

# THE ECONOMICS OF TOBACCO FARMING IN NORTH MACEDONIA

\_\_\_\_\_ *Policy Note* \_\_\_\_\_





February 2023

# **THE ECONOMICS OF TOBACCO FARMING IN NORTH MACEDONIA**

*Policy Note*

## KEY MESSAGES

- ❖ Contrary to the government's claims that tobacco is a strategic crop that delivers high profits to tobacco farmers, tobacco cultivation is not as profitable as suggested.
- ❖ Tobacco farmers' income decreases significantly when opportunity costs (such as unpaid family labor) are considered. Thus, households are misallocating scarce labor to a lessproductive economic endeavor.
- ❖ The long tradition of farming this crop in the country, the advanced age of most tobacco farmers, and the lack of information about alternatives keeps many farmers in tobacco cultivation.
- ❖ Former and never tobacco farmers on average are better off economically than current tobacco farmers.
- ❖ The Government of North Macedonia should develop evidence-based strategies to help tobacco farmers reorient to alternative crops and other more lucrative livelihoods.

## BACKGROUND

Tobacco farming is on the decline in North Macedonia. There is a decreasing trend in the number of cultivated hectares of tobacco and the number of signed contracts with tobacco buyers. The number of tobacco farmers is also decreasing: in 2020, the number of tobacco farmers was 19,702, which is less than half the number it was in 2010 (42,622). Most tobacco farmers are married, middle-aged males with a primary or secondary school education. Around two-thirds of tobacco household heads in North Macedonia are 45 years or older,<sup>1</sup> while the average age of the country's overall population is 40.1, years according to the 2021 census.

Most tobacco farmers struggle financially, living with an average monthly income below the average net monthly wage and below the value of the minimum household consumer basket.

### Current tobacco farmer:

"We live only on the revenue from tobacco. For two tons of tobacco, we will have income of 5,000 euros, while the total cost will be 3,000 euros. We have 2,000 euros left to get us through the year".

Tobacco leaf cultivation occupies around 3.2 percent of total arable land in North Macedonia.<sup>2</sup> North Macedonia is the second largest producer of oriental-type tobacco leaf after Turkey.<sup>3</sup> In 2021, the total production of tobacco was 24,329 tons from 15,457 hectares of land, with an average yield per hectare of 1,574 kilograms. Tobacco production is mainly in the Pelagonia and Southeast regions, together representing 87.9 percent of total tobacco production in 2021. Pelagonia is the largest tobacco-growing region, accounting for almost half

<sup>1</sup> Tobacco Production Strategy 2021-2027

<sup>2</sup> Hristovska Mijovic, B., Spasova Mijovic, T., Trpkova-Nestorovska, M., Tashevska, B., Trenovski, B. & Kozeski, K., (2022). *Tobacco farming and the effects of tobacco subsidies in North Macedonia*. Analytica, Skopje, North Macedonia.

<sup>3</sup> The four major producers of oriental type tobacco are Turkey, North Macedonia, Greece, and Bulgaria, where natural and climate conditions are suitable for this crop.

of the total tobacco leaf cultivation area in the country. Almost all tobacco farmers grow a Prilep-variety type of tobacco leaf—95 percent of production in 2019—followed by Jaka, which accounts for the remaining five percent.

More than 90 percent of tobacco is exported, and the remaining 10 percent is used in domestic cigarette manufacturing. Tobacco exports exceed imports by several times in North Macedonia.<sup>4</sup> According to the latest data, the tobacco industry comprises four percent of total industry in the country, and the number of workers employed in the production of tobacco products in 2019 was 3,489, which represents a significant decrease compared to 2000 (6,095). North Macedonia ratified the Framework Convention on Tobacco Control (FCTC) in 2006, which introduced a legal commitment for the reduction of tobacco production and consumption as well as to help those who are employed in the tobacco sector to find alternative viable livelihoods.<sup>5</sup> The process of EU integration will require the reduction of crop-specific subsidies, likely leading to less income to tobacco farmers and an eventual reduction in the area harvested. The Government adopted a new Strategy for Tobacco Production (2021–2027) in 2020<sup>6</sup> that includes an action plan with a short-term period (2021–2024) in which there is envisaged indirect support for tobacco farmers, but preparations will be made with education and counseling for future change to other crops.



<sup>4</sup> SSO Database

<sup>5</sup> Law on ratification of the Framework Convention of Tobacco Control of the World Health Organization Official Gazette of the Republic of Macedonia No 68, 2006

<sup>6</sup> TOBACCO PRODUCTION STRATEGY FOR THE PERIOD 2021-2027, WITH ACTION PLAN, Official Journal of the Republic of North Macedonia no.32/2021 from 08.02.2021

## FIELD RESEARCH

### Methodology

Tobacco farming traditionally has been supported by the Government of the Republic of North Macedonia. However, there is not enough research on the economic livelihood of tobacco farmers. To fill this gap and to provide results to support evidence-based policy and decision-making, a survey with a nationally representative sample was conducted.

