Algerian Food Security

Bahia BOUCHAFAA and Aynur PALA

***Abstract*— Like all countries in the world, Algeria has always and since its independence, worked to make food available and accessible, mainly through subsidies, food security being a sacred concept. Having gone through several financial and economic crises during its history as a young independent country, it begins to abandon the subsidization of more and more food products.**

Recently, Algeria has partially ceased the subsidy of the most consumed commodity of the population, namely wheat and its derivatives; which prompted us to wonder if we should not worry about food security in Algeria.

This article spreads the history of the way in which Algeria managed the availability of wheat, then its accessibility to ensure its food security. The analysis shows and confirms our concern that the overall food security index is declining especially since the partial abandonment of wheat subsidies. Also, this shows that the Algerian State is losing its resilience in the face of the unceasing growth in the demand for wheat.

***Keywords*— Bill, Food Security Public Policy, Subsidy, Resilience, Wheat.**

I. Introduction

Algeria has always adopted social protection policies whichimposed a significant cost on the public treasury. Indeedsubsidies were estimated at $17 billion only in 2019. But Algeria continues to subsidize stapleproducts like cooking oil, flour, semolina, bread, and fuel whatever its economic situation.However, thebudget deficit was estimated at $30 billion for 2022 and this led public authorities to approve the Finance Bill, which lifted food subsidies (Ghebouli, 2022).This might generate social crises becaue this country is considered as foodstuffs importer. The value of these imports exceedsthe quarter of the total of the country imports. The main part is constituted of three groups of products: cereal and derivatives (40 % of agricultural imports total value), milk and derivatives (14.3 %), oil and fats (10.5 %). This situation tidies up Algeria among ten main importer countries of foodstuffs in the world, in a situation of strong dependence towards the international market. Cereal products are the basic food with a consumption level reaching 205 kg/inhabitant/year (Chehat, 2007.) where wheat and common wheat occupy the first placeexceeding 200 kg per capitaper year (OCDE/FAO, 2021).

However, wheat production in Algeria cannot cover the national demand and this contrains the Algerian State reort to the imports. Imported quantities of wheat were multiplied by more than 10 between 1961 and 2021 (from 442000t to 8 million t) (USDA, 2022), costing the public treasury 2.25 billion dollars and this represents or a quarter of the total food import bill (USDA in Assocle, 2022). Let's note that Algeria paid 1 billion dollars for the same bill in 2004(Bencharif and Rastoin, 2007), implying thus an average annual growth rate of 5% This means that food invoice is heavier and heavier which weakens Algerian food security.

Food security has been defined in 1996 World Food Summit as : « ***Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy lif***e » (FAO,2008). The elements of the structure on which food security is based are::

- **Physical *AVAILABILITY* of food** which is determined by the level of food production, stock levels and net trade ;
- **Economic and physical *ACCESS* to food** which concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives ;
- **Food *UTILIZATION*** which is the way the body makes the most of various nutrients in the food ;
- ***STABILITY* of the other three dimensions over time** which involves adverse weather conditions, political instability or economic factors (unemployment, prices) can have an impact on the food security situation**.**

Therefore, the study of the food security situation of a country must take into consideration the points mentioned above. This presupposes a review of all mechanisms adopted by the Algerian State to make wheat accessible to population; namely the incentive for production, importation, subsidy. Let's note that the third element of food security will not be treated because it is not among the objectives of this article.

In this paper, we are trying to discuss the degree of resilience of the Algerian economy and the subsidy policy adopted by the Algerian State to ensure its food security. But first, we must establish an inventory of the current situation of food security in Algeria.

II. Physical availability of wheat

Algeria has always been able to take up the challenge of feeding its growing population that exceeds 44 million nowadays (World Bank, 2021) and mostly consuming wheat

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more than any other material, by seeking the best policy to cover its needs, in particular by focusing on production. However, a previews revealed a outstanding production which makes the rate of self-sufficiency in wheat lower and lower falling below 45%(Bouchafaa & al., 2023). A historical review of Algerian wheat production evolution led us to identify the causes of such a situation.Note that the challenge is to turn to imports to cover demand regardless of the price on the market. By that, we are definig the two ways of making wheat available to population, that are production and imports Submit your manuscript electronically for review.

