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Economic Research Informing Tobacco Control Policy

# *Why Tobacco Control Doesn't Hurt Farmers*

Decoupling Domestic Cigarette  
Consumption from Leaf Production

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and Evan Blecher

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## About Tobacconomics

Tobacconomics is a collaboration of leading researchers who have been studying the economics of tobacco control policy for nearly 30 years. The team is dedicated to helping researchers, advocates and policymakers access the latest and best research about what's working—or not working—to curb tobacco consumption and the impact it has on our economy. As a program of the University of Illinois at Chicago, Tobacconomics is not affiliated with any tobacco manufacturer. Visit [www.tobacconomics.org](http://www.tobacconomics.org) or follow us on Twitter [www.twitter.com/tobacconomics](https://www.twitter.com/tobacconomics).

## Section I

### *Introduction*

Manufactured cigarettes began to be produced and widely smoked in the 19th century, resulting in a major shift in global tobacco use. Today the overwhelming majority of tobacco is consumed by smoking manufactured cigarettes. Globally, smoking prevalence increased consistently among men, and later among women, in high-income countries (HICs) until the 1960s when the health risks and consequences of smoking became widely known. This resulted in declines in smoking prevalence in HICs, but did not translate directly into a decline in global cigarette sales as the declines were offset by prevalence increases in low- and middle-income countries (LMICs) combined with large increases in the global population.

In more recent years, declines in smoking prevalence have continued rapidly in HICs and declines have begun to occur in LMICs. As a result, the number of adult smokers has also declined, from 1.139 billion in 2007 to 1.125 billion in 2015 due to a decline in adult smoking prevalence from 23.5 to 20.5%, even though the global population rose during that time. Furthermore, data from Euromonitor shows that global cigarette sales peaked at 5.5 trillion sticks per year in 2012 and declined to 5.1 trillion sticks per year in 2016. However, as this paper describes, the decline in tobacco use as measured by smoking prevalence and cigarette sales does not coincide with trends in tobacco leaf production, which peaked more than 20 years earlier (in the 1990s).

Much of the decline in smoking is attributable to tobacco control policies that reduce the demand for tobacco. These policy interventions occurred earlier in HICs, but have gained greater global momentum since the adoption and entry into force of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) in 2005 (see annex). The FCTC also recognizes the need to promote economically viable alternatives to tobacco leaf production.

The tobacco industry and their proxies, ostensibly in the interest of tobacco farmers, frequently argue that tobacco control policies, which lead to a decline in tobacco use domestically, will create a

‘livelihood crisis’ among tobacco farmers by reducing the demand for tobacco leaf (Lencucha et al., 2016). These arguments relate mostly to farmers in LMICs, where most of the world’s tobacco is now grown. Furthermore, this narrative pits public health against economics where invariably public health is a less important consideration (Labonté et al., 2018).

This paper examines the tobacco supply chain and recent trends that can inform tobacco control policies, specifically addressing the arguments in opposition to tobacco control policies in relation to tobacco farming.

Tobacco farming is part of a much larger and complex supply chain. Tobacco is a vertically integrated industry centered on a small number of highly concentrated multinational corporations and a large state-owned monopoly in China, that perform the manufacturing, marketing, branding, and coordination functions of the chain. This paper describes three important trends in the supply chain over the past two decades. First, the location of tobacco farming sources has shifted from HICs to LMICs. Second, there is a trend toward consolidation among tobacco leaf merchants and manufacturers: two leaf merchants and five manufacturers dominate the global tobacco market. Third, leaf purchasing systems are moving away from auctions to contract-based farming arrangements.

Section II examines the shifts in sourcing patterns from HICs to LMICs. More than 90% of global tobacco leaf is now grown in LMICs, predominantly China. This shift in the supply chain over several decades has decoupled domestic tobacco use from the domestic supply of tobacco leaf. Many large tobacco growing countries are net exporters of tobacco leaf. In most producer countries, farmers primarily produce for global markets; hence, demand and prices for their produce are unaffected by domestic demand reduction policies.

Section III analyzes the implications of rising market concentration among leaf markets and tobacco manufacturers. The trend of increasing consolidation among firms gives leaf merchants and tobacco manufacturers monopsony power as tobacco leaf buyers and weakens the bargaining

position of tobacco farmers. The uneven dynamics between buyers and farmers are further complicated by the rise of contract-based farming arrangements, where farmers are provided with inputs and credit to produce specified quantities and quality at set prices. These practices perpetuate economic dependency on tobacco companies and lower incomes for tobacco farmers relative to non-tobacco farmers. This imbalance in market power is particularly evident in LMICs heavily focused on tobacco leaf production.

Section IV presents three experiences of countries adapting to changes in the supply chain. Section IV.A presents a Brazilian case study, showing decoupling between local tobacco control policies and the local tobacco production targeted to global demand. The case study examines a comprehensive tobacco control policy and a high increase in tobacco taxes. Section IV.B shows how farmers' livelihoods are being shaped by programs encouraging alternative crop cultivation in Turkey. Section IV.C shows China's leading position in the global tobacco market being (simultaneously) a big leaf producer, a big leaf exporter, and the most important leaf importer, as well as a top-ranked cigarette manufacturer.

Finally, Section V concludes.

## Section II

### *The decoupling between domestic demand for tobacco products and domestic supply of tobacco leaf*

In the largest tobacco leaf producer countries, tobacco farming (domestic tobacco supply) is oriented to the international market (global tobacco demand).

Tobacco production can be broken down into three broad activities, each with different technology requirements and different value addition to the process as a whole. The first stage is farming, also known as cultivation and curing, which is a highly labor-intensive process requiring specific biophysical conditions. This stage provides the main input in the form of unprocessed tobacco. The second stage is primary processing, which involves stemming and stripping of tobacco. This stage provides the intermediary input in the form of

processed tobacco or tobacco leaf. Finally, the third stage is secondary processing or manufacturing, which employs a higher technology and skill level, and transforms inputs into final outputs — that is, tobacco products in the form of cigarettes, chewing tobacco, etc. (Goger et al., 2014).

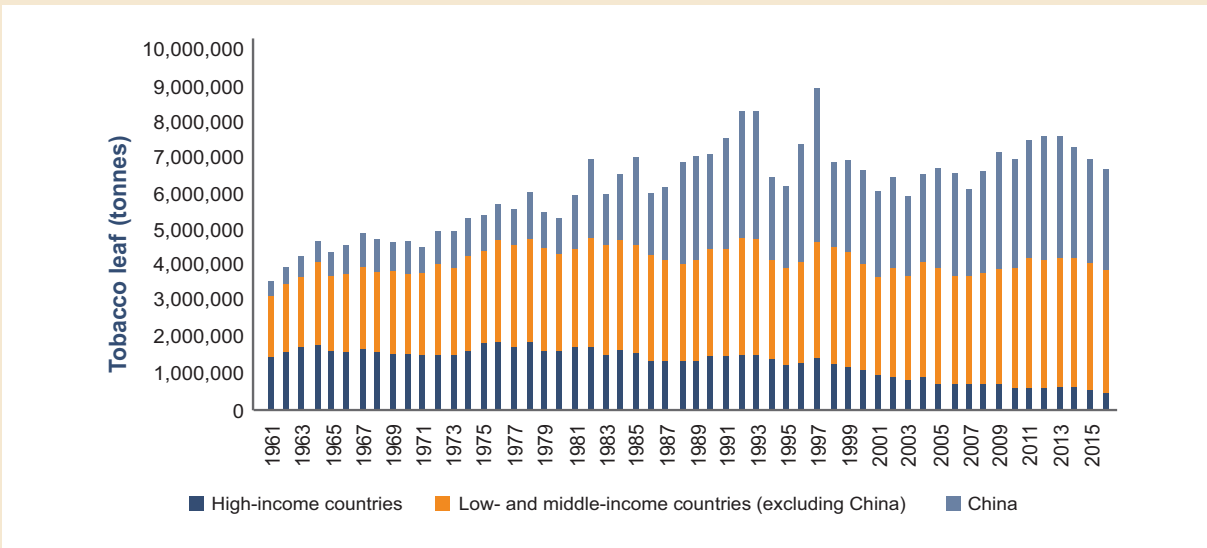
This input-output structure of tobacco production has a distinctive feature: Production activities can be divided between different enterprises and geographically dispersed, each to a location that fits its requirements. For example, the majority of enterprises currently engaged in farming are smallholders producing unprocessed tobacco on family farms averaging less than one hectare in LMICs. As unprocessed tobacco is a semi-perishable commodity and requires relatively quick primary processing, the second stage is generally performed in facilities located in leaf producing countries. Manufacturing is a 'capital-intensive, quality sensitive, and mechanized' process and uses cured tobacco as input (which can be stored for longer periods under appropriate conditions and traded), and these facilities are mainly located in HICs (Goger et al., 2014).

The current geographic distribution of tobacco production activities represents a significant shift experienced in the past two decades: The location of tobacco farming sources has shifted from HICs to LMICs while major manufacturing facilities have generally remained in HICs (Goger et al., 2014).

Figure 1 shows the volume of tobacco leaf production between HICs and LMICs between 1991 and 2016. China, overwhelmingly the largest producer, is shown separately. Overall, tobacco leaf production grew consistently from 3.6 billion tons annually in 1961, peaking in 1997 at nearly 8.9 billion tons. Production declined to a relative low of 6.0 billion tons in 2003, and then recovered to 7.6 billion tons in 2013, and has declined each year since. In 1961, HICs produced 1.5 billion tons annually or 47% of global production, and by 2016 this number had declined by two-thirds to 0.5 billion tons annually, or just 8% of global production. In 1961, LMICs produced 2.1 billion tons annually, of which China only produced 0.4 billion tons, or 18%. By 2016, production rose to 6.1 billion, of which China produced 2.8 billion or 46%.

**Figure 1**

**Tobacco leaf production in HICs, LMICs, and China, 1961-2016**



Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017)

Figure 2 shows the share of tobacco leaf production of the eleven largest producers, between 1992 and 2016. The figure shows that tobacco farming is highly concentrated in a small group of countries. China continues to be the top producer, accounting for approximately 42% of global production, while India and Brazil follow as the second and third largest producers in 2016, with 11 and 10%, respectively. Table 1 depicts the data slightly differently, showing the ranking of the ten largest producer countries in 1992 and 2016. All three HICs in the top ten global producers in 1992 have dropped in the rankings, and two have fallen out completely (Greece and Italy). The United States (U.S.) remains the only HIC that is a top ten global producer in 2016. Greece and Italy have been replaced with LMICs that have risen in the rankings, such as Indonesia and Malawi.

