

# Self-reported impact of the threat of terrorism and of Covid-19 on household food insecurity in Burkina Faso

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## Abstract

Burkina Faso faces recurrent food insecurity, exacerbated during lean seasons, particularly in rural areas. Like many other countries, it has also been affected directly and indirectly by the Covid-19 pandemic. It also continues to suffer from terrorism and its inherent consequences. This study aimed to examine the factors contributing to food insecurity in the country, including the potential effects of these two shocks. The dataset of the fifth Demographic and Health Survey, conducted in 2021 on a representative sample of 13,251 households was utilized. Binary and multinomial logistic regressions were used to assess the self-reported impact of these two shocks on household food insecurity in Burkina Faso. It was found that food insecurity was affecting almost one in five households in Burkina Faso (19%). Some households reported that their food insecurity was caused by Covid-19 alone, terrorism alone or both (respectively 6.3%, 10.8 and 15.5%). However, more than two-thirds (67.4%) of those suffering from food insecurity said that neither terrorism nor Covid-19 was the cause of their food insecurity. These findings highlight the significant challenge of achieving food security in Burkina Faso by the 2030 Sustainable Development Goals deadline. In addition, considerable efforts are still required by all stakeholders to integrate cyclical or spontaneous shocks into the monitoring and mitigation mechanisms in place at the national and sub-region levels.

## INTRODUCTION

Access to a balanced and accepted diet is a fundamental human need. This is why food is explicitly mentioned in Article 25, Paragraph 1 of the Universal Declaration of Human Rights. This specific right has been reinforced by the Declaration on the Right to Food, which clearly states that the right to adequate food is realised when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means of its procurement (Nations-Unies et Conseil Économique et Social, 1999). Unfortunately, many low- and middle-income countries are still unable to guarantee this right to their populations, particularly in Africa, Asia, and Latin America. It has been estimated that by 2021, 900 million people were severely food-insecure and 3.1 billion people were unable to maintain a healthy diet, representing 42% of the world's population (FAO, 2023).

This already strained situation is sometimes exacerbated by shocks that are more or less predictable, but in some cases, they are unpredictable. This has been the case with

the insecurity linked to terrorism that has afflicted the Sahel countries over the last decade. Its devastation, in terms of loss of life, disease, forced displacement, unemployment, and its social, psychological, and economic consequences, is still unfolding. Terrorism-imposed roadblocks in so-called red zones affected the supply of agricultural products to markets, thereby limiting their access (FAO, 2021b). The reduction in cereal flows has affected availability and restrained demand (FAO, 2021b). Threats to traditional transhumance routes forced herders to use alternative routes, sometimes leading to conflicts with farmers. The looting of food reserves and livestock has also reduced community resilience (ICRC, 2023).

The ongoing insecurity in Burkina Faso stems from terrorism perpetrated by non-state armed groups. The scale and frequency of their attacks have continued to increase, changing the ranking of the country from 113rd in 2011 to 2nd in 2022 in terrorism impact (IEP, 2023). Population dis-

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placements have peaked at around two million, one tenth of the total population, according to the National Emergency Relief Council. More than half of the national territory was under the control of terrorists in 2024, according to Jean-Marie K. Traoré, Burkina Faso Minister of Foreign Affairs.

An additional 161 million people suffered from chronic undernourishment in 2020, due Covid-19 (HLPE, 2020). The number of people experiencing moderate to severe food insecurity increased by around 320 million. Some producers were forced to reduce the area under cultivation due to market closures and marketing difficulties (Vasseur et al. 2021). This led to higher prices, while households experienced a significant reduction in income (United Nations, 2020). Poor households then turned increasingly to less nutrient-rich staple foods (Laborde et al. 2020; Bracale & Vaccaro, 2020). The economic, social and environmental consequences of these two shocks were considerable, especially for certain sub-populations (WFP, 2020).

Burkina Faso registered its first two confirmed cases of Covid-19 on 9 March 2020. By 28 April 2020 and the number of infected individuals had increased to 668, with 48 deaths. The majority of the infections occurred in the two main towns of the country, Ouagadougou and Bobo-Dioulasso (556 and 58 cases respectively), according to Lefasonet (2020). In response, official measures were adopted, such as curfews, restrictions on public gatherings and border closings.

