By 2050, around 9 billion people will need to be fed. Food security is becoming a global challenge, especially for net food importers. Developing Countries, and mainly the African ones are net food importers suffering from food insecurity. According to the Food and Agriculture Organization’s estimates (FAO, 2014), 33 countries, including 26 Africans, need external food assistance due to conflicts, crop failures and high domestic food price.

For the Middle East and North Africa countries, they suffer from triple burden of Malnutrition: under nutrition, overweight and obesity. The prevalence of overweight and obesity are above 50% in all countries of the region. In 2014, 16.9% of children are stunted and 7.3% of children are underweight. Such burden has large social and economic losses; productivity losses and direct health care costs (The Economist Global Food Security Index, 2014, Fan, 2014 and Tielen and Candel, 2014). Moreover, Conflicts and civil insecurity are important driven of food insecurity in the MENA region. Around 50% of the Yemeni population is in need of food assistance. More than 20 % of the population is food insecure in Iraq (World Bank, 2012 and OuldAhmed, 2014)

Egypt is not an exception. As a Low Income Food Deficit Country (LIFDC), Egypt is facing high rates of poverty and unemployment, with 17% of the Egyptians suffering from food insecurity in 2011. Child stunting rate, in Egypt, is above the regional average, ranging from 28% to 58%. (FAO, 2014, IFPRI, 2014, United Nations Newsletter, 2013 and Ghoneim, 2014).

Figure 1, borrowed from Breisinger et al (2014) showed the different crises, faced by the Egyptian population starting from 2005, causing in deterioration of the food security situation. Annual per capita economic growth reached almost 0% in 2011-2012, compared with an annual average of 4.5% between 2005-2008. Poverty rate increased from approximately 20% in 2004-2005 to reach 25% in 2010-2011. This rising of poverty was accompanied by an increase of the prevalence of stunting children and the perceived of food insecurity to more than 30% and 40% respectively. Hence, food insecurity in Egypt can be seen, mainly, as an economic access problem. There is high correlation between poverty and food insecurity with 74% of chronically food insecure households living in the poorest Egyptian region, Rural Upper Egypt (Breisinger et al, 2014 and 2013).
The Gap between food supply and food demand is covered by food imports. For instance, wheat imports represent more than 50% of its consumption, making Egypt the largest wheat importer in the World. Being net food importer, make food security in Egypt vulnerable to volatility of international food price, which increases government budget and living costs of the Egyptian population contributing to poverty, under nutrition and other negative social welfare effects (FAO, 2003, Breisinger et al, 2013 and FAO, 2014).

Imported wheat is mainly used for the production of the subsidized bread. Food subsidy is an important component of the social safety programs in Egypt. It ensures the basic food nutrients at low prices, especially for poor households. It used to be seen as a protective tool against food insecurity, especially during crisis period. However, in addition to its large budget, such universal subsidy has a negative impact on the nutrient diet of the poor households, as the subsidized products are energy rich but nutritionally poor carbohydrates, which yield to obesity and malnutrition (World Bank, 2012, Smulders et al., 2013 and Ramadan. 2014).

Food Security Measurement

Food security is multidimensional aspect. However, the food security indicators, available in the literature, do not capture all these aspects. There is no agreement on what indicators to use. In addition, there is no consistent way to define where the food security has been affected exactly, when using such indicators. Moreover, food security measures are constrained by the availability of data and the different challenges related to the household surveys used in their construction. Such challenges include the use of food acquisition not food consumption and the unavailability of the different usage of food other than consumption (FAO, 2008 and Carletto et al, 2012).
Egypt's food security measures are not an exception to these challenges and drawbacks. However, the available indicators would give an overview of food security situation in Egypt. According to the available measures, food security situation in Egypt is alarming and still a lot of work should be done.

Food security, as it is defined in the World Food Summit, in 1996, is verified "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 life" (WHO, 2014, Tielens and Candel, 2014). From such definition, we can conclude that, in addition to the nutrient aspect of food security, it is a tripartite concept reflecting three criteria: Food availability, Food access and Food use. Food insecurity indicators, available in the literature, include prevalence of Malnutrition, which is abnormal physiological condition caused by deficiencies, excess or imbalances in energy, protein or other nutrients. Under nourishment means that food intake is insufficient to meet the dietary energy requirements for the individual, continuously. In other words, it is a condition of continued inability to obtain enough food. Other food security indicators include the prevalence of overweight and obesity that measure the percentage of population whose weight is above normal due to an excessive accumulation of fat (example of over nutrition). Wasting, which is the case of low weight for height resulted of weight loss associated with a recent period of starvation or disease. And Stunting, that is the case of low height for age reflecting a sustained past episode or episodes of under nutrition (FAO, 2006 and FAO, 2014).