The location of manufacturing facilities, however, has not experienced a significant shift. European countries, such as Germany and the Netherlands that have historically served as prominent manufacturing countries, have retained their tobacco manufacturing facilities and continue to be leading exporters and re-exporters of cigarettes and other tobacco products (Goger et al., 2014). In

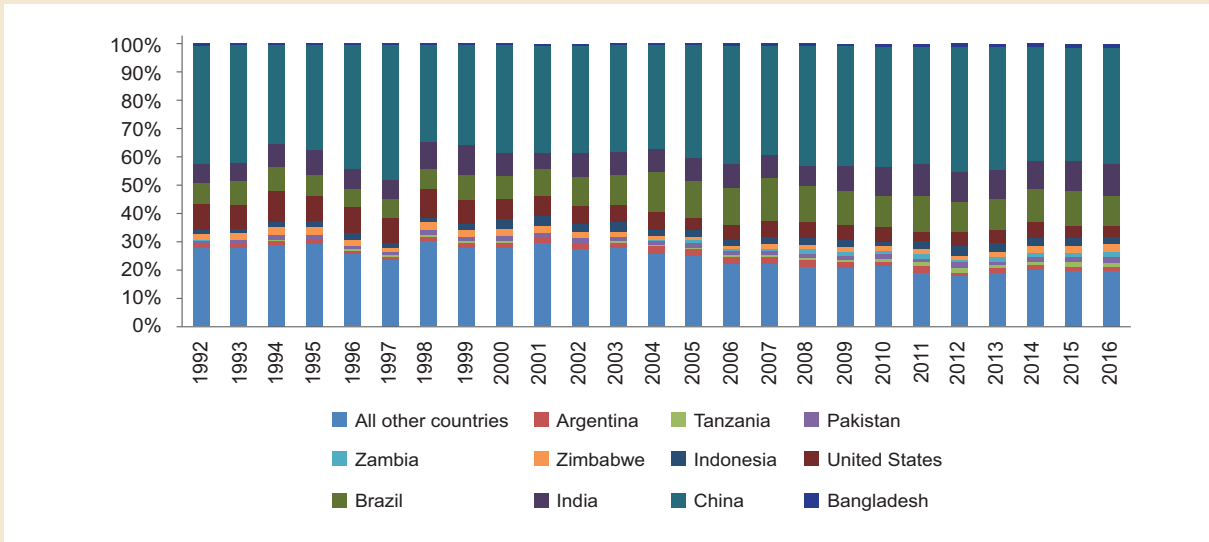
2016, Germany, Poland, and Russia were among the top ten cigarette manufacturing countries. China continues to hold the largest share of cigarette manufacturing in the world at 42.6% in 2016 (Euromonitor, 2017).

The shift in sourcing patterns and increasing participation of LMICs in tobacco leaf production is partly a result of a global process of trade liberalization in the 1980s that induced dramatic changes in many industries and regions. This shift mirrors patterns of change in the structure of global trade that accompanied the increasing volume of trade—disintegrating the production process into different parts and locating these parts in different countries (Feenstra, 1988). These changes ushered in a new phase of export growth in LMICs that led to the expansion of export-oriented production activities for products such as tobacco (Milburg, 2004).

Other factors also contributed to the rise in tobacco production in LMICs. Production costs are relatively low in LMICs compared to HICs due to cheap labor and less stringent regulatory environments. Additionally, many governments in these regions also provided support to encourage tobacco production; and in many countries,

**Figure 2**

**Production share of tobacco leaf for prominent countries, from 1991-2016**



Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017)

**Table 1**

**Top Ten producers of tobacco leaf in 1992 and 2016 and their share of global production**

1992	Share	2016	Share
China*	42.0%	China*	42.1%
United States	9.4%	India*	11.4%
India*	7.0%	Brazil*	10.1%
Brazil*	6.9%	United States	4.3%
Turkey*	4.0%	Indonesia*	2.9%
Zimbabwe*	2.5%	Zimbabwe*	2.6%
Greece	2.2%	Zambia*	1.9%
Italy	1.8%	Pakistan*	1.7%
Malawi*	1.5%	Tanzania*	1.5%
Philippines*	1.4%	Argentina*	1.4%

Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017)

Note: LMICs are indicated by an asterisk.

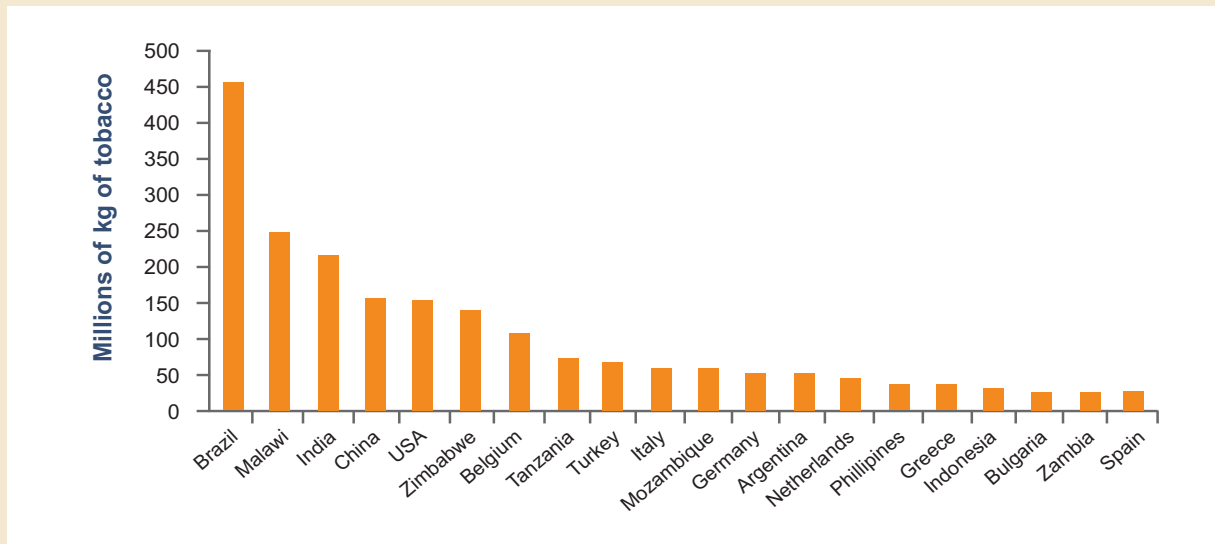
tobacco is still viewed as a profitable crop. For example, governments in the African region claim that tobacco farming alleviates poverty among farmers by providing employment and cash payments (Hu and Lee, 2015). On the other hand, support for tobacco production in HICs has weakened over time. For example, in the U.S. and the European Union, recent policies have resulted in a decrease in the number of farmers (European Commission, 2015; Vargas and Campos, 2005).

Consequently, in most countries, tobacco leaf is now produced for global markets. Figure 3 shows the total exports of tobacco leaf by volume and by country for the 20 largest exporting countries in 2014, and Figure 4 shows the same for total imports. Brazil, Malawi, India, China, and the U.S. are the largest exporters of tobacco leaf, with the U.S. being the only HIC. Conversely, four of the five largest importing countries are HICs, with China being the only LMIC among the top five importers.



**Figure 3**

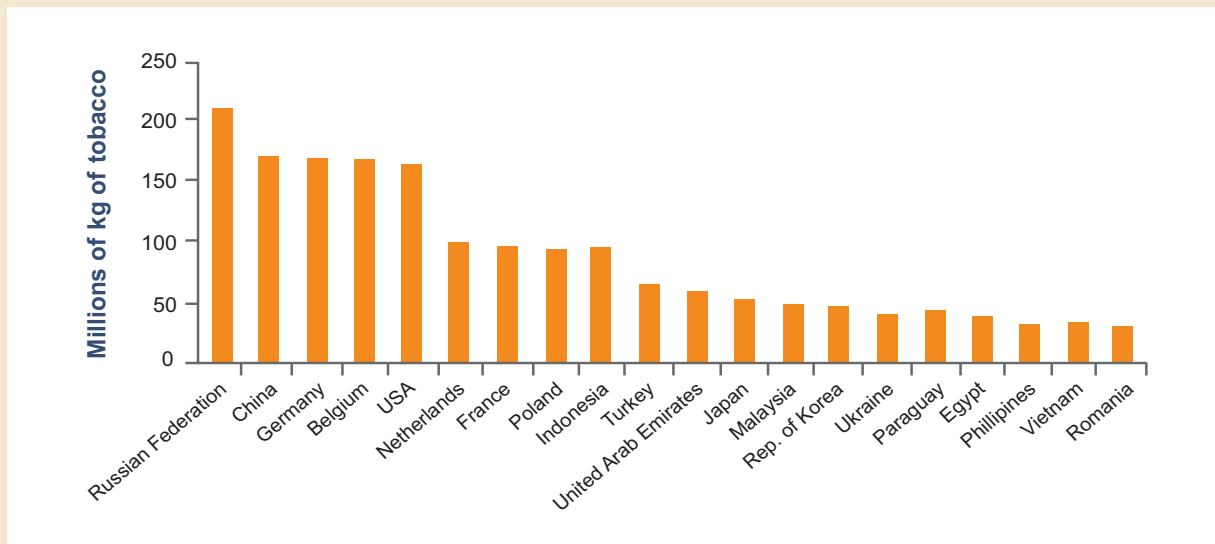
**Largest exporters of tobacco leaf by volume, 2014**



Source: Comtrade database (United Nations 2017)

**Figure 4**

**Largest importers of tobacco leaf by volume, 2014**



Source: Comtrade database (United Nations 2017)

Notably, few of the large exporting countries are also large importing countries. Tobacco exports of a country can be distinguished as exports of domestic tobacco and exports of foreign tobacco. The second class is generally referred to as re-exports (exports of foreign tobacco in the same state as previously imported). Comtrade export data contain both the exports of domestic and foreign goods. Belgium is the only large exporter that is not a large producer; it is a large importing country and thus likely re-exporting tobacco leaf.