A. Wheat production

As said previously, national durum and common wheat production covers only 30 % of the national market

The first constraint is the weakness of the agricultural policy, the least we can say, is that it remains very needy because, with the exception of the instrumentation of public grants, it neglects, even evacuates the necessity of proceeding to deep reforms of the land structures, the sector of the agronomic research and the financing ofagricultural exploitations. (Kellou, 2010).Studies made by the directionof the agricultural statistics and the information systems ended to the following observations:

- Durum wheat production knew a relative stability during the period from 1980 until 1990 with an average of 7.07 Mq corresponding to an average yield of 7.5 quintals per hectare;
- Then it appreciably increased between 1991 and 2003 with an average of 11.5 Mq and an average yield of 11 quintalsper hectare. The year 2003 recorded a good yield with 18 quintals per hectare.

Compared to the world average, which is 29 q / ha for 2004, the Algerian wheat yield reaches, for the best years, only 50 % of this value. It is about 10.5 q / ha, (it is among the weakest in the world). (Kellou, 2010).

Nevertheless, for the period 2000-2017, taking into account the support programs from which cereal cultivation has benefited within the framework of the National Agricultural Development Program, and subsequently of the Agricultural and Rural Renewal policy, the evolution of the yield levels achieved seems positive . Indeed we noted an increase in the average yield, which rose from a level of 12.5 q/ha in 2007 to 14.6 q/ha in 2017. But it is certain that the rate of increase in the yields of durum and soft wheat remained insufficient compared to the needs of the population which are increasing(Ferhat & Chehat, 2020).We can conclude that wheat production is almost stagnantand far from satisfying the demand of the population (Bouchafaa & al., 2023).

B. Wheat importss

The imports play a key-role in the supply of the cereal national market. The very weak progress recorded by the grains domestic production condemned the State to look for the rational means of supplies management outside, adapted to the budgetary resources in moment, but offering a guarantee against the risks of shortage, always lived on the dramatic situation

Algeria imported the equivalent of 61% of its cereal consumption, the largest item of its food imports, between 1975 and 1979 (Dahmani, 1999 in Ferhat & Chehat; 2020). From 1995 to 2005, the Algerian market absorbed, on annual average about 4.3 million tons of wheat representing a value of 858 million dollars. (Chehat, 2007). The cover of consumer needs in cereals (wheat and barley) is provided up to 37.7% of national production during the period 1995-2004. The domestic supply is still low, the self-sufficiency rate is at about 28.4% for wheat (average 1995/2004). The satisfaction of domestic demand is then mainly ensured by imports, up to about 72% for wheat. (Djermoun, 2009). We also noted that Algeria imported 52 million quintals on average per year in the period 2008-2017, hence a very serious dependence (Ferhat & Chehat; 2020).in 2016 alone, wheat imports amounted to 82 million quintals, i.e. a wheat food bill estimated at 1.8 billion dollars.The volume of wheat imports thus remained high, which consolidates Algeria's dependence on the world grain market.The growing gap between wheat supply and demand is largely filled by imports that have become excessively expensive over the years, with limited means of payment.

In Algeria, supplying the population is a real challenge in the sense that access to this commodity must be ensured at all times and at any price. which puts the State in front of two missions that it must accomplish simultaneously; namely ensuring availability and access to wheat to avoid facing food insecurity. Indeed, to make wheat and its derivatives accessible, Algeria uses the subsidy as a tool to support part of the expenses that it must deduct from the public treasury. This is done through public policies in favor of social support.So, let's analyze the efforts made by this country to ensure access to wheat in economic terms

III. ECONOMIC AND PHYSICAL ACCESSTO WHEAT

Although subsidies are a common mechanism in public policies, there is no universal definition of this concept. Differences between authors and economists persist. However, on the whole, subsidies are generally defined *as* ***«financial aid granted by the administrative authorities to support private natural or legal persons in the realization of projects or investments, the development of activities or global financing»***. In Algeria, subsidies are an important part of the state's economic and social policy, accounting for nearly 40% of GDP. They are used to support agriculture, industries, public services and poorer households, but can also be costly for the state (Anonymous, 2023).