In Egypt, 5% of the population is under nourished, in 2012 and 40% of adult population is already stunted by poor nutrition (Power, 2013 and World Bank Development Indicator, 2014). In Egypt, households’ consumption is not diversified, characterized by poor dietary with high dependence on cereals and cheap food. In 2011, 35% of the total population were found to have poor dietary diversity, reflecting poor access to food (Breisinger et al, 2013). The share of dietary energy supply derived from cereals, roots and tubers in Egypt is around 65% in 2009-2011, higher than the World rate, which is 52% (FAO, 2014). This means high dependence on cereals products. This can be explained by the importance of subsidized bread in the Egyptian diet, especially the poor. While average protein supply is higher than the World average (79 gr/capita/day in 2009-2011), but it is not from animal origin. Average protein supply from animal origin, is 24 gr/capita/day in Egypt, compared with 31 gr/capita/day for the World (Figure 2). According to the World Food Program (2013), consumption of cheaper calorie-dense food and reduction of certain items are kind of negative coping strategies applied by Egyptian households, especially in time of crisis. Such strategies in addition local dietary habits and nutritional awareness resulted in poorer dietary diversity and high dependence on food with lower nutrients, especially among the poor. There is 58% of the poor households have poor dietary diversity, compare to 23% of the non-poor.

![Figure 1](image-url)
An important aspect of food security is food access; it consists of having sufficient resources to obtain appropriate foods for a nutritious diet. Accessibility includes both physical and economic access to food that meets people’s dietary needs as well as their food preferences. High poverty rate is an indicator of limited access of some income groups to food. Hence, the stability of these two elements is crucial for food security.

In Egypt, the Gross Domestic Product (GDP) in Purchasing Power equivalent increased over the period from 2000 to 2013 by 37% reaching 10,731 in 2013 (Figure 3). However, this increase in GDP was accompanied by an increase in domestic food price index (Figure 4) resulted in decrease in food access, especially poor households whose food expenditure represented around 49% of their expenditure (Figure 5). This makes the poor households more vulnerable to any change in their income or food prices.
For the appropriate use of food based on knowledge of basic nutrition and care, as well as adequate water and sanitation, we found that Egypt suffers from triple burden of malnutrition: obesity, stunting and micronutrient deficiencies (Anaemia). This burden is very important and economically costly especially for children. Children under nutrition, alone, reduce national GDP by around 2% (IFPRI, 2014).

The prevalence of anaemia is increasing over the years, especially for children under five. Between 2000 and 2011, the prevalence of anaemia among children, under five, increased by 28%, reaching 45% in 2011. For non-pregnant women, this rate reached its maximum in 2007 with 39%, then start to decrease again to reach 35% in 2011. While for pregnant women, the prevalence remains around 30%-31% (Figure 6).

Figure 7 shows the deterioration of several food security indicators in Egypt during the period from 2000 to 2008. The prevalence of children below five years old, suffering from malnutrition (height for age), increased from 25% in 2000 to reach 31% in 2008. While for weight for age, these rates are 4% and 7% in 2004 and 2008 respectively. In 2014, the prevalence of stunted children and the prevalence of underweight remains 31% and 7%, respectively in 2014 (The Economist, 2015). The prevalence of wasting increased from 3%, in 2000 to 8% in 2008, for children below five years old. Taking gender into consideration, we found that the prevalence of wasting more than doubles between 2000 and 2008 for both males and females.
Challenges of food insecurity in Egypt

Based on the food security indicators represented above, we can conclude that the food security situation is alarming in Egypt. According to UN Egypt (2014), high population rates, increasing per capita income and urbanization are major factors for rising food demand, especially cereals. While at the food supply side, Egypt is facing important challenges with diminishing agriculture potential, water scarcity, climate change, deficit on its food balance and rising imports bills. Moreover, with a poverty rate around 26% in 2012/2013, food insecurity in Egypt can be seen as an economic access problem. There is a high correlation between poverty and food security in Egypt. The low earnings and high unemployment rate, combined with fluctuation of food prices, limit Egyptians’ access to food. Between 2009 and 2011, 12% of the population became both food insecure and income poor (transient food security) (Breisinger et al, 2013).