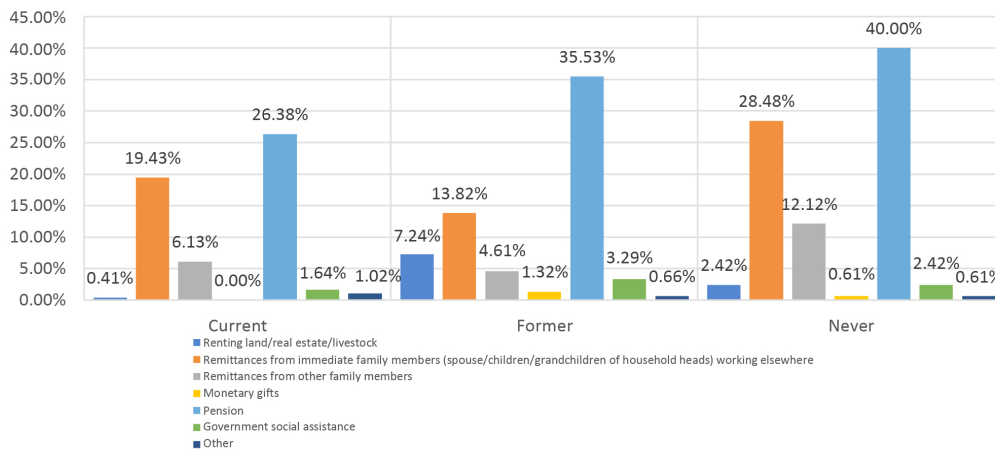
The survey comprises 806 farming households from 14 municipalities (urban and rural) in the top tobacco-producing regions in North Macedonia. Target groups (categories of respondents) for the survey are the following:

1. tobacco farmer (the respondent is a farmer who grew tobacco in 2021);
2. former tobacco farmer (the respondent is a farmer who grew tobacco in any year before 2021 and now cultivates other agricultural crops); and
3. never tobacco farmer (the respondent is a farmer who cultivates any agricultural crop other than tobacco and never cultivated tobacco previously).

### Survey results

- ❖ **Around half of tobacco farmers are not turning a real profit. While most tobacco farmers believe they achieve positive “perceived” profits (excluding the value of household labor), with only a few households perceiving negative profits, around half of the households actually achieved negative “real” profits.**
- ❖ **Most farmers struggle financially, living with an average monthly income below the average net monthly wage and below the value of the minimum household consumer basket.** The average monthly net wage paid in June 2021 in North Macedonia was MKD 28,744 (USD 469), while in the agriculture, forestry and fisheries sector it was MKD 23,117 (USD 377).
- ❖ **Pensions and remittances are one of the most important components for maintaining an adequate level of income and standard of living for tobacco farmers’ families.** Many farmers’ households rely heavily on pensions for additional income.

**Figure 1.** Participation of each income in the category “Other income,” by type of farmer



- ❖ **Although they spend the most time in the field, current tobacco farmers have a higher incidence of poverty compared to former and never tobacco farmers.** Considering per capita household income, the poverty rate among tobacco farmers jumps dramatically to 22.6 percent (based on the international poverty line of USD 1.90 a day per person) and to 30.6 percent (calculated with the national poverty line of USD 3,842.75 annual revenue for a four-person household). Meanwhile, the poverty rate for former and never tobacco farmers is 10.81 percent and 12.84 percent, respectively (based on the international poverty line of USD 1.90 a day per person).
- ❖ **Compared to former tobacco workers or never tobacco workers, the median current tobacco farmer devotes more time to growing crops.** The median male farmer worked 1400 hours on tobacco cultivation, while the median male former and never tobacco farmers worked 1000 hours and 1260 hours, respectively. Both the median male and the median female tobacco farmers dedicate 640 hours to nontobacco crops in addition to the hours spent on tobacco cultivation.
- ❖ **The children of tobacco farmers are more involved in farming relative to other farmers’ children.** Children’s help in the harvesting of tobacco is 2.3 times more common compared to children’s help in harvesting other crops; however, no farmer reported hiring children to help with tobacco cultivation and children do not appear to be engaged in potentially harmful activities related to pesticide/herbicide application. While children helping is not necessarily detrimental, missing school to do so is harmful to their education and development.
- ❖ **Compared to other crop activities, tobacco cultivation typically requires significantly more pesticide.** Pesticides are related to persistent health challenges for farmers and damage the environment through contamination of groundwater and watersheds.

