 306.8 million.

17. No other countries listed in table 1 had tobacco exports of more than US$ 300 million per year or a share of tobacco in all exports of more than 10 per cent, with the exception of Turkey which, as a middle-income country and member of the OECD, is not included. Similarly, tobacco export earnings expressed as a per cent of GDP do not reveal dependence of other countries in this context.

18. In some tobacco-exporting countries, long established tobacco industries are socially and locally important for the employment and income which they provide, although the industries are small for the country as a whole. Cuba and the Dominican Republic, for example, have cigar industries and, as seen in table 1, their shares of tobacco leaf and manufactures in all export earnings were respectively 3.1 and 3.2 per cent while export earnings from leaf and manufactures were the equivalent of 0.7 and 0.3 per cent of GDP, respectively.

19. It is noteworthy that several developed countries have large exports of leaf and manufactures, as seen in the annexed table 1.

20. A few exporting countries, including Malawi and Zimbabwe, grow tobacco almost exclusively for export. Most, however, utilize substantial shares of their production for domestic consumption. The bulk of world production is consumed in the countries where it is grown. It is noteworthy that the production and manufacturing of tobacco for domestic consumption generates domestic income, in addition to that deriving from international trade.

21. The newly independent States of the former Soviet Union trade largely with each other and thus the region of the former Soviet Union is almost self-sufficient. The major tobacco-producing republics are Azerbaijan, Kyrgyzstan, Moldova and Uzbekistan which, in 1993, accounted for 83 per cent of production in the former Soviet Union, while the major consuming States are the Russian Federation and Ukraine.

22. Tobacco is a highly heterogenous commodity at all stages from production to manufacturing. This diversity of qualities adds to the dependence of countries on tobacco as a major source of income. Countries are not only dependent on tobacco as a single commodity but also on the particular types which they grow, process and export. Although there is no common grading system in world trade, six main types and their final uses are as follows.

(a) "Flue-cured" consists of tobacco which has undergone a careful heat curing process. It is a high-value type with a large volume in trade and good market prospects for good qualities. As one of the light tobaccos, it is a principal ingredient in the popular United States and English blends which are the cigarette styles most smoked in the world. Small amounts are used for pipe tobacco.

(b) "Burley" is an air-cured light tobacco with a large volume of trade. It is used in many cigarette blends and pipe tobaccos.

(c) "Oriental" is a light tobacco used in the United States blends and is smoked unblended in Balkan and Middle Eastern countries and in the republics of the former Soviet Union. Minor quantities are used in pipe tobacco.

(d) "Other light tobaccos" are a group largely used in cigarette blends.

(e) "Dark air-cured and sun-cured" tobaccos are a group used in cigars and traditional kinds of cigarettes in some countries.

(f) "Fire-cured" is a dark type used in pipe tobacco, snuff and chewing tobacco.

23. Of interest in this study are the types of tobacco that are exported by the countries identified as depending on tobacco as a major source of income. Brazil and Zimbabwe export mostly flue-cured with relatively small amounts of burley. Malawi exports mainly burley with some flue-cured and small quantities of other types. Bulgaria exports oriental tobacco and cigarettes. In addition to cigarettes, China exports grades of tobacco that are used as fillers in cigarettes.

24. The trend in world demand is toward the light tobaccos (flue-cured, burley and oriental) and countries exporting these types, particularly good quality flue-cured, are normally advantageously placed in comparison with other suppliers. Demand for the light types in Eastern Europe, the former Soviet Union and developing countries is constrained, however, by their relatively high price as compared to other types.

25. The Food and Agriculture Organization of the United Nations (FAO) has analyzed trends in tobacco production, consumption and trade for countries and regions for the period 1974 to 1986 and made projections for the years 1995 and 2000.[5] More recent analyses by the World Bank indicate a shift in world tobacco production to low-cost producing countries in Africa, Asia and Latin America and a downward trend in production in North America and Japan, while future world consumption is expected to be heavily dependent on the Asia and Pacific region with its large share of world population and its good income growth prospects.[6]

Chapter II

ECONOMIC ROLE OF TOBACCO IN COUNTRIES DEPENDENT ON TOBACCO EXPORTS

26. The preceding chapter identified five countries that are dependent on tobacco as a major source of income: Brazil, Bulgaria, China, Malawi and Zimbabwe. In the following sections, the role of tobacco exports of these countries is considered in detail as regards their external sectors, domestic income and employment, government revenues and some environmental aspects.