In Burkina Faso, agricultural production is labour-intensive, employing 70-80% of the population. It is mainly based on rain-fed cereals (sorghum, millet, maize), which cover more than 88% of the sown lands each year (MAHRAH, 2013). Relatively poor agricultural performance and high population growth (2.9% per year) (DGESS/Agriculture, 2022) create a structurally negative food production balance, necessitating cereal imports. Despite imports, it is estimated that during the lean season in 2020, more than 2 million people, 10% of the population, were food insecure (phases 3 and 4 issued from harmonized framework of food insecurity zone and population classification at the West-Africa level) (CILSS/AGRHYMET, 2020).

Household food insecurity (HHFI) has a multidimensional nature. For example, female-headed households are the most food insecure (Boling, 2021), which is synonymous with the prevailing gender relations. When households rely on self-production and men hold primary decision-making power, women, especially single or widowed, may be excluded from benefits and opportunities. Moreover, being divorced or widowed deprives individuals of mutual support within the family (Akakpo et al. 2009; Jonathan, 2021) Regardless of gender, having savings, a regular and sufficient income, or substantive remittances mitigates food insecurity (Kimani-Murage et al. 2014). In the case of self-consumption, cultivated area is an important factor in meeting food needs, especially during the lean season (Randriamiandrisoa and Ballet, 2014). Living standards, which determine vulnerability to food insecurity (Millogo et al. 2015). The precariousness and instability of economic activity conducted by household members determines the possibility of having or covering basic expenses (Akakpo et al. 2009; Samandoulougou, 2019; Warner and Afifi, 2014). The same thing applies to poor

education, which reduces economic access or dietary diversity (Boling, 2021). An older household head, together with reduced physical capacity, increases HHFI, especially when labour support is lacking (Chinnakali et al. 2014). However, large household size (Millogo et al. 2015) and too high economic or demographic dependency (Akakpo et al. 2009) weaken food coverage. Belonging to a particular religion or ethnic group may also determine participation in local production networks, which are essential for mutual assistance in carrying out heavy agricultural tasks (Chinnakali et al. 2014).

The present study attempts to add to this complex network of causes of food insecurity the possible direct and indirect effects of the security crisis caused by terrorism and the various measures imposed to curb Covid-19, based on how people feel that their food consumption has been affected by both shocks.

## METHODS

The dataset used in this study comes from the fifth Burkina Faso Demographic and Health Survey (EDSBF-V), carried out from July to November 2021. The survey was conducted nationwide, except in areas made inaccessible by terrorism. A compensation for this was made with over-sampling within the displaced population from these affected regions. The survey included 13,251 households, with a coverage rate of 95% (INSD and ICF, 2023). The SPSS and Stata softwares were used for data processing and analysis.

HHFI status was based on eight independent variables from the Food Insecurity Experience Scale (FIES) that assess the severity of food insecurity, as follows: (1) worry, (2) health (healthy and nutritious food), (3) variation in food, (4) regularity of food consumption, (5) quantity of food consumed, (6) rupture of food consumption, (7) unavailability of food for consumption and (8) hunger (corresponding to severe food insecurity status (Ballard et al. 2013)). These relate to self-reported food behaviours and experiences and are formulated to reflect increasing difficulties in accessing food due to resource constraints. The sub-population affected by severe HHFI (2,482 households) was asked whether they attributed their situation to current terrorism, the effects of the Covid-19 pandemic, both, or neither of these shocks.

Dietary diversity was used to assess dietary quality (FAO, 2021a), based on a 24-hour recall period. The FAO scale varies from 0 to 10, based on the number of food groups consumed within the major ten enumerated as follows: Cereals, tubers, roots (1), Protein crops (2), Oilseeds (3), Dairy products (4), Meat, poultry, fish, offal (5), Eggs (6), Vitamin A rich vegetable (7), Vitamin A rich fruit (8), Other vegetables (9) and Other fruits (10). Those who consumed at least five food groups were considered to have reached the minimum level of dietary diversity required for an acceptable intake of micronutrients.

