**Food Security and the Global Food System**

**What is Food Security?**

Food security is centered on the premise “that all people at all times have access (including physical, social and economic) to sufficient, safe and nutritious food necessary to lead active and healthy lives” (FAO 2009). Essentially, humans should not have to rely on stealing, scavenging, or obtaining emergency supplies for food. When populations face food insecurity they are living with the absence of food security.

The region in the world to experience the greatest threat of food security is Sub-Saharan Africa. However, food security is something that every country and region on Earth must contend with.

**Malnutrition and Food Security**

Closely tied to food security is the concept of malnutrition. Rebekah Paci-Green and Gigi Berardi remind us that food security “can be considered as access to a daily minimum amount of culturally appropriate calories” (2015, pg. 686). Most people associate malnutrition solely with chronic hunger (also known as energy deficiency), which afflicts more than a billion people on the planet (McDonald 2010). There are, however, still two other types of malnutrition: nutrient deficiencies and excessive energy intake. Nutrient deficiencies, associated with deficiencies in key vitamins, lead to higher maternal death rates, blindness, birth defects, and greater susceptibility to diseases. Excessive net energy intake is when people take in energy rich foods that are nutrient poor. Combining these foods with very little exercise often leads to obesity and chronic diseases such as Type 2 Diabetes (Sage 2010).

**Factors Influencing Food Security**

Brian McDonald, author of *Food Security,* identified five factors presently influencing food security. These factors, which include population growth, changing diets/food consumption, global food prices, climate change, and changing technology will be described in greater detail below.

**1) Population Growth**. Earth’s human population has increased from 1.7 billion in 1900 to more than 7 billion people in 2016. Much of our population growth comes from regions in the global south as well as urban areas. However, given our growing population, scientists predict that we will still have enough food to feed the world’s population. Albeit efforts to provide enough food to feed this population will continue to put pressure on Earth’s resources (Godfray et al., 2010; McDonald 2010).

**2) Changing diets/food consumption.**

Changing diets and food preferences are occurring in China, India, and Brazil as a result of their middle class. With greater spending power, these populations are adding more meat to their diets, which is driving up the cost of meat and poultry. In the 1990s, less than half of all meat consumed in the world took place in developing countries and by 2006 that percentage had jumped to 60 percent. In addition, as more people on our planet consume greater amounts of meat, more land is required to support this diet. For example, the average vegetarian diet requires roughly 800 square meters per person of land, while a meat and dairy diet requires 4000 square meters.

**3) Global Food Price Crisis of 2008**

Over the last decade, global food prices had been on the rise and were especially exacerbated by the recession in 2008. An extreme example of this price jump occurred over a five-month period in 2007 when the prices of corn and wheat doubled. A number of factors have lead to the increase in food cost: the growing wealth in places like China and India where consumers can pay more food, eat larger meals, and consume diets that contain more meat, the high price of oil, fertilizers and pesticides, and an overall decrease in food stockpiles.

**4) Climate Change**

One of the greatest concerns in food security is climate change, which will continue to put pressure on the environment. Growing seasons will extend in some regions (particularly the mid-to high latitudes i.e. North America, Russia, and Central Asia) while being reduced in others due to drought, heat waves, hurricanes, and floods.

**5) Changing Technology**

A number of innovations in technology have led to changes in food security. Scientists have made advancements in agriculture and food production alongside greater refinement in crop breeding. Improvements in irrigation are leading to less water waste, and machinery has replaced animal and human muscle.

In addition to these five factors, Paci-Green and Berardi (2015) further elaborate on the negative impacts of food security to also include conflict and natural hazards:

1. Civil conflict or limited access to food-producing resources, especially land, results in food deficits.
2. Natural hazards strike vulnerable populations, whether that is a broad segment of a community or, more frequently, its marginalized members.
3. Food quality is compromised, due to either (1) or (2) above, or to inadequate quality of food (little fresh produce, poor protein sources, low-nutrient calories) and/or reasonably priced retail outlets selling high quality foods. (pg. 686)

**The Global Food System**

Previous centuries provide examples of a global food system largely limited to luxury food items such as sugar and spices (Sage 2012). More recently, however, our world is complexly interconnected through culture, politics, and economies in a process called **globalization.**  The scale and intensity of the interconnectivity is unprecedented in human history, and our food system is no exception. McDonald defines the global food system as “complex network of relations that includes the production, harvest, processing, transport, and consumption of food (p. 28). Colin Sage elaborates to describe the primary components of the global agri-food system: consumers, food retailing and service, processing and manufacturing, and primary production (2012, p. 30). The global food system also relies heavily on transportation infrastructure that includes travel routes, ports of entry, interstate road and railroad networks, and fuel for transportation (Paci-Green and Berardi 2015; p. 689).

**The Future of Food Security**

Charles Godfrey and others remind us that while we can continue to be optimistic in scientific and technological innovation for our global food system, we must also be cautious of growing greenhouse gas emissions and increasing water scarcity, which will pose enormous challenges to sustainably producing food in the future (2010). In addition, McDonald argues that in order to create food security, we must uncouple the global food system and address food insecurity at a range of scales. “Individuals and communities can define problems, prioritize efforts, increase transparency, and develop solutions” (pgs. 155-156). Education is key to informing people about their food choices, how their food was produced, its nutritional value, and the overall ecological footprint of their food (often including the distance it has traveled).

**References**

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