A. External sectors

27. The shares of earnings on tobacco leaf and manufactures in total export earnings of Malawi and Zimbabwe have been discussed in paragraph 13. Table 2 gives net trade in tobacco and its manufactures calculated as exports net of any imports of the five countries in the period from 1990 to 1992. For comparison, table 2 also lists for each country the current account balance defined as the balance of trade in goods, services and private transfers . Thus, for Bulgaria, Malawi and Zimbabwe, earnings on tobacco reduced the deficits in their balance of trade or, stated differently, if tobacco earnings had been lower, these countries would have had larger deficits. Brazil’s tobacco exports contributed to its positive balance of trade.

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[5] FAO, *Tobacco: supply, demand and trade projections, 1995 and 2000*, FAO economic and social development paper 86, Rome, 1990.

[6] World Bank, *Market outlook for major primary commodities*, Washington, Report No. 814/92, 1992, Vol. II, pp.243-247.

28. Another aspect is a comparison of tobacco earnings with debt service. As seen in table 2, tobacco earnings were two and a half times greater than debt service for Malawi, about three-fourths of debt service of Bulgaria and Zimbabwe and relatively smaller in relation to debt service for Brazil and China. The figures for Malawi and Zimbabwe are particularly significant as debt service was the equivalent of 5.9 per cent of GNP of Malawi and 11.1 per cent of GNP of Zimbabwe in 1992.

29. It is noteworthy that, for Malawi and Zimbabwe, tobacco production, more so than other crops, involves imports of fertilizer, agricultural chemicals, equipment and other items which require expenditure in foreign exchange. The value of these imports could be deducted from net trade in a more complete analysis. Account would have to be taken of some items, such as farm machinery, which are also used for other crops on farms where tobacco is grown.

30. Earnings on exports of tobacco help to provide the financial resources needed for economic development. Structural adjustment programmes in Malawi and Zimbabwe are closely tied to earnings on tobacco. Historically, earnings on tobacco were relatively more stable than those from other agricultural exports. This was partly due to tobacco prices being relatively more stable than prices of other commodities. However, in recent years, tobacco prices have fluctuated more than previously. A return to more stable prices is expected by some industry specialists. Another factor affecting export earnings on tobacco has been the trends in volumes of exports. Thus, Brazil, China, Malawi and Zimbabwe have had strong growth in volumes of exports with consequent growth in their export earnings while Bulgaria's volume and value of exports has fallen.

Table 2

Comparison of net export earnings on tobacco and its manufactures with current account balance a/ and debt service of selected countries, (annual averages, 1990 to 1992) (millions of US dollars)

	Exports of tobacco and its manufactures	Imports of tobacco and its manufactures	Net trade in tobacco and its manufactures	Current account balance	Total debt service
Brazil	807.9	14.7	+ 793.2	+ 338.0	9 022.0
Bulgaria	538.7	38.7	+ 500.0	- 452.7	690.3
China	306.8	165.2	+ 141.6	n.a.	7 941.6
Malawi	309.0	2.2	+ 306.8	- 122.7	115.0
Zimbabwe	422.9	4.2	+ 418.7	- 315.1	545.3

Source: UNCTAD statistics and UNCTAD, *Handbook of international trade and development statistics*, 1993 and World Bank, *World Debt Tables* 1994-95.

a/ Includes balance of trade in goods, services and private transfers but not government transfers.

B. Domestic income

31. As seen in table 1, Brazil, Bulgaria, China, Malawi and Zimbabwe each had annual exports of leaf and manufactures greater than US$ 300 million in the 1990 to 1992 period. These export earnings were distributed through the economies of the countries, with the exception of those which were transferred abroad.

The companies and workers receiving income spent it, in turn, on various investment and consumption goods and services which stimulated economic activity in other sectors through linkages and multiplier effects.

32. As an example, table 3 gives a listing of payments made by Zimbabwe's tobacco growers in producing the 1992/93 crop. The total expenditure of nearly 1.9 billion Zimbabwean dollars, or US$ 330 million, included payments made to companies, parastatals and government departments which supplied the tobacco growers, together with wages, interest, dividends and taxation. As seen in table 4, expenditures by Zimbabwe's merchants and packing houses in 1992/93 amounted to nearly 1.6 billion Zimbabwean dollars or US$ 280 million. Expenditures by growers, merchants and packing houses equalled about one-tenth of GDP, not counting indirect effects in other sectors where expenditures increased because of income received from the tobacco sector.