The non-monetary approach of Filmer and Pritchett (2001) was used to assess the household living standard. It is based on characteristics of the main residential house, the availability of facilities, and household ownership of durable goods. Using the multiple correspondence analysis followed by hierarchical classification, the households have been divided into five ordinal modalities: poorest, poor, middle

class, well-off, and rich. Due to its construction, this variable reflects not only the financial capacity to afford these products but also the quality-of-living environment, particularly sanitation.

Following the selection of independent variables based on a literature review, bivariate cross-tabulations were performed to examine factors associated with severe HHFI, complemented by chi-square or analysis-of-variance tests. The relevant discrete and quantitative variables were then retained at a 20% significance threshold and incorporated into explanatory models. After a collinearity test on the retained explanatory variables, binary logistic regression was used to determine the main determinants of severe HHFI. The model adequacy was assessed using Nagelkerke  $R^2$  to indicate the proportion of the dependent variable explained by the variables included in the model. The rate of accurate classification indicates the proportion of independent variables' correspondence between predicted and observed dependent variables. In the explanation approach, the significance cut-off point is 5%. Due to missing data, the binary logistic regression was carried out on 6,119 cases, whereas the multinomial logistic regression was limited to 1,260 cases.

As for education and occupation of the household head, certain categories were grouped to reduce fluctuations due to low number of cases. Households with a head who had attained a secondary or higher education level were grouped together. Similarly, households headed by an unskilled manual worker, skilled manual worker, or "other" occupation constituted a new occupational category.

## RESULTS

### SAMPLE DESCRIPTION

More than half of households (53.3%) were composed of three or more related individuals (Table 1 below). One quarter of households were considered rich (26.1%), while 18% were in the poorest category. The Centre region had the highest proportion of households (21.4%), while the Sahel had the lowest (2.0%). Household heads were mainly married men who generally lived in rural areas and were uneducated. They did not have a bank account and were mainly active in agriculture; 62.5% owned a farm animal.

### DETERMINANTS OF SEVERE HOUSEHOLD FOOD INSECURITY IN BURKINA FASO

In 2021, 18.8% of households were severely food-insecure according to the FIES scale (Table 2). It is noticeable that the prevalence was unexpectedly higher in the Centre-Ouest (35.5%) and Sud-Ouest (28.6%) regions, where rains are rela-

**Table 1. Characteristics of households included in the sample**

Variables	Percentage
<b>Household composition</b>	
One adult	10.0
Two adults of opposite sex	29.5
Two adults of the same sex	3.1
Three related adults	53.3
Three unrelated adults	4.1
<b>Wealth index</b>	
Poorest	18.0
Poor	17.9

Variables	Percentage
Middle class	17.8
Well-off	20.3
Rich	26.1
<b>Region of residence</b>	
Boucle du Mouhoun	9.8
Cascades	3.2
Centre	21.4
Centre-Est	9.6
Centre-Nord	8.2
Centre-Ouest	10.4
Centre-Sud	4.8
Est	6.0
Hauts-Bassins	10.3
Nord	5.5
Plateau central	5.5
Sahel	2.0
Sud-Ouest	3.3
<b>Marital status of HH</b>	
Single	5.7
Married	85.6
Widow	6.6
Divorced	2.1
<b>Education of HH head</b>	
No education	64.6
Primary	15.5
Secondary	14.8
Superior	5.1
<b>Occupation of HH head</b>	
Not work	10.6
Professional/technical/manager	9.4
Sale	13.4
Agriculture	42.0
Skilled manual	12.6
Unskilled manual	7.9
Other	4.0
<b>Minimum diet diversity</b>	
No	73.5
Yes	26.5
<b>Bank account</b>	
No	75.4
Yes	24.6
<b>Place of residence</b>	
Urban	34.2
Rural	65.8
<b>Sex of HH head</b>	
Male	86.6
Female	13.4
<b>Herds. farm animal</b>	
No	37.5
Yes	62.5
<b>Total</b>	<b>100.0</b>

tively abundant. Urban households were less likely to be severely food-insecure than rural households (13.3% compared with 21.5%), undoubtedly due to higher living standards. Households with three related adults were the most vulnerable, while those with only one adult were the least affected (20.5% compared to 15.7%). Given the priority generally attributed to food in household expenses, poor households were more likely to be food insecure than wealthy households (34.7% versus 7.7%). Food-insecure households were less likely to consume diversified diets (15.6% versus 19.9%). Contrary to expectation, households headed by

divorced persons were less food insecure than others, particularly those headed by widowed persons (14.8% compared to 26.5%).