- ❖ **Tobacco farmers show signs of green tobacco sickness, a form of acute nicotine poisoning.** Females who are part of the tobacco cultivation process appear more likely to show symptoms of this disease than males.
- ❖ **Current tobacco farmers are more likely to rent land for farming compared to former and never tobacco farmers.** In the survey, 22.2 percent of current tobacco farmers and 13.7 percent of former tobacco farmers stated that they rent land from others.
- ❖ **The vast majority of farmers reported having a contract with a leaf buyer.** Survey results show that almost all tobacco farmers (94 percent) in all major tobacco-growing regions have signed contracts with tobacco leaf buyers. Contracts provide farmers with inputs at the start of the season that the farmers pay for when they sell to the buyer, at the buyer's price, at the end of the season. The farmer can only sell within their contract. More than half (57 percent) of the tobacco farmers say they are satisfied with the concluded tobacco agreement, while 36 percent are not. Additionally, around half (49 percent) of tobacco farmers expressed dissatisfaction with the appraisal of the grade of their tobacco.
- ❖ **The final price of tobacco leaf depends not only on the type of tobacco leaf but also on the grade (or quality).** The tobacco grade and type are determined according to measures and methods adopted by the Ministry of Agriculture for qualitative and quantitative assessment of tobacco. The dominant type of tobacco leaf is the Prilep variety 66 in all regions, grown by 98.7 percent of respondents.<sup>7</sup> Grade I Prilep variety 66 is sold at the highest average price of USD 3.97 per kilogram, while Grade IV of the same type is sold at the lowest average price of USD 2.55 per kilogram.



<sup>7</sup> See more about this type in Miceska, G., & Dimitrieski, M. (2018). Variety structure as essential factor for sustainable development of the production of oriental tobacco in Republic of Macedonia and marketing of tobacco production competitive in foreign markets. *International Journal of Agriculture Innovations and Research, IJAIR*, 3(3), 1-8.

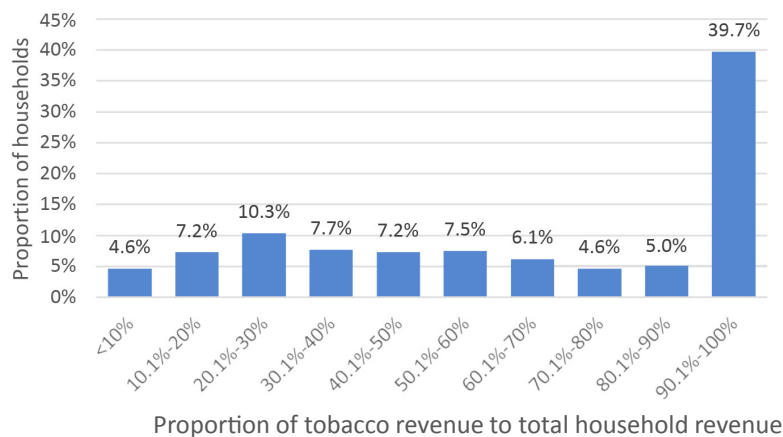


# ECONOMICS OF TOBACCO FARMING IN NORTH MACEDONIA

## Revenue versus income

Tobacco farmers rely heavily on tobacco revenue to provide their livelihood. For the majority of tobacco farmers (around two-thirds), tobacco revenue represents a large share of total household revenue. In fact, for 39.7 percent of responding households, tobacco income is by far the dominant income source (more than 90 percent of total household revenue). This supports the notion that most tobacco-farming households are focused on growing tobacco as a main source of their livelihood. This could perhaps be attributed to the tradition of families growing tobacco, to the generous subsidies provided by the government, and the established contract market for tobacco leaf. This could also suggest that growing tobacco is considered more profitable by tobacco farmers than growing other crops.

Figure 2. Share of tobacco revenue in total household revenues



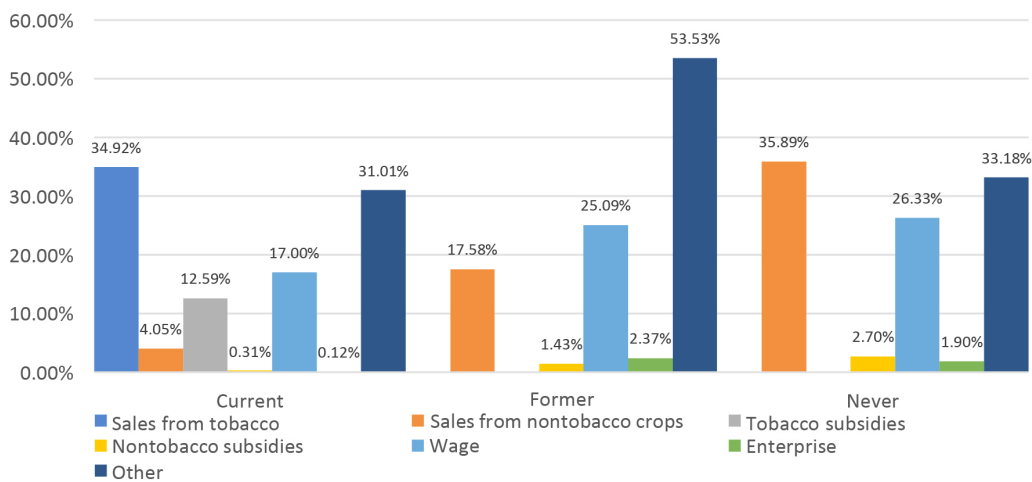
*Current tobacco farmer:*

“For around 40% of tobacco - farming households, tobacco revenue represents 90 – 100% of the total household revenue.”.