33. Detailed figures on expenditures of the tobacco industry in Brazil, Bulgaria, China and Malawi are not available.

Table 3

Expenditures of Zimbabwe's growers of tobacco, 1992/93 (in thousands Zimbabwean dollars)

Goods and Services		**914 214**
Chemicals	176 631	
Coals and fuels	161 612	
Fertilizer	129 428	
Insurance	123 857	
Maintenance (buildings and machinery)	122 074	
Services	131 770	
Transport	28 881	
Packing	21 684	
Miscellaneous	18 277	
Labour		**323 867**
Other Expenditure		**615 972**
Government (taxation and fees)	49 573	
Lenders (interest on loans)	201 114	
Re-investment (of capital)	183 642	
Retained (gross income/living expenses)	181 643	
TOTAL		**1 854 053**

Source: Maurice Rooney and Mervyn Ellis, "Zimbabwe Tobacco: An economic impact study", unpublished paper, February 1994.

Table 4

Expenditures of Zimbabwe's merchants and packing houses, 1992/93 (in thousands Zimbabwean dollars)

Goods and Services		**778 566**
Packing and packing material	538 575	
Storage, handling and forwarding	97 601	
Transport (local)	28 002	
Utilities	27 770	
Insurance	16 726	
Advertising, promotion, etc.	10 914	
Services	7 044	
General expenses	51 934	
Labour		**188 680**
Other Expenditure		**630 026**
Government	8 495	
Lenders	378 203	
Reinvestment	175 695	
Retained	67 633	
Total		**1 597 272**

Source: Maurice Rooney and Mervyn Ellis, "Zimbabwe Tobacco: An Economic impact study", unpublished paper, February 1994.

34. Another aspect of domestic income is the share of tobacco in earnings of the agricultural sector as a whole. Gross value of tobacco crops and their contributions to agricultural incomes in 1983 to 1985 were reported by FAO.[7] Recent figures for Zimbabwe indicate that tobacco accounted for 32.4 per cent of agricultural income in 1993 and about 36.8 per cent of it in 1994.[8] For Malawi, tobacco represented 73.0 per cent of agricultural income in 1992 and 68.0 per cent in 1993.[9] For Bulgaria, the value of tobacco production was 5.3 per cent of that of the agricultural sector in 1991.

35. A further aspect of domestic income is the value added between sales by farmers and the export level. In Zimbabwe, value added between auctions where farmers sell their crops and the export level, adjusted for shrinkage from green to packaged weight of 14 per cent, was 45 per cent of the auction value in 1992 and 56 per cent in 1993. Comparable figures for Malawi were 14.5 per cent of the auction value in 1992 and 37.8 per cent in 1993.

36. The benefits from tobacco production are not evenly distributed among producers. Large-scale growers in Zimbabwe usually produce high-value flue-cured tobacco and, in Malawi, both the flue-cured and burley tobaccos. These large-scale farms are more efficiently managed in crop rotations and input use. They

[7] FAO, *The economic significance of tobacco*, FAO economic and social development paper 85, 1989, p.7.

[8] Information from the Zimbabwe Tobacco Association.

[9] Information from the Tobacco Association of Malawi.

also have better access to credit, extension and marketing services. The small-scale growers of Zimbabwe and Malawi, including those in Malawi using traditional tenured or customary land, while benefiting from tobacco production, are at a relative disadvantage as compared to the large operations. In Zimbabwe especially, there is disparity between the wealth and income of the large farmers and that of the small-scale farmers which is further complicated by the wage and land redistribution aspirations of the workers on the larger farms.

37. Income distribution in Brazil is complex as the small-scale farmers in the southern part of the country - where most the nations's tobacco is produced - grow and market their crops under a contract system. Tobacco companies organize seasonal contracts in which they agree to buy a farmer's total production and provide technical advice. Fertilizer, pesticides and some tools are often provided at low cost. Seeds are distributed to assure quality. Interest on loans for capital investments such as barns is also financed by the companies. The estimated total cost of assistance to growers may be around 30 per cent of the total price paid to producers.[10] Prices paid to growers are negotiated based on costs of production plus a return to the growers.

38. Bulgaria's structure of production and system of remuneration is in transition from centrally planned agriculture to a system with an important role for the private sector. Land ownership and tenure are among the problems to be solved. China's system is centrally planned.

C. Employment

39. In each of the five countries identified as dependent on tobacco exports, large numbers of workers are employed in cultivation and processing of green leaf on farms. Some of the employment is seasonal. Both men and women are hired, thus enabling higher earnings at the family level. The process is highly labour-intensive, starting from preparation of seedbeds, transplanting of seedlings, caring for the plants, harvesting of leaves as they mature and the curing of leaves. As an example, one hectare of tobacco production in Brazil requires on average 207 worker-days or about 6.8 worker-months of labour. In Bulgaria, hand labour in picking, sorting and stringing of the small leaves for oriental tobacco from one hectare of tobacco can involve 12 to 14 worker-months of labour. Efforts are being made in the producing countries to increase productivity through research and development.