When considering net exports, China, the U.S., and most European countries are not net exporters or significant net exporters. Most net exporters of tobacco leaf are LMICs, with the majority being in Africa. In 2014, the top ten net exporters of tobacco leaf accounted for approximately 12% of the global production (Table 2). The only HIC in this group is Italy. On the other hand, in the same period, the

top ten tobacco leaf net importers accounted for approximately 7% of global production. Nearly all net importers are HICs, with Indonesia being a notable exception (Table 3).

Note that in some countries, net exports exceed 100% of total production. This can be explained partially by the stockpiling and smuggling of raw tobacco. For example, tobacco traders in Malawi suggest that Universal Leaf Tobacco (ULT) and Alliance One International purchased smuggled raw tobacco from their neighboring countries, Zambia and Mozambique (Otanez, Mamudu, & Glanz, 2007). Between 2004-2014, on average, more than 100% of Malawi's tobacco raw production, 94% of Zimbabwe's tobacco raw production, and 87% of Italy's production were (net) exported. In the case of Greece, Brazil, Argentina, and Zambia, net exports represented more than 50% of total local production.

**Table 2**

**Net exports of tobacco leaf as a percentage of global production by country, 2014**

Country	2014
Brazil	4.1%
Malawi	2.2%
India	2.0%
Zimbabwe	1.2%
Tanzania	0.7%
Mozambique	0.5%
Argentina	0.5%
Italy	0.5%
Zambia	0.3%
Uganda	0.2%
<b>Net exports / World Tobacco Production</b>	<b>12.0%</b>

Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017) and Comtrade database (United Nations 2017)

**Table 3**

**Net imports of tobacco leaf as a percentage of global production by country, 2014**

Country	2014
Russian Federation	1.9%
Germany	1.0%
France	0.7%
Poland	0.7%
Belgium	0.6%
Indonesia	0.6%
Malaysia	0.5%
United Arab Emirates	0.5%
Netherlands	0.4%
Japan	0.0%
<b>Net imports / World Tobacco Production</b>	<b>7.2%</b>

Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017) and Comtrade database (United Nations 2017)



The key implication of the trend outlined above is that tobacco leaf production is no longer solely determined by domestic demand. Put simply: it is primarily an export crop. Production is concentrated among a handful of LMICs and exported to HICs where most of the tobacco manufacturing units are located. However, China, the largest producer, is one of the exceptions to this trend, as tobacco leaf in China is produced for domestic manufacturing and consumption.

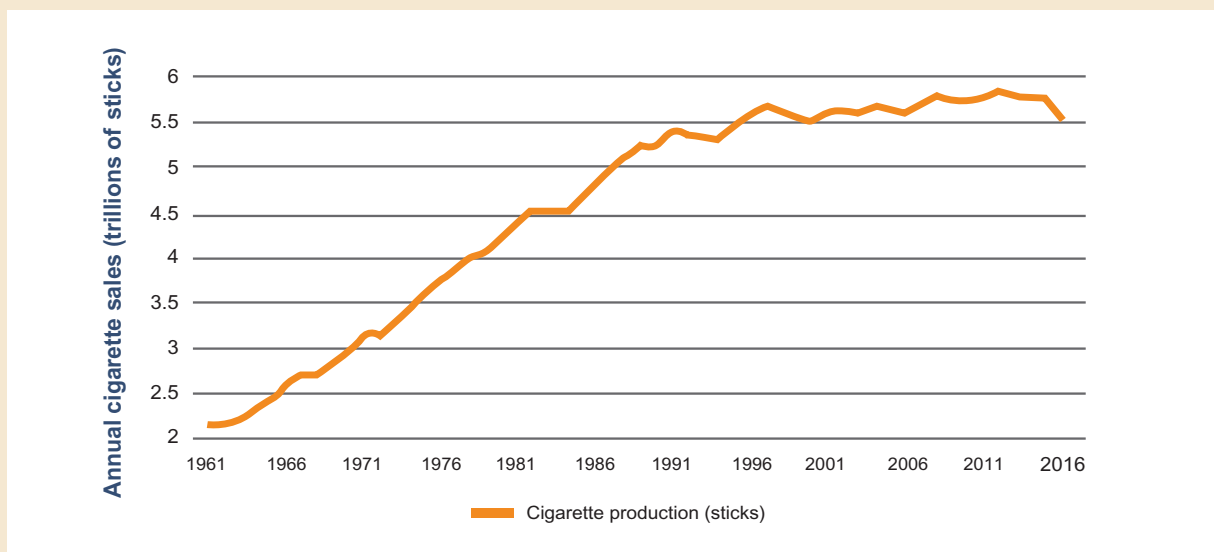
The demand for tobacco leaf is mainly derived from the global demand for tobacco products, the most significant of which are cigarettes. About 80% of tobacco leaf is used in the manufacturing of cigarettes. Figure 5 shows global cigarette sales, which steadily rose throughout the 1990s and early 2000s, peaking at just less than 6.0 trillion cigarettes in 2012, and have remained relatively flat since 2008. However, since 2012, global cigarette sales have dropped to 5.5 trillion sticks in 2016. Note that it is the first consistent and significant decline in cigarette sales in many years.

The demand for cigarettes, and other manufactured tobacco products, is determined by price and non-price factors. Price has shown to be the key determinant of smoking uptake and

cessation (Chaloupka, Straif, & Leon, 2011; Chaloupka & Warner, 2000; Jha, 2014 #451 Jha & Peto, 2014; U.S. National Cancer Institute and World Health Organization, 2016; World Health Organization, 2010). Non-price determinants may include individual, social, environmental, and/or cultural factors. For example, a key non-price determinant is a consumer's personal income. In addition, a variety of other factors can affect the demand for cigarettes and other tobacco products, including socioeconomic status, tastes, and advertising and other promotional activities.

The demand for tobacco leaf is a derived demand of the consumption of manufactured tobacco. In other words, the demand for cigarettes and other manufactured tobacco products, along with other factors such as the technology utilization of tobacco leaf, the popularity of filtered cigarettes and the reduction of leaf used to manufacture cigarettes, determine the demand for tobacco leaf. Advancements in manufacturing technology have meant that less raw inputs are required to produce the same quantity of cigarettes. About 15 to 20% less tobacco leaf is now used in manufactured cigarettes (FAO, 2003). The rise in the popularity of filtered cigarettes has a similar implication. Since the length of cigarettes with a filter tip is the

**Figure 5**  
Global cigarette sales, 1990-2014



Source: Cigarette Production 1961-2004 based on USDA data. Cigarette Production 2005-2016 based on Euromonitor data.

same as non-filtered cigarettes, a lesser amount of tobacco is used in filtered cigarettes, consequently affecting the demand for tobacco leaf (Chaloupka, 2015).

Prices received by farmers for their produce, known as farm gate prices or producer prices, are another major element that determines the production of tobacco leaf. These prices differ by country depending on two main factors: first, international market conditions, as discussed above, i.e., the global demand and supply of tobacco leaf; and secondly, the regional and local market systems, such as market structure of leaf buying companies, the resulting bargaining position of farmers, and government support subsidies. Statistics show that producer prices in the five top producer countries fell in the 1990s; however, there has been a steady rise since 2002 (FAOSTAT, 2017). Additionally, producer prices in LMICs are significantly lower compared to HICs, and statistics show that on average, small tobacco farmers tend to receive lower prices (sometimes, small farmers' tobacco is graded down). As noted above, low producer prices is one of the main reasons for the shift in sourcing patterns to LMICs.

In summary, domestic demand for tobacco products is determined by factors unrelated to local production of tobacco leaf, which, in turn, is determined by global market conditions, technological capacity of each country, and other factors, such as regional and local market structure and government support.

### Section III

#### ***Rising market concentration in the tobacco industry and asymmetric bargaining positions between small farmers and tobacco leaf and manufacturing companies***

The description of tobacco production in Section II identified the main stakeholders involved in each stage of the tobacco supply chain: i) farmers, who cultivate and cure tobacco; ii) primary processors, commonly referred to as leaf merchants or intermediaries, who stem, strip, and store tobacco; and iii) manufacturers, who turn tobacco leaf into tobacco products and perform the marketing,

branding, and coordination functions of the chain. Although, in many countries, one entity may perform more than one activity. For example, in Indonesia, most farmers are also primary processors (Drope et al., 2017).

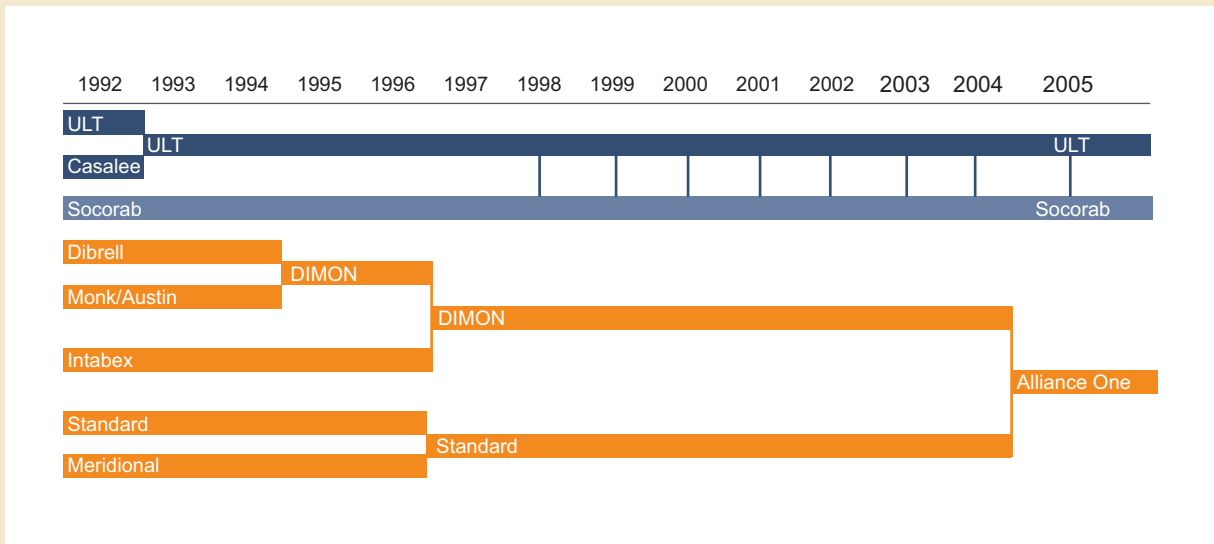
Overall, the tobacco industry is highly concentrated. A small number of leaf buyers and tobacco manufacturing companies hold a high degree of market power. At present, the global tobacco leaf market—the second stage—is represented mainly by a small number of multinational companies. The two largest, ULT and Alliance One International, control a substantial share of the global market (Goger et al., 2014). For example, these two companies account for 62% of Imperial Tobacco's total tobacco purchases. ULT also claims to handle 20 to 30% of Brazilian tobacco leaf, and 35 to 45% of tobacco leaf in Africa (Silveira and Dornelles, 2010).