**Current tobacco farmers rely mostly on tobacco farming and tobacco subsidies (comprising together 47.5 percent of their total revenue).** The proportion of tobacco sales (revenues) in total household revenues among current tobacco farmers is 34.92 percent, and the proportion of tobacco subsidies is 12.59 percent. In addition, the proportion of other revenues (rent, remittances from family members, pensions, and government social assistance) is 31.01 percent, also contributing significantly to household revenue. However, current tobacco farmers earn less than former and never tobacco farmers from sources other than tobacco crops. Former tobacco

farmers generate a lower proportion of agricultural revenue (17.58 percent of nontobacco crop sales), while the proportion of other revenues and wages is significantly higher (53.53 percent and 25.09 percent, respectively), suggesting that **former tobacco farmers are more likely to rely on revenue sources other than agricultural revenue. Never tobacco farmers have the most balanced proportion of agricultural and nonagricultural activity contributing almost equally to their household revenues.**

**Figure 3.** Share of different revenue sources in total household revenue, by type of farmer



**On average, former tobacco farmers generate much higher household income than never and current tobacco farmers.** The average former tobacco farmer generates USD 16,451.56, per year while the average current tobacco farmer only generates USD 12,072.40 per year. The higher household income of former tobacco farmers can be explained, among other reasons, by shifting to non-agricultural activities that generate higher wage income and other income (mostly pensions and remittances). Even though never tobacco farmers realize much higher nontobacco crop income than former tobacco farmers, their realized other income is lower.

**Table 1.** Average income from different sources, by type of farmer (in USD)

	Current Tobacco Farmer		Former Tobacco Farmer		Never Tobacco Farmer	
	Income	Valid N	Income	Valid N	Income	Valid N
<b>Nontobacco crops profit</b>	5,819.01	15	5,237.26	15	12,519.78	33
<b>Nontobacco crops income</b>	1,290.27	63	1,057.44	48	2,600.89	88
<b>Tobacco income</b>	-279.54	336	n/a	0	n/a	0
<b>Enterprise income</b>	n/a	0	-31,854.55	1	-22,145.45	2
<b>Wage income</b>	6,456.02	202	7,223.85	57	7,915.71	77
<b>Other income</b>	10,863.89	219	11,119.98	79	6,455.62	119
<b>Total household income</b>	12,072.40	363	16,451.56	74	12,858.24	109

### Costs (input and labor costs)

**Tobacco farming is input intensive**, both in terms of direct inputs, such as fertilizers and chemicals, as well as farm labor, both hired and household. **Consistent with research in other countries, labor and non-labor input costs for growing tobacco are typically very high in North Macedonia, particularly compared to most other crops.** Fertilizers are the most common and one of the consistently largest expenses. Nearly all tobacco farmers (96.72 percent) report purchasing fertilizers, out of whom around two-thirds use non-organic fertilizers and one-third use organic fertilizer. Almost two-thirds of respondents use pesticides for their farming activities.

**Median tobacco input costs are higher than median nontobacco input costs.**<sup>8</sup> In addition, median tobacco and nontobacco input costs for farmers vary considerably across regions. The results show much higher median input costs for tobacco. **Tobacco farmers typically use significantly fewer inputs for nontobacco crops during the tobacco-growing season. This is important, considering that many tobacco farmers (30 percent) also grow nontobacco crops.**

<sup>8</sup> This is consistent with previous research for other countries (such as Briones, 2015; Chavez et al., 2016; Goma et al., 2015; Keyser & Juita, 2005; Magati et al., 2016; Makoka et al., 2016; and Mulyana, 2015).

**Table 2.** Median input costs for current and former tobacco farmers by region (in USD)

	Region	Tobacco input	Nontobacco input
		Median	Median
Current farmer	Pelagonia	337.27	109.09
	Southeast	545.45	600.00
Former farmer	Pelagonia	n/a	218.18
	Southeast	n/a	290.91

**Growing tobacco is a highly labor-intensive activity that requires many hours of work and effort and thereby generates high unpaid household labor costs.**

**Tobacco farmers bear significantly higher costs for household and hired labor because tobacco farming is a more labor-intensive activity.** The median male individual in a household works 1400 hours per year on tobacco cultivation, while the median female individual works 1260 hours per year. Both the median male and the median female tobacco farmers dedicate an average of 640 hours per year to nontobacco crops in addition to the hours spent on tobacco cultivation. The amount of labor current tobacco farmers dedicate to tobacco exceeds the amount former and never tobacco farmers dedicate to their crops. On top of time spent on tobacco cultivation, current tobacco farmers also allocate an additional third of that amount of time to their nontobacco crops. Relevant studies show that, by dedicating so many hours to tobacco production, many farmers miss out on other important economic opportunities—such as wage work or a small business—to obtain additional income.