40. In Brazil, there are some 193,600 family holdings, mostly in the southern part of the country. The average farm size is 22 hectares of which on average only ten per cent is planted to tobacco. A high proportion of labour is supplied by family members, the remainder being provided by hired labour. At an estimated four full-time or seasonal workers per farm, 774,400 persons would be engaged fully or seasonally in tobacco production.[11] Other workers are employed in the processing and marketing to the export level as well as in sectors that are stimulated indirectly by the spending of the tobacco industry.

41. Some 16 million workers are employed in tobacco cultivation in China where the production process is extremely labour-intensive.[12] As China exports only about 2.6 per cent of its production, an estimated 400,000 workers in cultivation may be attributed to tobacco production that is destined for exports. Additional

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[10] International Tobacco Growers' Association, *Tobacco Farming: Sustainable Alternatives*?, East Grinstead, West Sussex, England, vol. 2, 1993, pp. 8-9.

[11] *Ibid.*, p. 8.

[12] International Tobacco Growers' Association, *Tobacco in the Developing World*, East Grinstead, West Sussex, England, 1990, p. 14.

workers are employed in leaf processing, manufacturing and exports. They number 520,000 in all but only a fraction may be directly attributable to tobacco exports.[13]

42. Employment in Malawi's tobacco industry in 1992 is seen in table 5. There are many small-scale farmers and relatively few large-scale operations. Employment on the land, according to a recent survey, totalled about 662,000 and comprised 95.6 per cent of the gross total, as seen in table 5.[14] As tobacco production and marketing play a large role in the economy, other sectors are heavily dependent on the tobacco industry. The Ministry of Labour estimated that nearly a third of total paid employment in Malawi is derived from the tobacco industry.[15] These workers, together with their dependents, are estimated to number 4.15 million people or 52 per cent of the country's population.

Table 5

Employment in Malawi's tobacco industry, 1992

		Number engaged
Primary production (from planting to drying of the leaf on the farm)		
Growers:	86 480	
Tenants:	149 148	
Workers:	426 493	
Total employment on the land		**662 121**
Grading of leaf		**11 311**
Processing and manufacturing		**6 211**
Storage and other services		**2 729**
Distribution		**10 134**
Gross Total		**692 506**

Source: Tobacco Association of Malawi.

43. In Zimbabwe, tobacco growing employs one-third of all agricultural labour and ten per cent of the national labour force. In 1992/93, there were about 14,400 growers including more than 10,000 small growers. Table 6 lists direct employment by activity in tobacco growing, marketing and manufacturing with a total of 120,595 employees in 1992/93. Indirect employment in sectors stimulated by the tobacco industry is estimated to total 33,485. Dependents of all the workers in direct and indirect employment are given as 637,270 people. A grand

[13] Jin Maoxian, "The position and role of China's tobacco industry in international markets," *Sino World Tobacco*, vol. 26, December 1994, pp. 64-74.

[14] A detailed analysis of employment in tobacco production and marketing is given in: Wycliffe Chilowa, *The significance of tobacco in the economy of Malawi*, University of Malawi, Centre for Social Research, December 1993.

[15] International Tobacco Growers' Association, *Tobacco Farming: Sustainable Alternatives*?, East Grinstead, West Sussex, England, vol. 1, 1993, p. 16.

total of workers and dependents is 791,350 people or 8.3 per cent of the country's population, who depend on tobacco directly or indirectly for their livelihood.

Table 6

Employment and dependents of employees in Zimbabwe's tobacco industry, 1992/93

	Number engaged	
Direct employment		**120 595**
GROWING:		
Flue-cured growers	3 000	
Burley growers	11 400	
Labour	98 000	
Research	250	
Training	130	
Service companies	1 760	
Associations	60	
MARKETING		
Buyers and processors	5 300	
MANUFACTURING	695	
Indirect employment		**33 485**
GROWING	24 050	
PROCESSING AND EXPORT	1 165	
MANUFACTURING	150	
MARKETING (Wholesale and retail)	8 120	
TOTAL EMPLOYMENT		**154 080**
Dependents of employees in:	Number of dependents	**637 270**
Direct employment	509 760	
Indirect employment	127 510	
TOTAL OF EMPLOYMENT AND DEPENDENTS		**791 350**

Source: Maurice Rooney and Mervyn Ellis, "Zimbabwe Tobacco: An economic impact study", unpublished paper, February 1994.