Several forms of subsidies are applied in Algeria. These include, among others, social subsidies, which encompass all budgetary expenditure aimed at guaranteeing a decent standard of living for people in precarious situations, providing assistance to citizens for access to essential goods or services such as food, in particular milk and wheat, considered to be widely consumed products (Anonymous, 2023).

For wheat and derivatives, consumer prices are regulated due

to their importance. They remain very low and are subsidized by the State until the end of the 1980s. Under structural adjustment, 1992 – 1995, part of the price is passed on to the consumer. That is why the prices of wheat derivatives have risen in stages, an increase described as "gentle" by Chehat in 2006.Since April 1996, bread price of has remained stable while semolina price was slightly reassessed in 2007 (Bouchafaa & Kherchi-Medjden, 2015).

However, the stagnation of production has forced Algeria to resort more and more to the world market in order to meet its priority needs, which has caused increased food dependence in addition to financial and technological dependence.This constraint is all the more important as these imports are carried out in a context of financial crisis which makes them more politically difficult and burdensome.

In this context, in 2020, according to two executive decrees published in the Algerian Republic Official Journal No. 52, the State stopped subsidizing soft and durum wheat intended for manufacture of other types of flour and pasta and couscous. It is mentioned that for flour and bread, the sale price to the consumer of a kilogram of ordinary flour is fixed at 27.50 dinars and that of sale to bakers at 2000 dinars per quintal while the price of semolina for households will not change. It remains fixed at 38.5 Da and 42.5 Da per kilogram for ordinary and extra semolina respectively. The subsidy does not affect durum wheat intended for the production of pasta, couscous and other derivatives (JORADP, 2020).

According to wheat subsidy history, we note that Algerian State is smoothly abandoning grant and this can affect a large segment of society (about 52% of population) living below or approaching the poverty line (Bouchafaa, 2018).This situation can lead to an imbalance at the level of the Algerian consumer because it will now be difficult for him to access an essential commodity which is wheat and its derivatives for his daily life. this can harm the country's food security because according to Bessaoud, the latter is linked to a dynamic of global development and requires the mobilization of all economic sectors and that it is a matter of State and that it concerns public policies (Bessaoud 1997 in Ferhat & Chehat, 2020).

This modest analysis encourages us to seriously worry about the current situation of food security in Algeria and the repercussions of a possible destabilization that can be caused by the failure to one or other of the components of food security as defined in world food summit in 1996. To do this, we propose to appreciate the resilience of public policies adopted to maintain food security through the study of Algerian food security indicator that we will define in the next section

IV. Analysis of food security situation in Algeria

The food security indicator adopted by all the countries is the one developed by Economist Impact in order to classify them according to the scores obtained for accessibility, availability, quality and safety and finally natural resources and resilience.

According to Economist Impact, in its 10 edition of global food security index (GFSI) 2021, Algeria occupies the 54th place on the world ranking of food security, behind Argentina 53th and ahead of Tunisia 55th, with an overall score of 63.9 points out of 100, or 77.9 points for accessibility, 58.0 points for availability, 62.0 points for quality and safety and 50.7 points for natural resources and resilience.Regionally, the Economist Impact website ranked Algeria 10e in the Middle East and North Africa region out of a total of 15 countries.We note that Algeria enjoys fairly good food accessibility, but for the other three indicators, namely availability, quality and security and finally resilience, it is just average.

In 2022, Algeria drops to 68th place with a GFSI of 58.9, thus losing 5 points compared to the previous year. However, it is ranked first in the Middle East and North Africa (MENA) region.We can easily assume that Algerian food security is declining globally and therefore, from the point of view of accessibility, quality and safety and above all resilience, Algeria must be concerned about its alarming situation.The fact that Algeria is at the top of the MENA list raises concern about the food security situation of the whole region.

TABLE I: Algeria vs World Food Security Index, 2019-2022

	Algeria			World		
	2019	2022	Diff	2019	2022	**Diff**
Overall Score	58.9	**59.8**	+0.90	69.0	62.9	-6.13
Affordability	66.8	**66.9**	+0.10	57.8	**67.5**	+9.72
Availability	57.3	55.8	-1.50	65.9	59.4	-6.49
Quality & Safety	54.7	53.0	-1.70	54.1	**61.0**	+6.83
Sustainability and Adaptation*		54.2*			54.1*	

Source: The Global Food Security Index, The Economist's Intelligence Unit *, New criteria added in 2022.