**Table 3.** Median hours worked by farming household members by gender, age, and tobacco/nontobacco crops

Age	Tobacco farmers				Former tobacco farmers		Never tobacco farmers	
	Tobacco		Nontobacco		Nontobacco		Male	Female
	Male	Female	Male	Female	Male	Female		
<15	207.5	1800	8	400	90	n/a	10	n/a
15-20	1278	1260	120	150	144	750	135	112.5
21-35	1230	1152	336	396	800	700	270	600
36-60	1536	1350	808	730	900	990	1540	1500
>60	1455	1155	912	740	1200	960	1200	960
All	1400	1260	640	640	1000	900	1260	1080

Labor costs are calculated by multiplying the agricultural minimum hourly wages (\$2.29 for tobacco and \$1.65 for nontobacco crops) by the number of household labor hours reported. **The opportunity costs are unpaid family labor costs, meaning household members are not being paid for their work.** The concept followed provides an estimation of the opportunity cost of household labor, calculated using the value of an agricultural worker’s hourly wage under the assumption that these farmers could, at the very least, obtain a job doing day wage labor.

## Real versus perceived profit

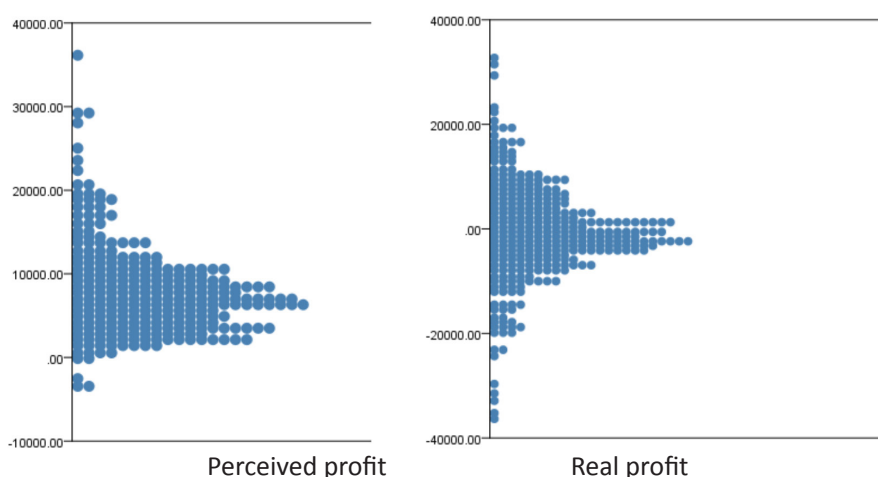
Current tobacco farmers' median **perceived profits**<sup>9</sup> per hectare from tobacco are higher than perceived profits from nontobacco crops. However, once the opportunity cost of household labor is accounted for, the median **real profits**<sup>10</sup> from tobacco become negative. The median perceived profit from growing tobacco is USD 7,022 per hectare, while the median real profit is USD -988 per hectare. When costs are taken into account, tobacco farmers' real profits from nontobacco crops are higher than former and never tobacco farmers' real profits per hectare. **The median current tobacco farmer grows other crops more profitably than the median former or never tobacco farmer.**

**Table 4.** Median profits per hectare (in USD) – current, former, and never tobacco farmers

	Tobacco		Nontobacco	
	Perceived	Real	Perceived	Real
	Median	Median	Median	Median
Current	7022.73	-987.98	2561.39	604.20
Former	n/a	n/a	4045.46	472.11
Never	n/a	n/a	5654.73	390.77
Total	7022.73	-987.98	2901.48	479.62

**Around half of tobacco farmers are not turning a real profit.** Figure 4 depicts the distribution of perceived and real profits per hectare from tobacco farming. Current tobacco farmers achieve positive perceived profits, with only a few households perceiving negative profits. However, around half of the tobacco households actually achieve negative real profits.

**Figure 4.** Distribution of profit per hectare for tobacco farming (in USD)



<sup>9</sup> Perceived profits are calculated in the following way: (tobacco sales + tobacco subsidies) – tobacco farming non-household labor input costs, where direct non-labor expenses include physical inputs (such as fertilizer, pesticides, and equipment), hired labor, marketing expenses, and transportation.

<sup>10</sup> Real profits are calculated by subtracting the opportunity cost of household labor: (tobacco sales + tobacco subsidies) – (tobacco farming non-labor input costs + tobacco farming household labor input costs).