D. Government revenues from production and export of tobacco

44. As tobacco is included in general taxation of the agricultural and manufacturing sectors, it is difficult to separate out a share for tobacco alone. Government revenues are also generated in sectors other than tobacco where spending by the tobacco industry stimulates economic activity and taxable income. Some specific examples of tax payments are, however, available.

45. For Malawi, contributions by the tobacco industry to government revenues through tax payments represented 16.7 per cent of total government receipts in

1983.[16] In 1991, income tax paid by growers, merchants and their employees amounted to the equivalent of US$ 40 million or 11 per cent of the total tax revenues.[17]

46. Income tax paid by Zimbabwe's growers, merchants and their employees was the equivalent of US$ 12 million in 1991/92.[18] As seen in table 3, taxes and fees paid, by growers in 1992/93 were 49,573,000 Zimbabwean dollars or about US$ 9 million.

E. Environmental aspects of tobacco production

47. Tobacco production requires heavy use of fertilizers, pesticides and other agricultural chemicals. As an example, chemicals used in Zimbabwe for production of flue-cured tobacco are fumigants for preparation of seedbeds, pesticides to control nematodes in fields, weed control chemicals, growth regulators, chemicals to control unwanted growth of suckers, fungicides for control of diseases, fumigants for insect control in storage and colouring agents.

48. Fertilizers, pesticides and other chemicals may spread in the local environment, including the water supply, and cause harm to the people living in the area and to the habitat. Pesticides and agricultural chemicals may be dangerous to health of workers, if improperly handled or used without necessary protective clothing.

49. Nicotine poisoning of workers, including women and children who work on family-owned farms, is a health risk. Child labour and interference with schooling of children who work on farms are issues.

50. Wood is used as fuel for flue and fire curing of tobaccos. Consumption for this purpose, along with household uses for heating, cooking and building material, may lead to deforestation with consequent damage to habitats on which plant and animal life depend as well as to soil erosion in deforested areas and damage to watersheds and underground water levels. Valuable base-line data and analyses by type of land cover of woody biomass in Malawi and Zimbabwe have recently been published.[19]

51. Deforestation in Malawi, in part owing to needs for fuel to cure tobacco, is not well documented but may be reaching critical levels. The country uses wood for flue and fire curing of about 20 per cent of its tobacco. At least one of the larger flue-curing operations is reported to use charcoal produced from thinnings of commercial forest in the central and northern part of the country. About 80 per cent of production is burley and other air-cured tobaccos that do not require a fuel.

52. Tobacco farmers in the southern part of Brazil, where about 80 per cent of the tobacco is grown, have planted trees to provide fuel for flue-curing. The industry claims that it is self-sufficient in fuel for this purpose. In one company-sponsored scheme, farmers that contract with the company plant trees, principally Eucalyptus species, to supply wood for flue curing. The plan is for

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[16] Agro-economic Services Ltd. and Tabacosmos Ltd., *The employment, tax revenue and wealth that the tobacco industry creates*, London, 1987, Table A 3.6.

[17] International Tobacco Growers' Association, *The economic significance of tobacco growing in Central and Southern Africa*, East Grinstead, West Sussex, 1992, p. 9.

[18] *Ibid.*, p. 6.

[19] A.C. Millington, R.W. Critchley, T.D. Douglas and P. Ryan, *Estimating woody biomass in Sub-Saharan Africa*, World Bank, 1994.

approximately one hectare of trees to sustain production from two hectares planted in tobacco, the average area of tobacco planting on a farm. Trimmings and thinnings are used. One seventh of the trees are to be cut annually so that the area will be on a seven-year cutting cycle with the trees replaced every 28 years. Farmers should use an average of about 4 kilograms (kg) of wood per kg of flue-cured leaf.

53. Zimbabwe's small-scale farms use wood for flue-curing but produce mostly burley and other air-cured tobaccos. The large-scale farms have converted to coal for flue-curing.

54. FAO reported that, in 1986, some 12.9 kg of wood were required to cure 1 kg of flue-cured tobacco in Malawi. Comparable figures reported for Brazil were 5.9 kg of wood per kg of cured tobacco and, for Zimbabwe, 10.8 kg of wood per kg of cured tobacco.[20] It is noteworthy that efforts are being made to increase the efficiency of use of fuel wood through improvements in design of flues and furnaces. Another means of increasing efficiency, if finance is available, is purchase of wood well in advance of use to ensure that it is dry.

55. China is reported to use mostly coal for flue-curing. Bulgaria produces little flue-cured tobacco as most of its production is air-cured oriental tobacco.