At the beginning of the 1990s, eight companies dominated the global leaf market. Through acquisitions and mergers, that number has declined to three multinationals. Figure 6 depicts this consolidation over time. In 1993, ULT acquired Casalee. In 1995, Dibrell Brothers and Monk/Austin merged and created DIMON. In 1997, DIMON acquired Intabex while Standard Commercial acquired 75% of Meridional's leaf operation in Brazil. In 1997, three large U.S. multinational corporations (ULT, Standard Commercial Corporation and DIMON) controlled the activities of buying, processing, and marketing for most of the Virginia and Burley leaf varieties, while the Turkish-American company, Socotab, specialized in the commercialization of tobacco (Hammond, 1998). In 1998, ULT and Socotab completed the formation of a partnership combining their oriental leaf tobacco businesses. In 2005, the second and third largest international leaf dealers, DIMON and Standard Commercial, merged creating Alliance One International.

In the manufacturing segment—the third stage—more than four-fifths of the market, approximately 85% market share (by volume), is held by five multinational tobacco manufacturing companies. China National Tobacco Corporation dominates with a 42.4% market share, followed by Phillip

**Figure 6**

**Dealer consolidation timeline**



Source: Universal Leaf Tobacco (2005)

Morris International (14.1%), Japan Tobacco International (11.7%), British American Tobacco (11.6%), and Imperial Tobacco Group PLC (5.7%) (IBIS World Industry Report, 2016).

Similar to the global leaf market, the manufacturing market has also experienced rising levels of concentration in the past two decades. For example, Philip Morris International acquired firms in Australia, Canada, Colombia, Jordan, New Zealand, and South Africa, acquired majority stakes in Mexico and Pakistan, and established joint ventures in Vietnam and the Philippines; British American Tobacco acquired firms in Colombia, Indonesia, and Turkey; while Japan Tobacco Inc. acquired multinational firm Gallaher as well as firms in Sudan and South Sudan.

The rising trend of vertical integration within the multinational tobacco manufacturing companies further complicates the dynamics of mergers and market concentration. In many countries, in addition to ULT and Alliance One International, multinational tobacco manufacturing companies have also set up operations in the second stage, either through wholly-owned subsidiaries or joint ventures, which enable them to source tobacco leaf directly from farmers. For example, both Philip

Morris International and China National Tobacco Company established joint ventures with Alliance One International to manage contract buyers and primary processing in Brazil. Japan Tobacco Inc. acquired leaf merchants in Africa, Asia, and Latin America, and established joint ventures with U.S.-based leaf merchants (Silveira and Dornelles, 2010). Additionally, multinational tobacco manufacturing companies are increasingly setting up direct sourcing arrangements with farmers (detailed below). For example, in Malawi, about one in four farmers operating under sourcing arrangements reported working with Japan Tobacco International (Makoka et al., 2016) and in Kenya, more than half reported working with British American Tobacco (Magati et al., 2016). Vertical integration of tobacco manufacturing companies is squeezing out smaller leaf merchants, reducing competition in the second stage, and leading to an even higher concentration and market power in the leaf market (Goger et al., 2014).

Economic theory suggests that the rising consolidation among firms gives leaf merchants and tobacco manufacturers' monopsony power as buyers of tobacco leaf, which weakens the bargaining position of tobacco growers. Most

tobacco growing operations—the first stage—can be classified into three major categories: smallholders, who grow tobacco as individuals or in groups; estate and tenant farmers, who grow tobacco on large estates; and contract farmers, who grow tobacco on land accessed through rental arrangements. The majority of these operations are smallholders, who grow tobacco on family farms, averaging less than one hectare. Consequently, a rise in monopsony power reduces tobacco farmers' ability to receive favorable prices.

Historically, auctions were the main mechanism for tobacco procurement in the tobacco industry. Farmers took their crop to the trading floor post-harvest, and the crop was graded and sold to the highest bidder. In recent years, multinational tobacco manufacturers have progressively established subsidiaries that operate as leaf buyers and set up direct sourcing arrangements with farmers through contracts. Contract-based systems are also being increasingly used by independent leaf merchants (Goger et al., 2014).

Though the exact terms of the contract vary depending on the context, typically, contract-based farming systems serve as a means of vertical coordination between farmers and contracting firms (tobacco manufacturers or leaf merchants) whereby contracting firms supply farmers with inputs, such as seeds, fertilizers, etc., without the need for an upfront payment; give technical assistance through the firm's supervisory and instruction teams; extend credit and mediate between farmers and banks for loans; and provide transport to the tobacco warehouses and processing plants. The firms also reserve the right to reject substandard produce. Tobacco farmers, in return, commit to following the technical guidance and price classification scheme set by the contracting firm and selling the entire crop to them at harvest.

In relation to the tobacco supply chain, Goger et al. (2014) note that from the perspective of tobacco multinationals, contract farming arrangements are largely driven by the desire for greater control of their supply networks and ensuring quality control at the supply end of the chain. Vertical integration and contract-based farming arrangements essentially bring the supply of raw materials under

the control of tobacco manufacturers, without the need to assume costs or risks involved in tobacco production. Contract-based farming arrangements allow tobacco firms to control both the varieties of tobacco produced at the local level and the quality and costs of production. Contracting firms avoid direct involvement in production and assume the risk of processing and marketing the final product; while farmers receive credit, technological assistance, and access to markets, and assume the risks associated with production (Glover, 1984). From the perspective of farmers, volatile tobacco leaf prices and the need for liquidity lead them to often favor these arrangements. Contract arrangements provide financial access to farmers in the presence of inefficient or ineffective credit markets (Moyo, 2014).

Evidence suggests that the provisions offered to farmers by tobacco firms have become a strong mechanism to increase farmers' dependence on tobacco. Even though farmers receive raw inputs and technical assistance and they are assured sales of their crop, under the contract they are restricted in their ability to grow alternative crops or sell their produce to other buyers to receive better prices. For example, studies in LMICs show that tobacco leaf merchants extend more credit to small farmers at the start of the season than they pay for their harvest (Clay, 2004), indirectly increasing farmers' reliance on tobacco. Studies from Brazil show farmers tied in debt bondage cycles in cases of unexpected events: Tobacco firms aggressively promoted contract arrangements and provided inputs and credit facilities. When firms rejected a substandard yield at the end of the season, farmers were further offered cash advances to cover costs. Consequently, these farmers must return to tobacco production to pay off the previous year's debt (Geist, Chang, Etges, & Abdallah, 2009; Vargas & Bonato, 2007). In Vietnam, farmers who are unable to sell all their produce are indebted due to the high quantity and cost of inputs used to produce the crop (Nguyen & Hoang Van M, 2009). In Bangladesh, small farmers under contract are unable to switch to alternative crops despite owning their land due to their indebtedness (Akhter, Buckles, & Tito, 2014). Studies in other countries, such as Kenya (Kibwaje et al., 2009) and Uganda (Leppan et al., 2014), recount similar experiences.



Production costs to farmers also outweigh the benefits due to use of labor, including household labor. The tobacco industry promotes contract farming, claiming that it results in higher and more predictable incomes for farmers. Goma, et al. (2015) present income estimates of tobacco farmers who have signed contracts with leaf buying companies in Zambia. Their research shows that most tobacco farmers are operating at a net loss after the cost of non-labor inputs borrowed through contracts is subtracted from the sale of tobacco leaf. Further, a comprehensive calculation of costs that accounts for family labor shows that farmers' net profits are significantly reduced. Evidence from Indonesia (Drope et al., 2017), Phillipines (Chavez et al., 2014), Kenya (Magati et al., 2016), and Malawi (Makoka et al., 2016) show similar results for contract farmers.

Thus, the trend of increasing consolidation among firms gives leaf merchants and tobacco manufacturers' monopsony power as buyers of tobacco leaf, and thus, weakens the position of tobacco farmers. The uneven dynamics between buyers and farmers are further complicated by the rise of contract-based farming arrangements, where farmers are provided with inputs and credit to produce specified quantities and quality. As prices and quality grades are also determined by the purchasing agency, that is, the tobacco company, farmers are unable to negotiate for higher prices and reduce debts. Farmers' reliance on tobacco production as their primary income stream and high level of control due to predetermined specification in contracts, when combined with increasing market concentration at the intermediate stakeholder level, creates asymmetric bargaining power between smallholder farmers and tobacco companies. More importantly, the asymmetry makes farmers more susceptible to price-fixing and downgrading (of leaf quality) practices and increases their exposure to debt risks. These practices perpetuate economic dependency on tobacco companies and lower incomes for tobacco farmers creating 'livelihood crises.' This asymmetry is particularly evident in LMICs, and heavily focused on tobacco leaf production.

## Section IV: Country Examples

The three country case studies presented in this section: Brazil, Turkey, and China, highlight the decoupling of local tobacco control policies and local production of tobacco in the current context of the highly concentrated and globally integrated tobacco supply chain. Additionally, the case studies show that effective tobacco control policies can be implemented to reduce tobacco consumption and support tobacco growers' transition to alternative livelihoods. The China case in particular demonstrates how global demand for tobacco is highly determined by the demand for tobacco products defined by other countries, and how this can be a challenge in the context of decreasing cigarette consumption.