**Table 2. Prevalence of severe food insecurity according to some household characteristics**

Variables	%	Sig.
<b>Structure of household</b>		0.000
One adult	15.7	
Two adults of opposite sex	17.0	
Two adults of the same sex	18.2	
Three related adults	20.5	
Three unrelated adults	16.7	
<b>Wealth index</b>		0.000
Poorest	34.7	
Poor	24.0	
Middle class	17.5	
Well-off	15.2	
Rich	7.7	
<b>Region of residence</b>		<0.001
Boucle du Mouhoun	24.9	
Cascades	6.0	
Centre	12.0	
Centre-Est	13.6	
Centre-Nord	20.9	
Centre-Ouest	35.5	
Centre-Sud	16.3	
Est	15.2	
Hauts-Bassins	8.7	
Nord	20.4	
Plateau central	20.2	
Sahel	31.8	
Sud-Ouest	28.6	
<b>Marital status of HH</b>		0.000
Single	16.7	
Married	18.4	
Widow	26.5	
Divorced	14.8	
<b>Variables</b>	%	Sig.
<b>Education of HH head</b>		0.000
No education	21.1	
Primary	16.9	
Secondary	10.0	
Superior	0.7	
<b>Occupation of HH head</b>		0.000
Not work	26.8	
Professional/technical/manager	6.2	
Sale	11.4	
Agriculture	22.3	
Skilled manual	17.1	
Unskilled manual	18.0	
Other	11.8	
<b>Minimum diet diversity</b>		0.000
No	19.9	
Yes	15.6	
<b>Bank account</b>		0.000
No	22.4	
Yes	7.5	

Variables	%	Sig.
<b>Place of residence</b>		0.000
Urban	13.3	
Rural	21.5	
<b>Sex of HH head</b>		0.066
Male	18.5	
Female	20.3	
<b>Herds. farm animal</b>		0.000
No	16.7	
Yes	20.0	
<b>Overall</b>	<b>18.8</b>	

HH: Household; Sig.: Significance

Based on bivariate analyses, as shown in Table 3, food-insecure households have an older head (47.32 years compared to 44.83 years) and have more agricultural land (9 ha compared to 7 ha). Non-severely food-insecure households have a significantly higher average number of poultry and sheep (8.45 and 2.74, respectively) than severely food-insecure households (7.38 and 2.31, respectively). On the other hand, households owning cattle or pigs were more food insecure.

**Table 3. Mean values of quantitative variables associated with severe household food insecurity**

Quantitative variables	Severe food insecurity			
	No	Yes	Overall	Significance
Size of household	6.16	6.78	6.27	0.000
Age of household head	44.83	47.32	45.30	0.000
Hectares of agricultural land	7.26	9.08	7.65	0.001
Number of cattle	0.68	0.97	0.74	0.000
Number of pigs	0.24	0.40	0.27	0.000
Number of goat	3.11	3.18	3.12	0.554
Number of poultry	8.45	7.38	8.25	0.000
Number of camel	0.02	0.02	0.02	0.993
Number of duck/turkey	0.19	0.18	0.19	0.841
Number of bull/cow	1.38	1.32	1.37	0.554
Number of sheep	2.74	2.31	2.66	0.001

Table 4 shows that, everything else equal, the poorest households were about 7.6 times more likely to be severely food-insecure than the wealthiest households. Having little or no education, being single, and living in the Centre-Ouest Region conveyed substantial additional risk. Holding all of this constant, certain occupations, including skilled labourers, and living in an urban area, increased risk. Those without minimum dietary diversity were less likely to experience severe food insecurity (OR=0,823).

