POST GRADUATE DIPLOMA ASSIGNMENT

ASSINMENT ONE

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POST GRADUATE DIPLOMA IN FOOD SECURITY AND MANAGEMENT

SUBMITTED ON 4TH OCTOBER 2019

**QUESTION ONE**

DEFINE THE FOLLOW TERMS:

1. Policy
2. Food balance sheet

POLICY

**Introduction**

First and foremost, there is no simple answer to this question of what a policy is. There are different ways of looking at the term policy according to Sherri, T. (2005). Caledon Institute of Social Policy retrieved from <http://www.caledoninst.org>. It notes four different perspectives of looking at a policy; Substantive and administrative, Vertical and horizontal, Reactive and proactive, and Current and future.

Perhaps from experience in my previous work so many people claim to have little or no understanding of policy. Indeed, many would perceive that they don’t “do policy,” and others maintain the fact that it has only less relevance to their work, or for that matter, their lives. In answering this assignment, the concept of policy is explored from a general perspective. It therefore does not solely focus upon one specific area or programme so much as the key elements embedded in the process of policy development but as it is intended to support the work of the community initiatives engaged in local efforts to improve the quality of life

**Definition of Policy**

Policy in a more precise way can be defined as a deliberate plan of action to guide and achieve rational outcomes. Rational in a way that, it must be adopted in order for its wisdom and prudence to control action of individual(s) or entities towards achieving the goal.

This term is used both by government and private sector. Due to that it is also referred in some sense as a document. It very much finds its level in Public Administration and in it legal sense it refers to set of principles and guidelines that is used to manage entity’s affairs. Hence it covers some areas like agriculture policy.

**Common Characteristics of a policy**

Despite the variation in policy process, there are some common characteristics used in setting or formulating a policy. These are:

* Selecting the desired objective;
* Identifying the target of the objective;
* Determining the pathway to reach that objective;
* Designing the specific program or measure in respect of that goal;
* Implementing the measure and assessing its impact.

The identified characteristics above defined in brief as follows:

Selecting the desired objective; Policy directives can be understood as an expression of commonly accepted societal values. As such a policy objective should be determined in the first step in policy formulation in any sector. For instance, any food security policy be it for livestock restocking to a particular community, the objective must be identified say “improve economic status”.

Identifying the target of the objective; this process is to identify the appropriate targets toward whom or what the policy should be directed that could be the entire population or designated households or group that meet certain criteria. And for that matter, the selected target have to link to the overall objective, which embodies within it either direct or indirect of who will or what should be affected by the proposed measure.

Determining the pathway to reach that objective; the policy process is to determine from a range of options how best to reach the specified objectives. For example, the need to reduce poverty or to improve the quality of life in rural areas has to link to goal achievement using a wide range of possible interventions say, for instance, that the overall goal of government is to reduce poverty in the country or even in a particular community. So, the desired outcome may be achieved by for example, enhancing the knowledge and skills of an identified group in an effort to promote their employability. This can be an intervention to reducing cringe of poverty though it is not the outcome of poverty reduction.

Designing the specific program or measure in respect of that goal; as explained in determining the pathway, policy formulation does not end once a preferred route to the desired outcome has been selected. There is considerable design work to be done after the approach has been identified. For example, if the government decides to tackle poverty through the delivery of income benefits, it will then first establish appropriate design including policy target, cost and financing of the proposed measure(s), and political factors that will guide to the achieving of the goal.

Implementing the measure and assessing its impact; ideally, all policies and programs should assess and correct their course on an ongoing basis. Torjman and Leviten-Reid (2004) they say, there is “The need for continuing feedback within the policy process is based on the assumption that evaluation is important not just for accountability purposes”. Therefore, it means it is vital to constantly assess and to better understand quality practice when lessons are widely shared.