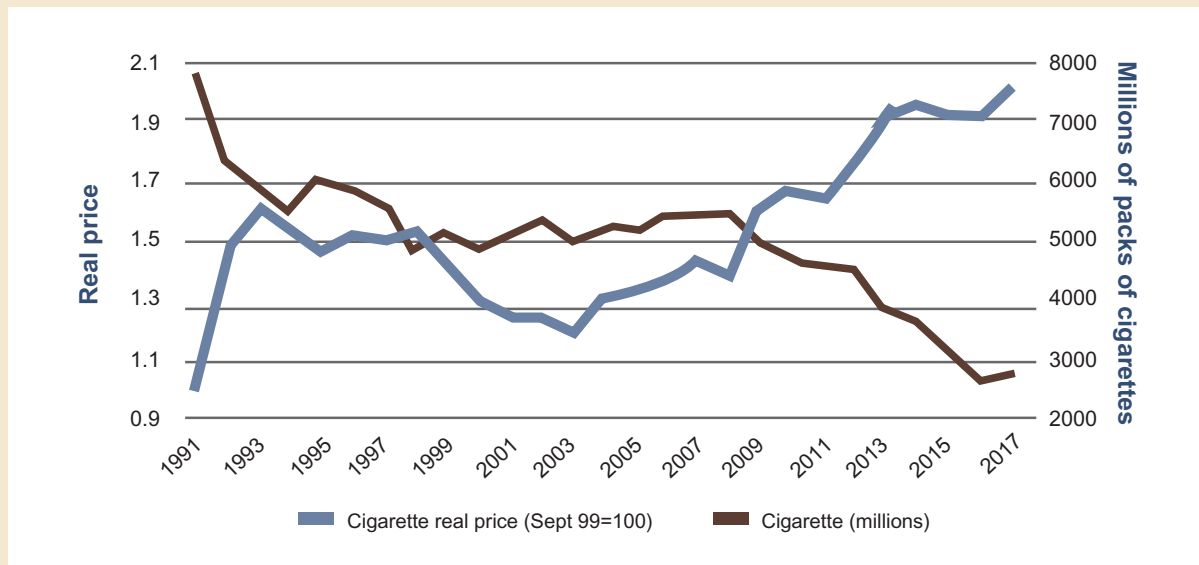
### A. Brazil

Over the past three decades, Brazil has implemented policies targeted to reduce tobacco use. Even before ratifying the FCTC in 2005, Brazil had increased cigarette taxes, implemented warnings on cigarette packages, banned many tobacco marketing practices, and generally expanded tobacco control programs (D. Iglesias, 2006; R. Iglesias, Jha, Pinto, Silva VL, & Godinho, 2007; Levy, de Almeida, & Szklo, 2012). However, in terms of cigarette prices in Brazil, real prices declined from 1993 to 2003. Then, combined with structural reforms and tax increases, real prices recovered, resulting in a 68.2% real increase between 2003 and 2017. (Figure A1 ). Household surveys showed the prevalence of smoking among adults was cut in half, from 34.8% in 1989 to 18.5% in 2008 (Levy et al., 2012). Annual monitoring surveys (VIGITEL) show that the prevalence among adults followed the same downward trend. Between 2006 and 2016, VIGITEL prevalence decreased from 15.7 to 10.4% (Ministério da Saúde, 2017). The price increases explain most of the decline in cigarette consumption during the period (Levy et al., 2012).

Figure A2 shows the land area used for tobacco growing (measured in hectares) and tobacco leaf production (measured in tons) in Brazil since 1979. Since the late 1970s, increasing productivity of tobacco farms and tobacco exports drove tobacco

**Figure A1**

**Cigarette prices and domestic cigarette production in Brazil, 1991-2017**



Source: Own elaboration based on Iglesias (2006), FAO (2003), (Organization 2017) and the Brazilian Institute of Geography and Statistics (IBGE)

Note: Cigarette Nominal Price represents the average value per packet for the pool of five types of cigarettes that IBGE uses in the calculation of the consumer price index. The monthly rates of change were applied to the average value of September 1999 to obtain annual and monthly prices. Cigarette Real Price was computed as the average nominal price per packet (IBGE) / Consumer Price Index (IBGE-IPCA) considering September 1999 price (R\$ 1.37)

leaf production in Brazil. Between 1979 and 2001, the land area used for tobacco growing in Brazil remained relatively stable around 300,000 hectares; yet during the same period, leaf production rose from 421,708 to 568,505 tons, an increase of 35%. Between 2001 and 2006, there was a dramatic 64% increase in land area used for tobacco growing, which resulted in a 58% increase in production. Since 2006, there has been a small but steady decline in both land area used for tobacco growing and tobacco production, but they both remain well above the 2001 levels.

Comparing Figures A1 and A2 allows for some interesting observations. First, the declining domestic cigarette production did not coincide with declining leaf production. In fact, the declining domestic cigarette production coincided with an increase in tobacco leaf production. The significant decline in domestic cigarette production occurred between 1991 and 1998 and continued

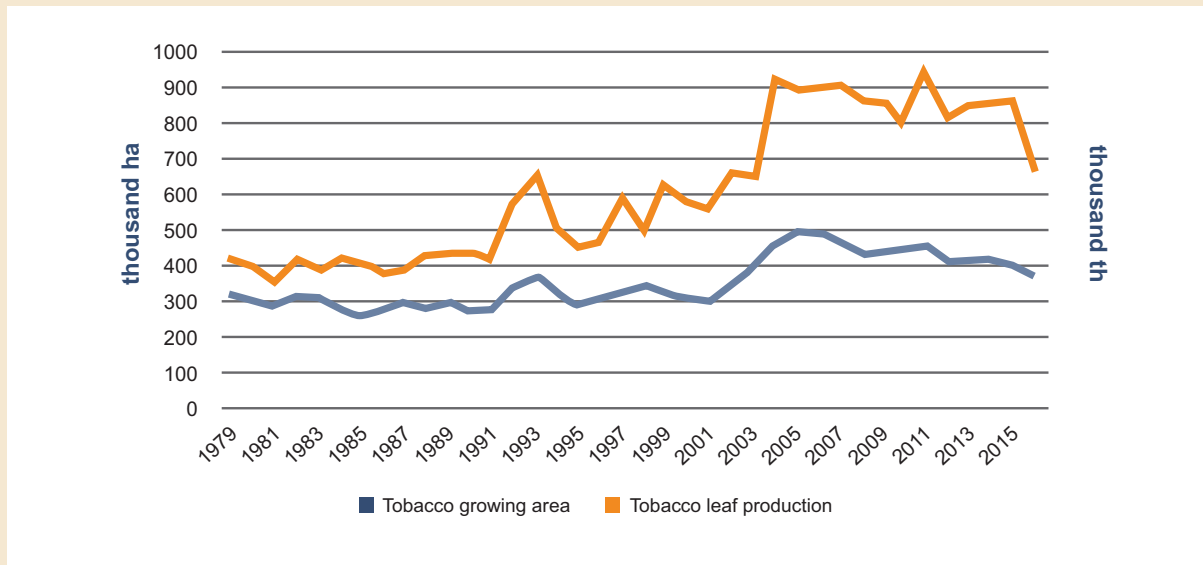
from 2007 onwards. Between 1991 and 1998, leaf production was rising as a result of productivity increases. Throughout the period 1991 to 2017, while cigarette production was consistently declining, leaf production was consistently increasing, with the exception of the last few years.

Figure A3 shows total tobacco leaf exports between 1979 and 2016, which follows an increasing trend, reaching a peak of 700,000 tons in 2007 before declining to 480,549 tons in 2016. Figure A3 also shows exports as a percentage of total production, showing an increasing trend since 1979. It is clear from these figures that increases in leaf production and decreases in local tobacco use resulted in increased leaf exports. Furthermore, this is evidence that domestic tobacco control measures did not undermine the livelihoods of tobacco farmers. In fact, tobacco farming increased in the presence of declining tobacco use in Brazil.



**Figure A2**

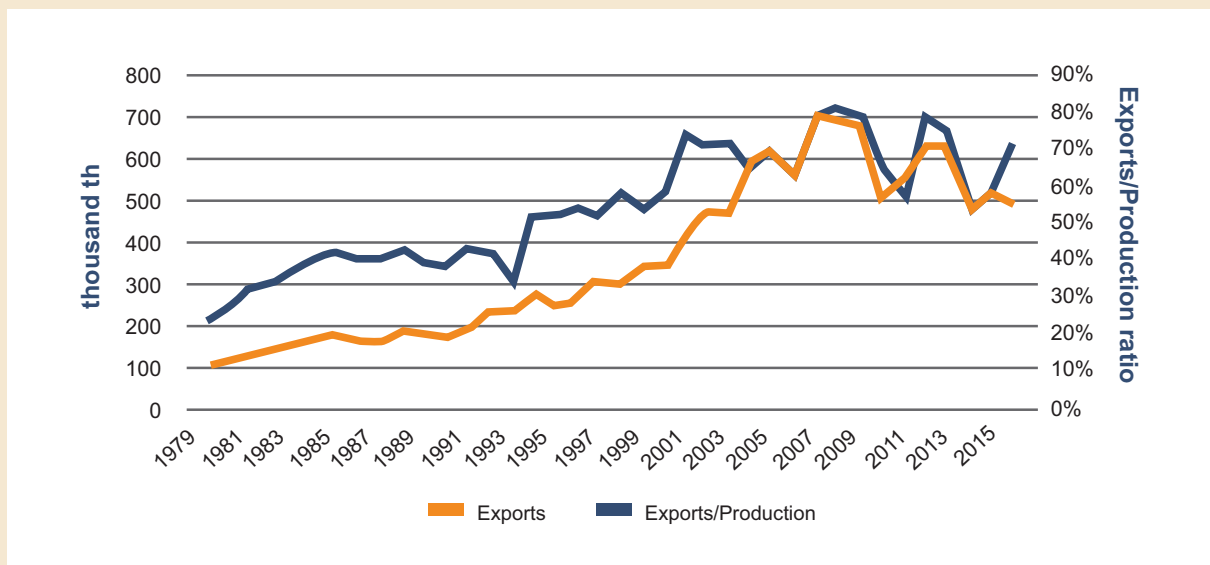
**Area used for tobacco growing and tobacco leaf production in Brazil, 1979-2016**



Source: Own elaboration based on the Brazilian Institute of Geography and Statistics (IBGE) and Sinditabaco

**Figure A3**

**Total exports and exports as a percentage of total production in Brazil, 1979-2016**



Source: Own elaboration based on the Brazilian Institute of Geography and Statistics (IBGE) and Sinditabaco

## ***B. Turkey***

Tobacco has been produced in Turkey for more than four hundred years and has been considered a significant revenue generator for over a century (Bilir et al., 2009). Turkey is one of the world's leading tobacco growing countries and the largest producer of oriental tobacco.