**Table 4. Logistic regression of risk of severe household food insecurity**

Variables/Modalities	OR	Sig.	95% CI	
<b>Sex of HH head</b>				
Male	0,833	0,390	0,549	1,264
Female	1.000			
<b>Region of residence</b>				
Boucle du Mouhoun	0,804	0,194	0,578	1,118
Cascades	0,256	0,000	0,136	0,480
Centre	0,652	0,129	0,375	1,132

Variables/Modalities	OR	Sig.	95% CI	
<b>Sex of HH head</b>				
Centre-Est	0,406	0,000	0,283	0,582
Centre-Nord	0,692	0,036	0,491	0,976
Centre-Ouest	1,828	0,000	1,315	2,540
Centre-Sud	0,560	0,006	0,371	0,846
Est	0,282	0,000	0,191	0,416
Hauts-Bassins	0,269	0,000	0,175	0,414
Nord	0,468	0,000	0,321	0,683
Plateau central	0,684	0,048	0,470	0,997
Sahel	0,542	0,009	0,342	0,859
Sud-Ouest	1.000			
<b>Place of residence</b>				
Urban	1,391	0,034	1,026	1,886
Rural	1.000			
<b>Education of HH head</b>				
No education	2,156	0,285	0,527	8,828
Primary	2,152	0,288	0,524	8,844
Secondary	1,885	0,383	0,454	7,826
Higher	1.000			
<b>Marital status</b>				
Single	2,308	0,258	0,542	9,817
Married	1,591	0,426	0,507	4,994
Widow	1,609	0,444	0,475	5,449
Divorced	1.000			
<b>Composition of HH</b>				
One adult	0,543	0,091	0,268	1,102
Two adults, opposite	0,696	0,104	0,449	1,078
Two adults, same sex	0,551	0,126	0,256	1,184
Three+ related adults	0,730	0,133	0,485	1,100
Three Unrelated adults	1.000			
<b>Bank account</b>				
No	0,996	0,979	0,756	1,313
Yes	1.000			
<b>Wealth index</b>				
Poorest	7,623	0,000	4,158	13,975
Poor	4,329	0,000	2,373	7,896
Middle class	2,854	0,001	1,574	5,175
Well-off	2,079	0,013	1,164	3,715
Rich	1.000			
<b>Herds. farm animal</b>				
No	1,335	0,004	1,098	1,623
Yes	1.000			
<b>Occupation of HH</b>				
Not working	2,340	0,012	1,203	4,550
Professional/technical/	1,615	0,242	0,724	3,603
Sale	1,791	0,097	0,900	3,564
Agriculture	2,128	0,022	1,115	4,062
Skilled Manual	2,356	0,015	1,184	4,687
Unskilled manual	2,098	0,033	1,063	4,141
Other	1.000			
<b>Minimum diet</b>				
No	0,823	0,021	0,698	0,971
Yes	1.000			
Variables/Modalities	OR	Sig.	95% CI	
<b>Sex of HH head</b>				
Size of HH	1,037	0,001	1,015	1,060
Age of head HH	1,004	0,127	0,999	1,010
Hectares of cultural	1,004	0,016	1,001	1,008
Livestock	1,012	0,198	0,994	1,031
Pigs	1,074	0,000	1,033	1,117
Poultry	0,982	0,000	0,976	0,989
Sheep	0,980	0,003	0,967	0,993
Constant	0,019	0,000		

Variables/Modalities	OR	Sig.	95% CI
<b>Sex of HH head</b>			
Nagelkerke R <sup>2</sup>	0,168		
Hosmer & Lemeshow	0,306		
Accurate classification	80,2%		

HH: Household; CI: Confidence Interval, Sig.: Significance

Among severely food-insecure households, 6.3% attributed their situation to Covid-19 but not to terrorism, and 10.8% to terrorism but not to Covid-19 (Table 5). Those citing both terrorism and Covid-19 accounted for 15.5%.