## Tobacco poverty

The nationwide poverty rate in North Macedonia was 21.8 percent in 2020, while the head count poverty ratio, calculated using the World Bank international poverty line of USD 1.90 per day was 2.39 (and fell to 2.03 in 2022). Using per capita revenue, the poverty rate among tobacco farmers is extremely low—about 2.3 percent, using the international poverty line of USD 1.90 a day per person, and 6.5 percent, calculated with the national poverty line of MKD 211,351 (USD 3,842.75) annual revenue for a four- person household—and is lower than the poverty rate of former and never tobacco farmers. **Using the more realistic measure of per capita household income, the poverty rates among current tobacco farmers jump dramatically to 22.6 percent and 30.6 percent, respectively. Hence, when considering per capita income, current tobacco farmers have the highest incidence of poverty, and never tobacco farmers have the lowest incidence of poverty among the three groups of farmers.** This might suggest that— although tobacco farmers gain relatively large tobacco revenues from sales and subsidies and from other sources (annual mean per capita revenue is above the national poverty line), they also incur larger direct and indirect costs when cultivating tobacco. In addition, tobacco is a very labor-intensive crop. Once these costs are accounted for, the results reveal a rather unprofitable crop.

**Table 5.** Poverty status of current, former, and never tobacco farmers

Poverty status	Poverty at USD 1.90 a day per person (2011 PPP)			Poverty at national poverty line MKD 211,351 (USD 3,842.75), annual revenue for four-person household (2019)		
	Current farmer	Former farmer	Never farmer	Current farmer	Former farmer	Never farmer
<b>Head count ratio measured per capita revenue (for all farmers, N=745)</b>	2.30% (N=479)	4.72% (N=106)	5.00% (N=160)	6.47% (N=479)	18.81% (N=106)	13.75% (N=160)
<b>Head count ratio measured by per capita income (for all farmers, N=546)</b>	22.59% (N=363)	10.81% (N=74)	12.84% (N=109)	30.58% (N=363)	31.08% (N=74)	22.02% (N=109)

Note: Poverty at national poverty line of MKD 211,351, annual income for four-person household for 2019 was taken from Laeken poverty indicators in 2019 report, issued by the State Statistical Office. <https://www.stat.gov.mk/PrikaziSoopstienie.aspx?id=115&rbr=13505>

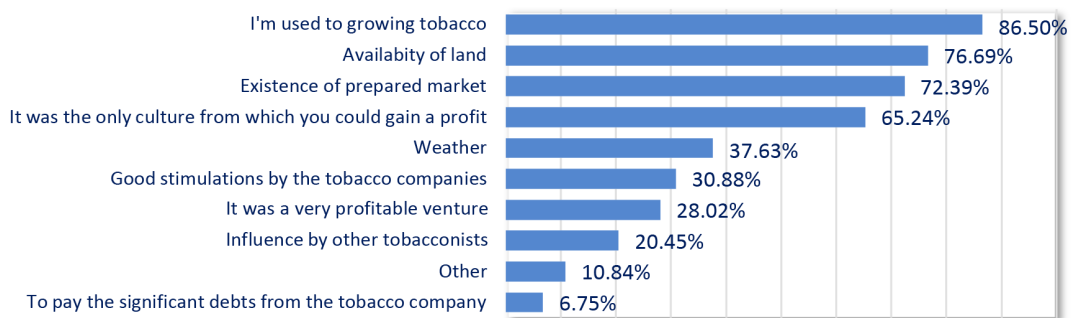
### **Even though the livelihood of tobacco farmers is not as lucrative as perceived, they continue to grow tobacco**

The most common reason given for continuing to grow tobacco is farmers’ familiarity with tobacco cultivation (86.5 percent). More than 70 percent of tobacco farmers also report that the availability of suitable land and the existence of a secure market, mainly through contracts with leaf buyers, are important reasons for continuing to

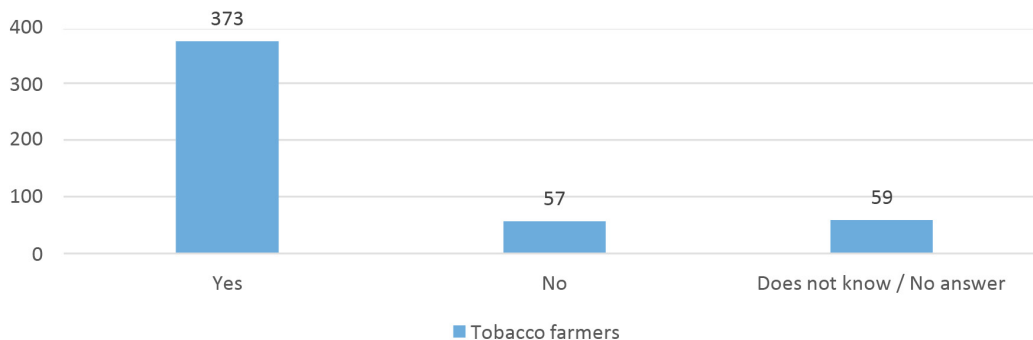
cultivate tobacco. In addition, **77 percent of tobacco farmers state that if the subsidies are taken away, they would stop growing tobacco. Hence, these data suggest the main reason why tobacco farmers grow tobacco is because of the subsidies.**

For families that have traditionally grown tobacco, there is some reluctance to shift to other crops because it is resource-demanding and sometimes skills-demanding, and the incentives provided by the government in terms of subsidies and the established market for tobacco leaf leaves them expecting a sure revenue, even if it is not large.