56. Another environmental concern is depletion of nutrients in soils and loss of soil in erosion. Small-scale farms in Zimbabwe may be depleting their soils as farmers attempt to maximize their returns. Large-scale farms, on the other hand, take measures to protect the soil. The crop rotation system, with fertilization of crops and years of grass (see paragraph 70), helps to conserve the soil quality. The situation in Malawi's small-scale sector and estates farmed by tenants is not well-documented. Such is also the case for Brazil, Bulgaria and China.

57. A further concern is whether land planted to tobacco is expanding and, if so, what are the environmental consequences. The area planted to tobacco in the five countries studied seems, at present, to be stable. Whether this area is shifting to encroach on forests or other environmentally sensitive locations is not documented.

58. A full economic analysis should take account of any harm to farm workers and environmental costs of deforestation and damage to soil and water resources which result from tobacco cultivation. The health and environmental consequences of production of alternative traditional crops and new agricultural products should likewise be fully evaluated in economic appraisals.

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[20] FAO, *The economic significance of tobacco*, FAO economic and social development paper 85, 1989, pp. 12-14.

Chapter III

ALTERNATIVES TO TOBACCO PRODUCTION IN COUNTRIES DEPENDENT ON TOBACCO EXPORTS

59. Dependency of countries on tobacco exports as a major source of income may be seen from the perspective of tobacco's attractiveness to growers in comparison with other crops or enterprises.

60. FAO reported on gross returns per hectare or sales value of tobacco and other crops in 1980 to 1984.[21] In addition to gross returns, costs of production need to be considered as tobacco is a costly crop to grow. In Zimbabwe, for example, costs per hectare for growing tobacco are often six to seven times greater than those for other major crops. A measure of gross margin or profit per hectare, after deduction of variable costs from sales value, is relevant from the point of view of decisions by farm managers on which crop to plant.

61. Gross margins per hectare have been studied by David Patchett and James Tuttle in research sponsored by the International Tobacco Growers' Association.[22]

62. For Brazil, Patchett and Tuttle found that gross margins per hectare for tobacco in the southern regions, where 80 per cent of the country's tobacco is grown, were as follows, depending on the type of tobacco produced: Amarelinho US$ 580, burley US$ 531, Galpao Commun US$ 455 and Virginia US$ 195. Surprisingly, the most popular type grown, Virginia, had the lowest gross margin. These gross margins per hectare were compared to those of selected alternatives in Rio Grande do Sul in the southern region, as follows: manioc US$ 595, beans US$ 79, sweet potatoes US$ 40 and maize US$ 2. Only manioc exceeded tobacco in profitability. This was due to very low costs and very high yields of manioc which may have been augmented by residual nutrients left in the soil from fertilization of tobacco as the rotation pattern of tobacco growing always includes at least one year and sometimes two years of manioc production in a six year rotation cycle.

63. A similar analysis was performed by Patchett and Tuttle for tobacco and selected alternatives in Malawi. Tobacco was found to be the most profitable crop by far. Gross margin of the least profitable type of tobacco, sun/air-cured at 809 Malawian kwacha per hectare, exceeded that of Blue Bonnet variety of rice, the most profitable alternative at 622 Malawian kwacha per hectare, by over 30 per cent. The most profitable tobacco variety, flue-cured, with a gross margin of 4,285 Malawian kwacha per hectare, was nearly seven times as profitable as this rice crop. The other alternatives, maize, groundnuts, cotton, wheat and beans, were less competitive. The analysis did not include tea, sugar or coffee, all of which are major export crops.

64. For Zimbabwe, Patchett and Tuttle found, from their investigation of gross margin information, that none of the major crops currently grown in the country rivalled tobacco in terms of profitability. Gross margins of Zimbabwe's important crops - wheat, cotton, groundnuts, maize and soya beans - were substantially lower than those for either flue-cured or burley tobacco. The gross margin of the most profitable alternative crop, coffee, was 2,689 Zimbabwean dollars per hectare or only 41.2 per cent of the profitability of burley, with a gross margin of 6,534 Zimbabwean dollars, and 15.5 per cent as profitable as a hectare of flue-cured which had a gross margin of 17,308

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[21] *Ibid*, pp. 8-9.

[22] International Tobacco Growers' Association, *Tobacco farming: Sustainable alternatives*?, East Grinstead, West Sussex, England, vol. I, 1992, and vol. 2, 1993.

Zimbabwean dollars.

65. As noted in paragraph 58, a full economic analysis should take account of any harm to health of workers and the environmental costs of production of tobacco and alternative crops.

66. Comparable data or other information on decision-making on which crops to plant are not available for Bulgaria or China, as their agricultural systems differ from a market-based system.