While the affordability index increased by 10 points from 57.8 to 67.5 in the world in 2022, it remained at 67 in Algeria in the same year. Thus, the low world affordability index has reached the level of Algeria. This performance is the best among other world food security criteria. The second best performance was experienced in food quality and safety, which increased by 7 points to 61. But, availability index related with stock level decrease by 6.5 points to 59.4. While Algeria is at the same level as the world average in terms of affordability criteria, it is 3.5 and 8 points below the world average in terms of availability and quality, respectively. Algeria should focus on a strategy to increase quality and safety and availability criteria. Algeria has the same lavel about sustainability and adaptation criteria score with world,

In 2022, the Algerian and world overall scores will be 60 and 63, respectively, indicating a difference of 3 points. The decrease from the 10-point difference in 2019 to 3 was due to the decrease in the world availability criterion. In general, as in Algeria, it is important to increase and stabilize availability and quality&safety criterias in order to increase world food security. The availability, quality, and safety criteria for both Algeria and global benchmarks currently fall below the their overall performance score and It is important to improve these criteria.

Sustainability is considered both a driver and a potential outcome of food security. While theoretical frameworks

propose that sustainability enhances food security, empirical studies often show mixed results, indicating that the relationship is complex and context-dependent. Some research suggests that sustainable agricultural practices can improve long-term food availability and resilience by reducing environmental degradation (Pretty et al., 2010). However, other studies highlight the challenges, such as trade-offs between short-term food production and long-term sustainability (Tilman et al., 2011). Further research is needed to explore these dynamics and refine how sustainability is integrated into food security indices. Jansén (2024) examines the relationship between sustainability and food security through an empirical analysis using Ordinary Least Squares (OLS) regression using Global Food Security Index (GFSI). They found that there is no statistically significant relation. The results suggest that either the relationship is weak, difficult to detect, or potentially obscured by methodological limitations.

The Sustainability and Adaptability criteria were added to the Global Food Security Index in 2022.For both Algeria and the world, the Sustainability and Adaptability criteria indices are at a level of 54 in 2022. This score is below their respective overall performance scores and represents the lowest value among all other criteria. The global score for this criterion is 63, indicating a gap of 9 points.Studies on the relationship between sustainability and food security have gained increasing attention in recent years,

This observation is to say that we must think about remedying the decline of Algerian food security and trying to stem the erosion in terms of accessibility that was foreseeable due to the quiet abandonment of the wheat subsidy. A more important point to raise is the loss of resilience of public policies in the face of the severity of Algeria's dependence on the international wheat market which may make it increasingly vulnerable. That is why it is time to think about reviewing wheat accessibility mechanisms.

V. Conclusion

This study was intended for Algerian food security. As wheat and its derivatives are the most consumed products by Algerians, we have tried to analyze the situation of food security in Algeria in relation to this commodity.This led us to examine the two essential resources to make this product available which we identify as production and imports..

Wheat production in Algeria remains insufficient to satisfy the national demand because consumption increases incessantly. the State's recourse to imports generates an increasingly heavy burden that the public treasury must bear.

In extra, to make wheat and its derivatives accessible to the population, Algeria has for a long time adopted a policy of large subsidies. No longer able to bear these costs, the State partially abandons the subsidy and therefore jeopardizes part of the population who will no longer be able to access part of the wheat derivatives.

It has been confirmed through a review of the global food security index developed by Economist Impact and adopted by the whole world that Algeria is experiencing a frank regression in 2022 compared to the year 2021 of 5 points worth 14 full places. However, it has been noted that Algeria now ranks first in the MENA region; which means that the whole region is in decline.

In conclusion, we believe that it is imperative for the Algerian State to sound the alarm about its food security and try to provide solutions that help to stop the erosion of its overall food security index by adopting more adequate and meet the basic needs of the population. In a nutshell, Algeria must worry about its food security.

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