**Figure 5.** Current tobacco farmers' reasons for growing tobacco



**Figure 6.** If the subsidies are taken away, would the tobacco farmer stop growing tobacco?



**Tobacco subsidies are blurring market signals in tobacco production**

*The government dedicates a disproportionate amount of funds to subsidies for tobacco farming.*

For more than a decade, subsidies have been one of the key measures used by all governments, regardless of political background, to support agricultural production. Subsidies for tobacco farming encourage farmers to continue or increase production. The proportion of tobacco subsidies in current tobacco farmers' total household revenue is 12.6 percent. In 2020, the government spent EUR 30 million on tobacco-farming subsidies, which is a quarter of the total agricultural subsidies. The constant increase of tobacco subsidies motivates tobacco farmers to grow more tobacco to get more subsidies, despite not being certain they will be able to sell the produced quantity.

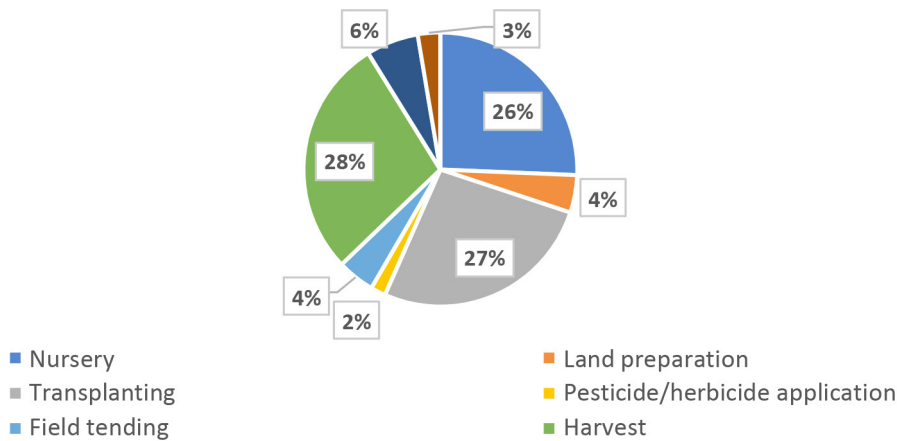
### Reasons former tobacco farmers switch to growing other crops

According to the survey data, **former tobacco farmers report switching to other crops for a variety of reasons, stating the low price of tobacco as the primary reason, followed by unfair grading and more attractive alternatives.** This signals an important potential for intervention and shifting possibilities.

### Child labor

**Children’s help in the harvesting of tobacco is 2.3 times more common compared to children’s help in harvesting other crops.** Household children are mostly used in the tobacco harvest (28 percent), transplanting the tobacco leaf (27 percent), and the nursery (26 percent). The government needs to ensure that no child misses school or schoolwork because of tobacco growing.

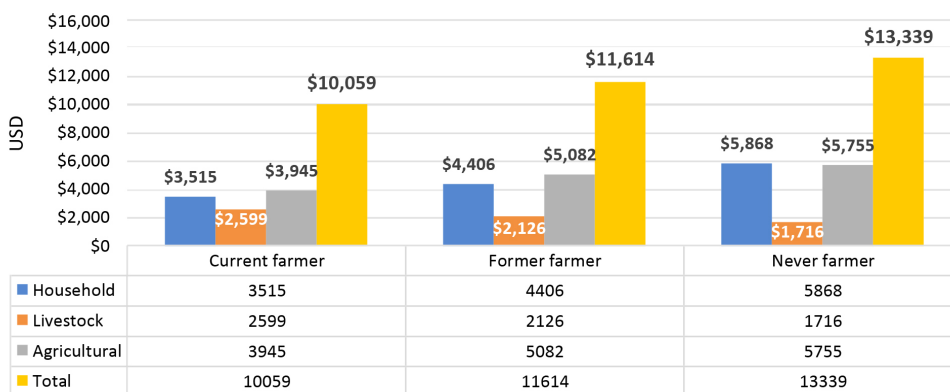
**Figure 7.** Child agricultural labor (<15 years old) in tobacco cultivation



### Well-being of farmers

**Current farmers, on average, have the lowest level of accumulated household and agricultural assets, compared to former and never tobacco farmers.** On average, never tobacco farmers have the highest value of accumulated capital (USD 13,339), while current tobacco farmers have the lowest level of accumulated assets (USD 10,059).