**Table 5. Household perception of the origins of its severe food insecurity**

Origins of food insecurity	N	Percentage
Covid-19 but not terrorism	157	6.3
Terrorism but not Covid-19	269	10.8
Covid-19 and terrorism	385	15.5
Neither Covid-19, nor terrorism	1 671	67.4
Total	2 482	100.0

## DISCUSSION

This study shows that there has been an impact of terrorism and of Covid-19 on HHHFI in Burkina Faso, as reported by the population. It appears also to be a positive association between household size and severe food insecurity. This finding corroborates those of other studies (Dassou et al. 2019; Kisoly et al. 2017; Nakelse et al. 2010). In Burundi, smaller farming households had more acceptable maize harvests per capita than larger ones (Napoli, 2010). While the presence of a larger number of active members in the household was conducive to higher productivity, this is becoming less feasible over time with population growth and the resulting fragmentation of arable land.

In Burkina Faso, our findings indicate that households with a non-working head are more likely to be severely food insecure (aOR=7.6). This link between poverty and food insecurity has been found by others, including Janin (2001) in his study of household living standards and their level of food insecurity.

Our results confirm the conclusions of many other studies on the impact of Covid-19; 6.3% of severely food-insecure households were affected by Covid-19 alone, and another 15.5% in combination with terrorism threats. The WFP, which looked at the issue in 2020, concluded that Covid-19 had a negative impact on several sectors related to the food situation in Central and West Africa (WFP, 2020). Covid-19 contributed to an increase in the price of imported cereals, a reduction in business activity, and, a reduction in agricultural production. Some producers have been forced to reduce their cultivated area due to difficulties in selling their product (Vasseur et al. 2021). At the same time, rising food prices have further weakened households' ability to buy enough food (Moseley & Battersby, 2020). The alternative has been to favour the most accessible products, which tend to be of poor nutritional quality (Vasseur et al. 2021).

Precarious security due to terrorism has led to food insecurity in some households: 10.8% of households are affected by terrorism alone and 15.5% in combination with Covid-19. Restrictions of access to areas by terrorism hamper

transhumance and animal access to pasture. Pastoralists' use of alternative corridors sometimes leads to conflict with farmers. The looting of food reserves and livestock also reduces the resilience of affected communities (WFP, 2020). Farmers in the "three-frontiers" region (Burkina Faso-Mali-Niger) have lost almost 80% of their arable land. In some cases, yields have fallen drastically due to a lack of inputs. In the northern regions of Burkina Faso, 30-50% of the land has been lost (ICRC, 2023). The abandonment of fields exposes people to food insecurity and even famine (ICRC, 2023). In addition, road closures or blockades imposed on certain localities affect the supply of agricultural products to markets and limit access, due to higher prices (FAO, 2021a). Terrorism reduces the flow of cereals, thereby reducing availability and lowering demand (FAO, 2021a). This instability exacerbates food and nutrition insecurity by reducing the already fragile livelihoods of farmers and pastoralists.

The attribution of HHFI to only one of the two causes (Covid-19 or terrorism) tends to increase with the area of cropland. An additional hectare increases the risk by about 11% compared to those who did not attribute it to either of the two causes. The increase in land also makes households more dependent on the market for production, sale, and input supply. Any instability at a larger scale, therefore, has an impact on these household activities.

A significant proportion of interviewees said that neither Covid-19 nor terrorism is responsible for their severe food insecurity (67.4%). It is well known that food security in African countries suffers from many structural problems, far more than from unexpected shocks such as terrorism or Covid-19 (CE-FAO, 2008). In fact, while it is often said that Africa has more than 60% of the world's arable land that is not yet exploited, the extent to which this land is used is currently out of line with needs (Mounet, 2012). This is why the African Union adopted the Maputo Appeal (Mozambique) in 2016, calling on African countries to devote at least 10% of their budget to agriculture in order to ensure self-sufficiency. In many countries, including Burkina Faso, budget allocations are primarily oriented towards functioning rather than investment. An assessment of the initiative's implementation showed that countries most dependent on their agricultural production were significantly behind schedule. Food security is therefore challenging to achieve, with production and availability still heavily dependent on rainfall, which is becoming increasingly erratic due to climate change. Although there has been an overall improvement in the amount of rainfall, it comes late and is concentrated over a relatively short period, causing floods in some areas and leaving pockets of drought in others. Widespread adoption of short-cycle seeds would have made it possible to take advantage of this ongoing imbalance, but unfortunately the extent to which this is being disseminated remains limited for the time being.