Tobacco farming is essentially a family business, grown in fields averaging seven hectares, producing 80-100 kg per hectare. As a labor-intensive crop, it is estimated that three to four members of the tobacco growing family are involved in production (Bilir et al., 2009). The majority of tobacco leaf is farmed in the Aegean region, followed by the eastern/southeastern region, and the Black Sea and Marmara regions.

Historically, tobacco producers in Turkey have made important contributions to the country's economy in terms of employment, exports, as well as tax revenues. Bilir et al. (2009) note that "control of the cultivation of and market of tobacco has always meant control of the country". The significance of tobacco cultivation to Turkey's economy has meant that the tobacco sector has always been particularly organized and regulated. From 1940 to 2000, the Turkish government supported tobacco farmers by setting a minimum purchase price for each grade of tobacco leaf and by purchasing all available leaf at specified prices through the government's tobacco and cigarette manufacturing monopoly, TEKEL. Between 2000 and 2002, the tobacco market was fundamentally altered. A new tobacco law was enacted on January 9, 2002, which eliminated government support of tobacco farming, established a contract production model, re-organized TEKEL in preparation for privatization, and transferred regulatory responsibilities from TEKEL to a newly created "Tobacco and Alcohol Markets Regulatory Authority" (TAPDK) (Gumus, 2008). By 2002, only 38% of tobacco purchasing was through TEKEL; this declined from 74% purchased by TEKEL in 1999, and 60% in 1995 (Koçturk and Cebeci, 2005). The remaining tobacco purchases were made through the private sector (Koçturk and Cebeci, 2005). In terms of purchasing agreements, in 2002, 71.2% of tobacco growers produced under

contracts with TEKEL, 25.8% under contract with the private sector, and the remaining 3% were independent producers (Koçturk and Cebeci, 2005).

These changes led to major declines in tobacco leaf production from 406,000 producers in 2002 to 51,000 in 2011 (see Table B1). Bilir et al. (2009) assert that many tobacco farmers, who were unable to adapt to these changes, moved to alternative crop production, other non-agricultural sectors, or migrated to other regions. According to Yürekli et al. (2010), the elimination of government support programs for tobacco farming caused a decline in the profitability of tobacco farming (and a simultaneous increase in profitability of farming other crops), which was a major factor leading to a decline in the number of tobacco producers. The number of producers peaked in 1998 at 622,000 before the reorganization (Koçturk and Cebeci, 2005) and within four years declined by 54% (Figure B1).

During this time, the Turkish government also made efforts to encourage tobacco leaf producers to cultivate alternative crops, focusing on low-income regions. Multiple projects were initiated by the Ministry of Agricultural and Rural Affairs and other entities (Bilir et al., 2009).

One major project, the Alternative Crops Programme for Tobacco, was carried out by the Ministry's Agricultural Reform Implementation Project in eastern and southeastern Anatolia, to encourage cultivation of products which were not sufficiently cultivated. Bilir et al. (2009) indicate that the project cost over \$US 2.4 million and benefitted 6,841 tobacco producers. While tobacco continues to be cultivated in Turkey, wheat, sunflowers, canola, dry beans, chickpeas, red lentils, corn, soybeans, cotton, trefoil, figs, vines, fruit, and glasshouse, aromatic and medical plants are grown in areas previously used for tobacco. To compensate farmers who lost income during the transition, the government also started a "Direct Income Support" program for tobacco farmers growing tobacco on at least 6,800 square meters of land. This program was later extended to include all tobacco farmers regardless of size.

**Table B1****Tobacco production in Turkey, 2002-2011**

Product Year	Number of producers (000)	Tobacco production (000 Ton)
2002	406	160
2003	319	112
2004	282	134
2005	252	135
2006	215	98
2007	180	75
2008	182	93
2009	77	81
2010	64	53
2011	51	45

Source: Gültekin Karakaş, D. (2014) [Original: Seydioğulları M. Evaluation on tobacco production and policies alternative to tobacco in Turkey. 2012]

### C. China

China is the world's largest producer and consumer of tobacco leaf. According to data from the National Bureau of Statistics of China, in 2017, tobacco was grown on approximately 1.13 million hectares, producing 2.4 million tons of tobacco, 95.6% of which was flue-cured. China's peak in tobacco leaf production occurred in 2012-2013, when tobacco was cultivated on 1% of China's total farmland, producing 3.2 million tons of tobacco (Figures C1 and C2).

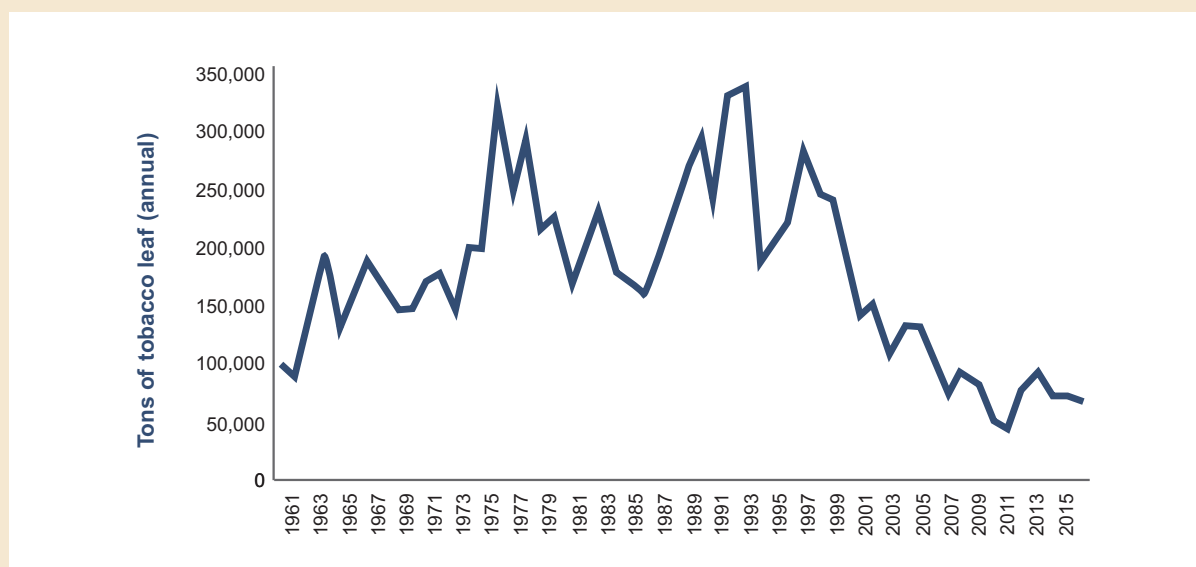
China is also the world's largest importer of tobacco leaf. In 2017, China imported 150,000 tons of tobacco leaf, and 94% of that amount was imported from only five countries: Zimbabwe, Brazil, the U.S., Argentina, and Zambia. According to Comtrade data (2019), between 2012 and 2017, China was a net exporter of tobacco leaf. Comparing production and net exports, imports only represents about 5% of the tobacco leaf available in China (production + imports - exports). This percentage is relatively small in

terms of China's local production of tobacco leaf, but it is highly relevant in terms of the main exporters of tobacco leaf. In countries like Zimbabwe, where 34% of the total tobacco produced in 2017 was exported to China, there is an extremely high dependency on China's tobacco market (Figure C3). Decisions made overseas, for example regulatory modifications by the State Tobacco Monopoly Administration (STMA) or strategic marketing decisions by the China National Tobacco Corporation (CNTC) determine what happens in the tobacco leaf market in Zimbabwe. The same applies to other countries, such as Brazil, Argentina, and Zambia, which are top tobacco producers and net exporters highly dependent on China's local tobacco economy and tobacco control decisions (Figure C4).

Most tobacco leaf produced in China is used to manufacture cigarettes for domestic consumption. China has the highest smoking prevalence in the world. Liu et al., (2017) estimated that in 2010, 318 million adults in China (304 million men and 14 million women) were current smokers, consuming

**Figure B1**

**Tobacco production in Turkey, 1961-2016**



Source: Food and Agriculture Organization of the United Nations, 2017 (FAO 2017)

a total of 1.74 trillion manufactured cigarettes. In the last decade, prevalence in China has started to fall (Yang, 2018). This decrease in prevalence and the observed decrease in sales since 2013 (Figure C5), along with an increase in production efficiency and decrease in grams of tobacco per cigarette, are expected to result in a decrease in demand for tobacco leaf. However, it is hard to say if China will keep local tobacco production stable and reduce imports or reduce local production and keep imports steady. What is clear is that the tobacco leaf markets in the top tobacco exporting countries are mostly dependent upon the decisions made in China (and the commercial decisions defined by the international dealers) and are decoupled from local tobacco control policies.

## Section V

### Conclusion

#### Key findings:

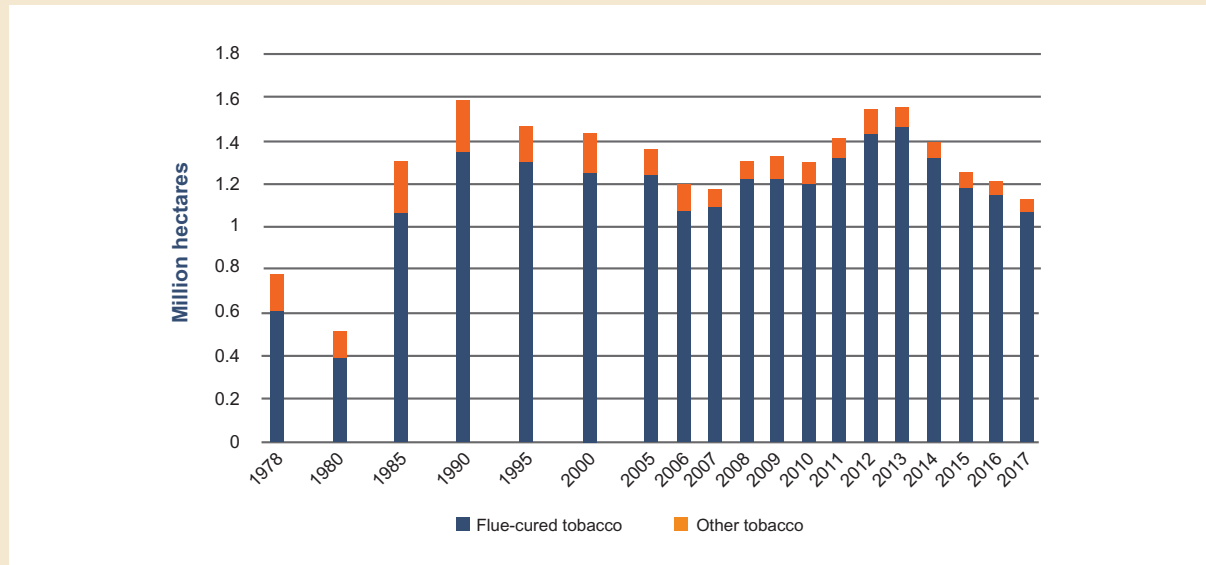
1. Tobacco growing and the leaf market are largely, and often completely, independent of domestic tobacco control policies. Most large leaf

producing countries are net exporters of tobacco leaf, and thus changes in domestic demand for tobacco products are unlikely to affect domestic production of leaf.