**Figure 8.** Average value of assets by type among current, former, and never tobacco farmers (in USD)

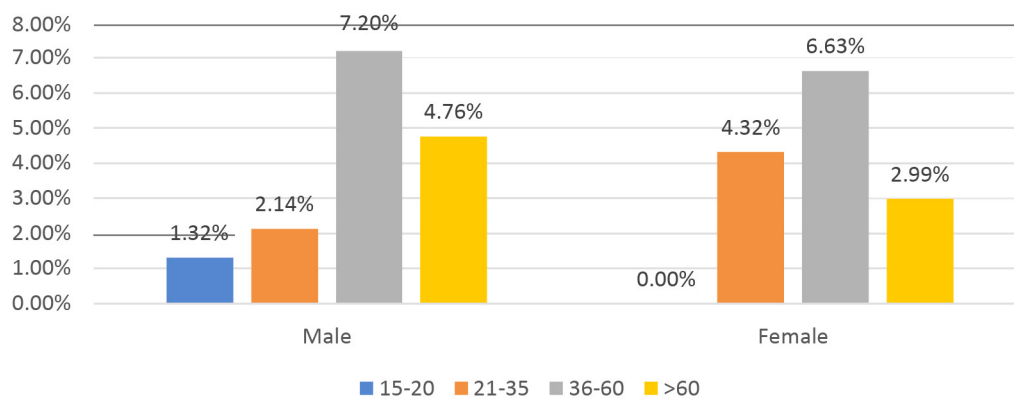




### Health status - green tobacco sickness

**Symptoms of green tobacco sickness, a potentially debilitating form of acute nicotine poisoning, are correlated with tobacco farming activities.** Females who are part of the tobacco cultivation process appear to be more susceptible to disease than males. Males aged 36–60 (7.2 percent) and females aged 36–60 (6.63 percent) reported having the most severe symptoms of green tobacco illness among current tobacco producers. The largest proportion of persons who reported illness in the last 30 days is observed among female former farmers older than 60 years (21 percent) and among former farmers aged 15–20 years (21 percent). It is likely that the disease causes reduced productivity through absenteeism and presenteeism.

**Figure 9.** Current tobacco farmers reporting 1–4 main symptoms of green tobacco sickness



Note: Symptoms include diarrhea, headache, vomiting, abdominal pain, dizziness, or fluctuations in heart rate.

## CONCLUSIONS

**Tobacco cultivation is not as profitable as the government suggests.** Thus, highlighting tobacco as a highly profitable crop is unfounded. This research indicates it would be much better for tobacco farmers, in terms of labor and economic efficiency, to reorient and grow another crop or pursue other economic activities in their local economy (such as wage work or small business).

**Around half of tobacco farmers are not turning a real profit. The opportunity cost for unpaid family labor makes growing tobacco unprofitable.** Revenues of tobacco farmers decrease significantly when the opportunity costs are calculated. Household members could better allocate their labor to other tasks that earn money; not doing so results in significant economic loss for those tobacco families.

**Poverty rates among tobacco farmers are slightly higher than the nationwide poverty rate. Current tobacco farmers have the highest incidence of poverty when considering per capita income.** Despite their high poverty rate, only a small share of tobacco farmers use some form of social assistance.

**Input costs for growing tobacco are typically very high, particularly compared to most other crops.**

## RECOMMENDATIONS

**Switching to nontobacco crops is likely to result in better livelihoods for many farmers.** The government should create comprehensive evidence-based policies to incentivize farmers to transition away from tobacco farming. The government must identify potential crops and the necessary conditions and actions (such as soil conservation and irrigation) such that shifting away from tobacco will be an attractive and viable option for current tobacco farmers.

**Agriculture subsidies must emphasize long-term investment in the sector that contributes more broadly to increased productivity and efficiency.** The government should aim to increase domestic agricultural production, especially of wheat, corn, and barley, but also of other agricultural products that will increase domestic food security capacity. The world export market for food crops is also looking very promising, with high demand and insufficient supply forecasts for the foreseeable future.

**The government should create educational programs to help farmers learn to grow alternative crops that bring higher income and are suitable for local conditions.** The education program should inform farmers about possible access to loans and help them acquire skills and access to new, advanced farming technology that will increase the quality and quantity of the crops they cultivate. In addition, the government should educate farmers on the opportunity costs related to cultivation of different crops. Many tobacco farmers are not aware of how much time they devote to their own crop cultivation.

**The government can establish financial and nonfinancial incentives to encourage cultivation of nontobacco crops.** For example, this could be done by increasing low-interest credit programs and allocation of state agricultural land. **To improve productivity of alternative farming activities, the government should increase their investments in improvement of the quality of soil and improvement of irrigations systems to increase their output.** The goal is to increase the arable land for other strategic crops. In this way, the total annual domestic production of strategic crops in the country will increase and dependence on imports of these crops will be reduced.

**Connecting farmers to processing factories to establish long-term relationships for nontobacco crop growing would help farmers to transition and engender prosperity and security for those families.** These relationships will provide farmers with access to available markets, which is cited as one of the top reasons why tobacco farmers continue to farm tobacco.

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