According to the Household Expenditure, Income and Consumption Survey (HEICS- 2012/2013), Egyptian households spend on average 38% of their total expenditure on food and drink. This share decreases with the household’s income level, reaching 27% for the highest income decile compared with 49% for the lowest income decile. These make it difficult to poor households to adjust their budget in times of food crises, like what happened during the Financial- Food Crisis in 2008 (Power, 2013).

In addition, the poor nutritional awareness, bad dietary habits, increasing waste in food preparation and access to clean water are other factors negatively affecting Egyptian food security. While at the supply side, we found that the agricultural production in Egypt is mainly concentrated along the Nile Valley and Nile Delta, given its high fertility, making expanding agriculture in the rest of Egypt more challenging for water scarcity and lake of fertility.

Agriculture production in Egypt is facing different challenges; climate change, soil desertification, salinization and urbanization. Construction on agriculture land is threatening the land availability. Between 2010 and 2011 the total cultivated area decreased by 1% because of such construction particularly in Greater Cairo and Nile Delta (Breisinger et al, 2013 and Deng et al, 2014). Water shortage and the degradation of water quality is another major challenge facing Egyptian agriculture. According to the Ministry of Water Resources and Irrigation, agriculture consumes the largest amount of the available water in Egypt, with a share that exceeds 85% of the total demand for water1. The gap between the needs and availability of water is about 20 BCM/year. These requirements are expected to increase by 20% (15 BCM/year), by the year 2020 (Hamza and Mason, 2005 and MWRI, 2014).

Source: World Bank Development Indicators, 2014

1 The production of 1 Kg of wheat requires 1300 Liter of water.
Therefore, water shortage has negative impact on agriculture production and constraints its extension required to face increasing demand. The potential decrease in Egypt Nile’s share because of the construction of the Ethiopian Renaissance Dam and the present rate of deterioration of surface and ground water quality will certainly increase the severity of the water scarcity problem and add to the cost of its treatment (Hamza and Mason, 2005, FAO, 2013 and MWRI, 2014). This increasing gap between the local supply and demand yields to raising dependence on food imports adding more pressure on the government’s budget and foreign currency reserves.

Concluding Remarks

At the micro level food insecurity in Egypt can be seen as a problem of economic access, while at the macro level, it is multi aspect problem; geography, demography and natural resources. Poverty and food security are highly correlated in Egypt representing major challenges for the Egyptian economy. Although the food subsidy system had played an important role in providing poor households with their basic nutritional needs, especially time of crisis, such a system cannot be maintained for long time given its increasing budget and inefficiency. The recent reforms conducted by the Government of Egypt in 2014, is an important step toward improving the food subsidy system and reducing its budget. More reform are required in addition to the implementation of other social programs such as conditional cash transfer that may yield to an improvement in health and education of children in order to put an end to the intergenerational poverty.

More actions should be taken to increase local food production and decrease food demand in order to reduce the food gap and secure food for all Egyptians. Suggested actions include the use of new agricultural techniques, improving infrastructure and credit access for small farmers in addition to efficient use of scarce water resource. Improving storage facilities to reduce grain wastage and reduce leakage of the food supply chain will yield to an increase in food availability, which is an important pillar for food security. Improving education level and providing more job opportunities through pro poor growth would increase households access to food by reducing poverty. Finally, raising awareness to nutritional and food habits is important for nutrient diversity and achieving food security.

Bibliography / More information

- Central Agency for Public Mobilization and Statistics (CAPMAS), 2013, Poverty indicators according to the Egyptian Household Income, Consumption and Expenditure Survey (HIECS, 2012/2013).
- Food and Agriculture Organization (FAO), 2008: “Deriving Food Security Information from National Household Budget Survey: Experiences, Achievements, Challenges”.
- Ministry of Water Resources and Irrigation in Egypt (MWRI), 2014, “Water Scarcity in Egypt”.
- The Economist, 2015: Global Food Security Index.