2. Advanced by globalization and trade liberalization, there has been a considerable shift in tobacco leaf production from HICs to LMICs. Several large LMIC tobacco producing countries are increasing their net exports of tobacco leaf.
3. The market structure of leaf production and tobacco manufacturing has changed substantially in recent years: An increased concentration of the manufacturing sector, combined with an increased concentration in leaf buying, and thus an increased monopsony power of leaf buyers, has shifted the value chain away from tobacco leaf farmers towards a small number of large multinationals.
4. There is a disconnect between global leaf production and global cigarette demand, with leaf production having peaked in the late 1990s, more than two decades before the peak in global cigarette demand.

**Figure C1**

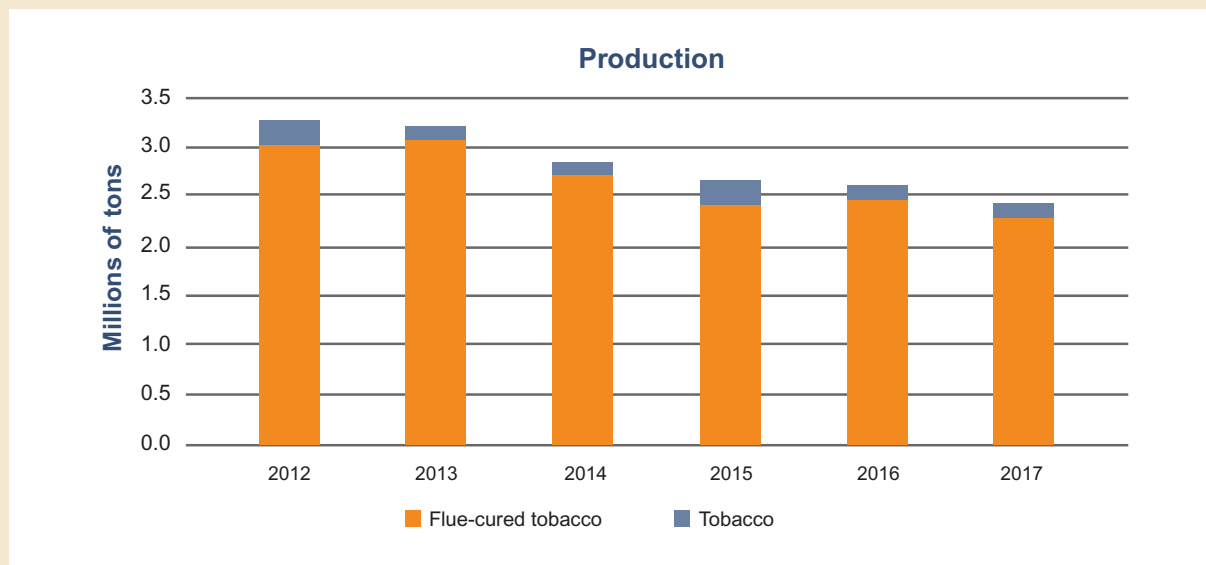
**Tobacco sown area in China of flue-cured and other tobacco, 1978-2017**



Source: National Bureau of Statistics of China (NBSC, 2018)

**Figure C2**

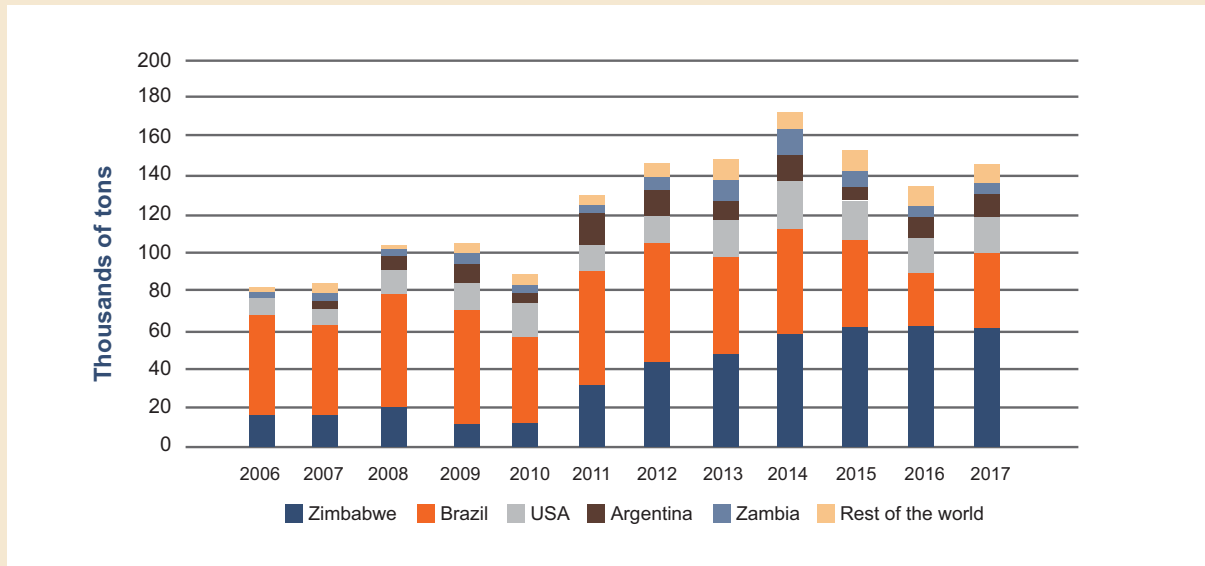
**Tobacco production in China, flue-cured and other tobacco, 2012-2017**



Source: National Bureau of Statistics of China (NBSC, 2018)

**Figure C3**

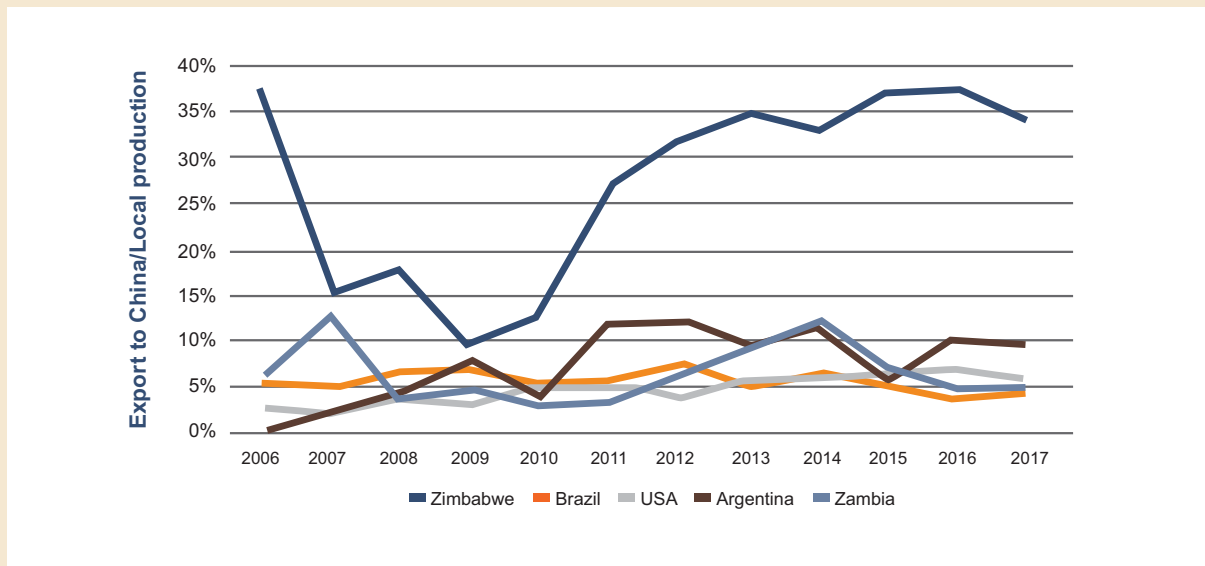
**Tobacco leaf imported by China, 2006-2017**



Source: Comtrade database (United Nations 2019)

**Figure C4**

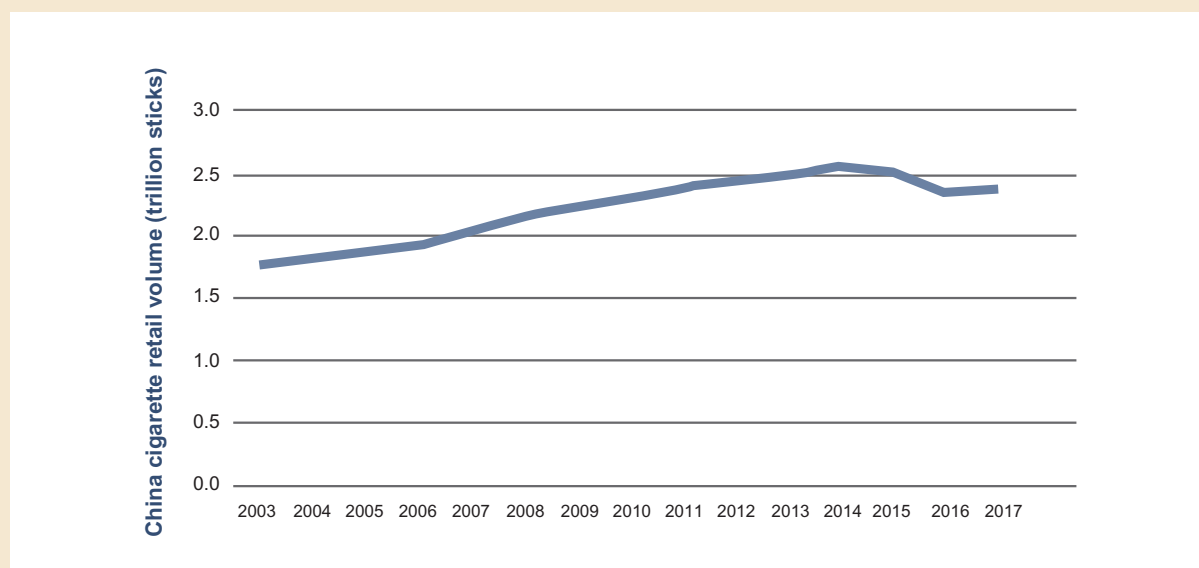
**Exports to China as a percentage of total exporter's production; top five tobacco exporters to China, 2006-2017**



Source: Comtrade database (United Nations 2019); Food and Agriculture Organization of the United Nations, 2019 (FAO 2019)



**Figure C5**  
**China cigarette sales, 2003-2017**



Source: Euromonitor (2019)

5. Individual countries (except China) have limited ability to affect the global market. Global declines in cigarette sales will put pressure on domestic tobacco growing independent of domestic tobacco control policies.