67. A shift of land-use from tobacco crops to traditional food crops would result in more production of the latter which would need outlets either in more consumption by a country's population, substitution of domestically produced food for imports, or by exports to foreign markets. Brazil, Bulgaria and China have large domestic markets for food. Malawi and Zimbabwe, being predominantly agricultural countries, grow almost all of their own food supplies, although there is scope for improving food consumption and, in the case of Zimbabwe, the country imports a fifth of its wheat requirements, which might be replaced by domestic production.

68. Development of export markets for traditional crops or new agricultural products would require extensive efforts in many areas including, agricultural research and development, training of farmers, credit, marketing and transportation. Land-locked Malawi and Zimbabwe face particularly difficult transportation conditions since air transport is costly and limited in capacity while over-land and sea routes preclude shipping of perishable products. Products which are storable and high-value per unit of volume are suited for surface transport. Also of importance are national economic reforms in macroeconomic, trade and other policies in the exporting countries as well as ways and means for increasing market opportunities in importing countries.

69. Despite the many requirements for successful diversification, there are numerous ideas for alternative crops and other enterprises. Much further investigation is needed to determine which of them are economically, socially and politically feasible. The environmental consequences should also be assessed. Ronald Watts and Theresa Watts have compiled an extensive list of ideas for diversification in Zimbabwe, as seen in table 7.

70. It is noteworthy that large-scale farmers in Zimbabwe have diversified to some extent. This is partly owing to a need for crop rotation as growing tobacco is susceptible to infestations of nematodes in the soil. These pests can be controlled by crop rotation, such as tobacco followed by maize, which benefits from residual nutrients left in the soil from fertilizing tobacco, and followed again by one or two years of grass for grazing of beef cattle. Tobacco farmers produce one-third of the country's maize and beef requirements as well as a fifth of the wheat requirements and some soya beans and groundnuts. It is also noteworthy that estates in Malawi produce food crops and keep livestock and, in some cases, also produce fish.

71. A few large-scale farms in Zimbabwe have begun production of new high-value crops and other activities such as game ranching and wildlife tourism. One farmer has 300 hectares of various seed crops for export and a large asparagus export business in addition to his 100 hectares of tobacco. Others have begun exports of fruits, vegetables, flowers and exotic products such as essential oils. The production and export of these items has been the result of entrepreneurial skills and efforts of the large farmers who maintain that revenue from their tobacco crops absorbs much of the fixed costs of their farms and that, without tobacco, the new enterprises would not yet be able to stand alone.

Table 7

Diversification possibilities in Zimbabwe

1. Local food crops: maize, sorghum, sunflower, soya beans, wheat, groundnuts, sugar.
2. Fibre crops: cotton, kenaf, silk.
3. Flower exports: roses, protea, carnations, asters, bonsai, dried flowers.
4. Vegetable exports by air or sea (canned or freeze dried): mange tout peas, green beans, asparagus, baby corn, courgettes.
5. Beverages: coffee. Wine from grapes and other fruits. Beer, spirits.
6. Fruit exports by air or sea: citrus, kiwi, avocado, mango, strawberries, raspberries, Cape gooseberries.
7. Nut exports: macadamia, pecan, cashew.
8. Game ranching/tourism.
9. Livestock products: game, ostrich, beef, pigs, poultry, fish from farm dams.
10. Seed exports: vegetable, grass, flowers and food crops.
11. Essential oils and other oil crops: jatropha, castor, etc.
12. Natural insecticides: Pyrethrum.
13. Skins: game, ostrich, crocodile.
14. Herbs and spices: paprika, chilies, etc.

Source: Ronald Watts and Theresa Watts, "National dependence on tobacco: A case study", in *Proceedings of the All Africa Conference on Tobacco or Health*, 14-17 November 1993, Harare, Zimbabwe, p. 115.

Chapter IV

CONCLUSIONS AND RECOMMENDATIONS

72. The purpose of the study is to review the role of tobacco in the economies of developing countries that depend on tobacco as a major source of income, and to draw implications for diversification into alternatives to tobacco agriculture. The study was prepared in response to ECOSOC resolution 1993/79 which, in addition to expressing concern about the serious health consequences of tobacco use, also expressed concern about the economic effects of reduced production in the tobacco-producing countries which are still unable to develop viable economic alternatives to tobacco production. The resolution called for a review of and recommendations on the impact of tobacco production on the economies of tobacco producing countries, in particular those that depend on tobacco as a major source of income. ECOSOC resolution 1994/47 likewise requested that all the issues raised in resolution 1993/79 be addressed. WHO has

recently reviewed these issues and ways of strengthening tobacco control policies and programmes.[23]

73. The study has investigated the dependence of the developing countries and the countries of Eastern Europe on tobacco as a major source of income in terms of the magnitude of the value of exports of tobacco leaf and manufactures of each country, the share of leaf and manufactures of tobacco in total exports of a country and a ratio of the value of exports of tobacco leaf and manufactures to GDP of a country as a general measure of the part that exports constitute of the whole economy.