In order to mitigate the risks associated with climatic hazards, in particular drought and rainfall deficits, the Ministry of Agriculture has been implementing an agricultural insurance mechanism since the 2020-2021 agricultural season through the Agricultural and Food Risk Management Project (PRAA). Surprisingly, only 801 producers had subscribed to the scheme by the 2022-2023

cultural season (MARAH, 2022). This is partly due to the relatively high cost of subscription, even when subsidised. In addition to this limitation, the disasters covered do not include exceptional situations such as Covid-19, which can be more damaging.

The information on food insecurity was collected based solely on households' assertions, using the eight FIES questions. In the context of austerity, it cannot be excluded that households may present a worse picture than is actually the case. The expectation of support or help to alleviate their difficult situation may encourage interviewees to deliberately bias their responses, particularly in areas affected by physical and food insecurity. Despite instructions on data collection and the precautionary measures adopted during processing, it is difficult to disentangle these intentional flaws from the results. Nevertheless, we can suppose that this limitation has a reduced effect on the results, since only one-fifth of the households reported being severely food insecure. Another limitation of the data collection process was that the survey has not collected data on infection of household members by Covid-19 or being direct victims of terroristic aggressions.

Our analyses showcase a perceived effect of terrorism and Covid-19 on food insecurity. In particular, large-scale farmers appeared to be the most affected because of their greater dependence on the market to sell their products. Interconnection with a wider system of production and consumption of products, especially those linked to the outside world, had made them de facto dependent on the measures taken to combat both problems. The system of input supply (seeds, fertilizers, pesticides) and the possibility of receiving technical or financial assistance mainly from state and partly from private services were disrupted. The displacement of people from their land as a result of the terrorism has seriously jeopardized the various food security cycles. Transhumance became impractical due to the risks to both people and animals.

Nevertheless, measures taken by the government have been both political and programmatic. On one hand, one approach attempts to integrate internal displaced persons into agricultural plan within host communities and reintegrating others in the freed villages. On the other hand, the ongoing 'Agriculture Offensive' initiative aims to achieve food self-sufficiency by freely providing populations with ploughs, seeds and fertiliser. Future evaluations will indicate whether these implementations are sufficient or need to be enhanced for a better harvest and food self-sufficiency achievement.

The national statistical system should improve its data collection procedure to include documentation of spontaneous events such as Covid-19 and criminal activities linked to terrorism. To this end, the collection of data on food insecurity by FIES in DHS surveys should become permanent. This would provide a basis for assessing its appropriateness to the national context and also for evaluating the overall population situation, including those employed outside agriculture. The measurement of HHFI will also be an essential complement to the existing agriculture survey, which is limited to agricultural households for yields estimation, campaign perspectives and production volumes.

## CONCLUSION

Like many Sahelian countries, Burkina Faso suffers from food insecurity resulting from short- and long-term effects. Factors such as erratic and insufficient rainfall, soil impoverishment, land subdivision, inadequate equipment and financing, restricted markets, imperfect distribution networks and channels, and a lack of information sharing between stakeholders affect the quality and quantity of crop productivity. Unfortunately, efforts to overcome these limitations are sometimes undermined by weaknesses and inconsistencies in the agricultural policies implemented. The absence of coordination efforts between and within countries leads to the expansion of monocultures, which impoverishes soils and creates slumps in product sales, impoverishing producers. Therefore, it is essential to address these issues in the long term by strengthening specific intervention systems, such as the eradication of migratory locusts, the rehabilitation of degraded land, and collaborative research into financing.

It is also important to prevent and accurately address different types of shock as far as possible by deploying efficient early warning systems capable of meeting new

challenges. The setup, equipment and assignment of qualified personnel guarantee their reactivity and performance. In light of recent events, it is necessary to expand their scope to all populations and nutrition-related issues, in order to address the specific needs of vulnerable groups.

## CONFLICT OF INTEREST

The author declares that he has no competing interests.

## DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN SCIENTIFIC WRITING

Nothing to disclose.

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