The global tobacco leaf market has evolved considerably over the last several decades, alongside a changing market for tobacco products and a dramatically changing regulatory and policy environment. This paper describes a number of these important characteristics and changes.

The first key conclusion of this paper is that tobacco growing and the tobacco leaf market are largely, and often completely, independent of domestic tobacco control policies. Most large tobacco leaf producing countries are net exporters of tobacco leaf. Changes in domestic demand for tobacco products are unlikely to affect domestic production, because a reduction in domestic demand would increase the surplus available for export. Additionally, the production levels of the most significant tobacco leaf producing countries are not significant enough to influence global volumes. Thus, an increase in the net exports of

any of these countries would be unlikely to affect global tobacco leaf prices. The case study of Brazil shows that even significant declines in the domestic demand for tobacco as a result of domestic tobacco control policies had no effect on tobacco leaf production.

Furthermore, this disconnect between domestic tobacco control policies and domestic tobacco leaf production has been accelerated by globalization. Liberalized trade policies and the resulting increasing trade of tobacco leaf have further resulted in a considerable shift in tobacco leaf production from HICs to LMICs, and in particular, several large producer countries. Increases in net exports have occurred in both large consumer countries (e.g., Brazil and India) and countries that are not large consumers (e.g., Tanzania, Zambia, and Zimbabwe).

There is also a clear disconnect between global tobacco leaf production and global cigarette demand, with leaf production having peaked in the late 1990s, which was more than two decades before the peak in global cigarette demand. This is indicative of technological change, both in terms of

product design and manufacturing techniques, which has meant less tobacco is required to satisfy increasing market demand. This disconnect leads to an important conclusion: Global tobacco leaf production has been declining and will continue to do so. Given that individual countries have limited ability to affect the global market, the global declines are going to put pressure on domestic tobacco growing independent of domestic tobacco control policies.

As global cigarette sales have now begun to decline, a different phase for tobacco has begun. The decline in global demand for cigarettes combined with reduced tobacco content per product means continuing and potentially more rapid declines in the demand for tobacco leaf. Tobacco use has clearly shifted from HICs to LMICs. Much of this change has been due to the effectiveness of tobacco control policies, which have reduced smoking prevalence, the number of smokers, and ultimately cigarette sales. However, even many LMICs are beginning to experience declines in smoking prevalence, the number of smokers, and cigarette sales, although there are still many countries where this is not the case.

Additionally, the market structure of tobacco leaf production and tobacco manufacturing has changed substantially in recent years. These changes have resulted in an increased concentration of the manufacturing sector (i.e., cigarette and tobacco manufacturers), combined with an increased concentration in tobacco leaf buying, and thus increased monopsony power of

leaf buyers has shifted the value chain away from leaf farmers towards a small number of large multinationals.

Tobacco control policies have become widely adopted and accepted around the world. The entry into force of the WHO FCTC has created norms and standards by which governments have implemented demand-side measures to reduce tobacco use, thereby reducing mortality and morbidity associated with tobacco use. The tobacco industry has critiqued these policy innovations under the guise of concern about the livelihoods of farmers growing tobacco leaf. This paper has shown that the supply chain of tobacco is complex, with a clear distinction between tobacco leaf growing and tobacco manufacturing. Importantly, it shows that governments can feel confident that they can develop and implement strong domestic tobacco control policies without major impacts on farmers given, in the short term, domestic policies to reduce tobacco use are unlikely to influence the globalized market for tobacco leaf, and thus would likely have little effect on demand for domestic leaf. In the long term, as the global demand for tobacco leaf continues to fall along with greater concentration in the supply chain and continued technological progress, producer countries will likely face challenges independent of their domestic policy environment. Such countries can seek alternatives for tobacco growing and can do so alongside strong domestic policy measures to reduce tobacco use, and thus simultaneously improve health outcomes and the livelihood of farmers as seen in the case study of Turkey.

## Annex: WHO Framework Convention on Tobacco Control (FCTC)

The WHO FCTC is a multilateral treaty under the auspices of the United Nations that entered into force in 2015; it currently has 181 parties. The FCTC was developed in response to the globalization of the tobacco epidemic and is an evidence-based treaty that has developed a strong set of policy norms and standards aimed at reducing tobacco use. The treaty is a framework treaty which is legally binding and establishes broad commitments for its parties while leaving more specifics to detailed agreements including protocols, guidelines, or national legislation. The FCTC has one protocol, the Protocol to Eliminate Illicit Trade in Tobacco Products, which entered into force in 2019 and has 48 parties. The FCTC also recognizes the need to promote economically viable alternatives to tobacco production to prevent adverse social and economic impacts on populations that currently depend on or are linked with the tobacco production supply chain. Article 17 requires Parties to promote, as appropriate, economically viable alternatives for tobacco workers, growers, and possibly individual sellers. Additionally, Article 18 recognizes the protection of the environment and health with respect to tobacco cultivation and manufacturing:

### **Article 17 of the FCTC: Provision of support for economically viable alternative activities**

“Parties shall, in cooperation with each other and with competent international and regional intergovernmental organizations, promote, as appropriate, economically viable alternatives for tobacco workers, growers and, as the case may be, individual sellers.”

### **Article 18: Protection of the environment and the health of persons**

“In carrying out their obligations under this Convention, the Parties agree to have due regard to the protection of the environment and the health of persons in relation to the environment in respect of tobacco cultivation and manufacture within their respective territories.”

There are several guidelines for implementation in various areas including taxation, product regulation, industry interference, packaging and labeling, and advertising, promotion and sponsorship. While the treaty deals with tobacco farming issues in Articles 17 and 18, there are not yet agreed-upon guidelines for these articles, primarily due to a lack of consensus on the commitment to support economically viable alternative activities to tobacco production. Instead, a set of “Policy options and recommendations on economically sustainable alternatives to tobacco growing (in relation to Articles 17 and 18)” was adopted in 2014. The guiding principles and recommendations are shown below:

#### Guiding Principles:

1. Livelihoods diversification should be the concept guiding implementation of economically sustainable alternatives to tobacco growing.
2. Tobacco growers and workers should be engaged in policy development concerning Article 17&18 in line with Article 5.3 of the WHO FCTC and its guidelines.
3. Policies and programmes to promote economically sustainable alternative livelihoods should be based on best practices and linked to sustainable development programmes.
4. The promotion of economically sustainable alternative livelihoods should be carried out within a holistic framework that encompasses all aspects of the livelihoods of tobacco growers and workers (including the health, economic, social, environmental and food security aspects).
5. Policies promoting economically sustainable alternative livelihoods should be protected from commercial and other vested interests of the tobacco industry, including leaf companies, in accordance with Article 5.3 of the WHO FCTC and its guidelines.
6. Partnership and collaboration should be pursued in the implementation of these policy options and recommendations, including in the provision of technical and/or financial assistance.

## Recommendations:

1. Diversification strategies should include both agricultural and non-agricultural opportunities, including shifting from one agricultural product to another. Substitution of one economic activity by another does not, however, fully address the problem of the poverty and vulnerability of tobacco growers and workers, typical of economic agents from the primary sector.
2. Diversification strategies should encompass a vision of sustainable development of the agrarian sector. Strategies should include diversified productive systems, e.g., production to achieve food security, short supply chains linked with local markets, and a combination of agricultural and non-agricultural activities.
3. Diversification strategies should increase the portfolio of activities and offered products — enlarging access to markets as an alternative to the seasonal constraints and stagnation of agricultural income. The strategies should also promote innovation and technical improvements on farms in order to save resources through new forms of handling and use of plants, livestock, and land. This would result in an increase in the number of activities undertaken and in resources at farm level.
4. Diversification strategies should promote new forms of cooperation and local interaction that would reflect on scale of profits and reduction of transaction costs. These changes should produce new levels of satisfaction among farmers, promote greater interaction with consumers/clients, and ensure more flexibility for adaptation.
5. Diversification strategies should be market demand driven and policies pursued should be based on market dynamics.
6. Regions with local diversified economic strategies should create environments favourable to sectoral integration between agriculture, commerce, industry and services. The regional diversity should produce greater stability and reduce vulnerabilities resulting from labour market fluctuations and sources of income. Economies of scale should reduce the

costs of transaction and produce positive territorial externalities.

7. This transition period from tobacco growing to an alternative livelihood also demands the implementation of intersectoral initiatives that provide farmers with a broader array of resources and opportunities. Such initiatives should have a market orientation and not be based upon protectionist assumptions. This transition should promote development strategies that strengthen farmers' autonomy, diversify agricultural and non-agricultural incomes, transform the technical basis to allow a transition to agroecology, recover soil fertility and preserve biodiversity, produce territorial externalities, and pay attention to public health objectives.

More recently, a decision in regard to the implementation of Articles 17 and 18, was adopted by the most recent Conference of the Parties in 2018. This decision encouraged Parties *“to support and strengthen the implementation of Articles 17 and 18 of WHO FCTC as a means to safeguard tobacco growers’ livelihoods and to address tobacco industry national and international efforts to block tobacco control policies”* and specifically *“to encourage farmers, including through technical assistance, to switch to viable alternatives to tobacco farming.”* Furthermore, the Convention Secretariat was requested to assist in the preparation of national action plans and support research and pilot projects in tobacco growing countries.

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