74. The findings indicate that Malawi and Zimbabwe are heavily dependent on tobacco export earnings by any of the three criteria. In particular, tobacco represented 73.3 per cent of Malawi's export earnings and 40.9 per cent of Zimbabwe's export earnings in 1990-1992.

75. Brazil, Bulgaria and China were found to have a large domestic sector that is dependent on tobacco exports as, in each case, their annual exports averaged more than US$ 300 million in the 1990-1992 period.

76. Chapter III considered the role of tobacco in the external sector and domestically in income, employment, government revenues and some environmental aspects for each of the five countries. Of special significance are the earnings and very large numbers of workers gainfully employed in tobacco production, processing and exports as well as the income and employment generated in other sectors stimulated by the tobacco industry. A full economic analysis should take account of any harm to health of workers and environmental consequences of production of tobacco and alternative crops.

77. The available figures on profitability of alternative crops in Brazil, Malawi and Zimbabwe, as presented in chapter IV, show that tobacco is far more remunerative than traditional crops. However, there are numerous ideas for diversification possibilities, as exemplified by those of Zimbabwe. Much further investigation is needed to determine which of the ideas are likely to be viable possibilities. Considerable development effort would be needed to diversify out of tobacco production.

78. Fully equivalent diversification implies not only attaining a level of export earnings equal to that gained from tobacco but also distribution of income to and employment of the workers in the highly labour-intensive tobacco industries of the five countries.

79. The international community should assist, when requested, with developing a range of options, including bilateral and multilateral collaboration on agricultural diversification or other economic alternative to tobacco agriculture, to assist countries where tobacco is a major export. The national plans of action called for in ECOSOC resolution 1994/47 (see paragraph 4) could include investigation and development of alternative crops and other economic alternatives. This work would depend on the availability of finance to cover the spectrum of activities.

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[23] World Health Organization, "World No-Tobacco Day 1995", *Tobacco Alert*, special issue, 1994.

Annex

Table

Developed countries' production of tobacco, exports and export earnings on tobacco leaf and manufactures, shares of earnings in total export earnings and earnings on leaf and manufactures expressed as shares of GDP, annual averages, 1990-1992

	Production of leaf (1000 metric tons)	Export volumes (1000 metric tons)		Export earnings (millions US$)			Share of exports of leaf and manufactures in all export earnings (per cent)	Export earnings on leaf and manufactures expressed as shares of GDP[a/] (per cent)
		Leaf	Manufactures	Leaf	Manufactures	Total		
TOTAL OF DEVELOPED MARKET ECONOMY COUNTRIES of which:	1 360.5	623.5	583.7	2 552.6	10 680.6	13 233.2	0.5	..
EEC	414.2	340.2	337.5	855.2	5316.7	6172.0	0.4	0.1
Belgium-Luxembourg	1.2	7.4	20.8	27.3	331.8	359.1	0.3	0.2[b]
Denmark		0.8	5.4	6.1	120.7	126.8	0.3	..
France	27.6	11.6	30.5	48.2	163.8	212.0	0.1	..
Germany	8.0	22.8	91.5	82.7	1195.3	1 277.9	0.2	..
Greece	159.3	120.0	9.7	349.1	61.9	411.0	4.7	0.6
Ireland		0.3	4.5	0.7	53.9	54.6	0.2	0.1
Italy	167.2	132.2	0.8	174.7	10.1	184.8	0.1	..
Netherlands		12.2	107.1	96.1	1977.1	2 073.2	1.5	0.7
Portugal	5.2	4.4	0.2	8.8	3.4	12.1	..	..
Spain	47.5	18.5	2.3	29.8	17.3	47.1	0.1	..
United Kingdom		10.1	64.5	31.7	1381.6	1 413.3	0.7	0.1
South Africa	34.5	6.0	0.6	17.1	3.5	20.6	0.2	..
Switzerland	1.3	9.8	16.0	60.6	257.5	318.1	0.5	0.1
United States	752.2	240.7	207.2	1 523.1	4 716.8	1.5	1.5	0.1

Source: UNCTAD statistics and UNCTAD, *Handbook of international trade and development statistics*, 1993.

a/ Expressed as percentage of annual average of GDP in period 1989 to 1991.

b/ Expressed as percentage of 1990 GDP