**Limitations of a policy:**

Policy at some point has been presented as paralyzed and unable to cope with the demands, complexities, and challenges of a diverse society and globalized era. Therefore, let us consider these below inherent limits to the effectiveness of policy and to its productive outcomes:

1. **Limited capabilities to enforce a policy**: if a policy has some kind of ambiquity all reform may not achieve a consensus around *solving* such problems as poverty, agricultural issues, lack of educational achievement, and how to guard against all illicit plans.
2. **Financial limits to the support of policy implementation**: Deficits have dampened enthusiasm for new, broad, expensive policy initiatives to implement especially if the policy is clumsy, expensive due to its bureaucracy.
3. **Less policy research**: Policy is determined and implemented *on the basis of* detailed research or analysis. Policy not on detailed research poses threat to its implementation.
4. **Clashing values**: There are diverse and contentious policies ranging from tradition to religion, speech, and cultural diversity. These are the bases of many of our disagreements over values, and values are central to policy-making. Policy cannot by itself clarify or resolve value conflicts.
5. **Limits to our knowledge**: Social science has much to do before policy makers can be confidently having stock of knowledge which is available to guide sound policy. Policy finds it difficult to thrive in social science since many conclusions are qualitative which is subject to changes over time.

**In conclusion**; public policy represents a decision, made by a publicly elected or designated body, which is deemed to be in the public interest. Policy development involves the selection of choices about the most appropriate means to a desired end. A policy decision is the result of a method, which in theory at least, considers a range of options and the potential impact of each.

Therefore, the weighing of options takes into account various factors, like: who benefits (the more the better), who might be negatively affected (the fewer the better), time required to implement the solution, associated cost and financing, and political complexities government structure like in South Sudan. Policies are on papers only, lack political will, lack the power to enforce.

FOOD BALANCE SHEET

**Introduction:**

Before defining what food balance sheet is, it is important to note that food supply for human consumption is estimated by food-balance-sheet methods which relates simply to the quantities of food available for the individual but not necessarily to the food actually consumed by the population. Such analysis is made for each commodity entering into human consumption, and of each food for human consumption in population.

**Definition:**

According to Paul, N. (20120), he defines food balance sheet in the finance sense. He refers to as a financial report that illustrates the food service operation’s financial condition on a particular date. His definition implies that Food balance sheets are built on the basic premise within a country in each year whereby the sum of all aspects in the supply of a given food product must be equal to the sum of utilizations of that product by the population.

Food for Agriculture Organization (FAO) <http://www.fao.org/w> reports that, food balance sheet presents a comprehensive picture of a country’s food supply during a specific reference period. Meaning this tool is very important as it assists to target government policies with regards to food security being domestic or foreign.

**Importance of food balance sheet:**

Food balance sheet shows quantities and types of food available for consumption in any country and gives the content of the food supply expressed in terms of nutrient value. That means it shows trends in over-all national food supply, disclose changes that may be taking place in the types of food consumed, and reveal the extent to which the food supply of the country as a whole, though not of different groups in the community, is adequate in relation to nutritional requirements.

It is a useful means of measuring how agricultural production per person domestically compares with previous levels and may disclose significant, and possibly permanent, changes in the pattern of agriculture, trade and the content of national diet.

Food balance sheets is useful because it brings together a large part of food and agriculture data in each country, also serve as a focal point for a detailed examination and appraise of food and agricultural situation in a country. For example, comparison of domestic quantities of food available for human consumptions with those imported.

Further, food-balance-sheet technique may also be used in forecasting food supplies likely to be available from home production in any country, if reasonably reliable estimates of crop and livestock production and utilization could be provided in advance.

**Conclusion:**

The Food Balance Sheet (FBS) presents a compressive picture of the country’s food supply during a specific period. It gives an indication of the adequacy of food supply relative to the nutritional requirement of the population. It is a useful tool in designing, planning and assessment of policies and programs related to food security and nutrition.

**QUESTION TWO**

DISCUSS THE LIMITATION OF FOOD AID

**Introduction:**

In this question, precise definition of what “food aid” as a concept will be illustrated including various types. Certain portions of the population in an area are some times more impacted by food insecurity than others, whether because of their ages or because of where they were born or due to man-made and natural hazards. Worldwide, the following groups face less food security than anyone else; children, elderly, rural populations, residents of Africa and Asia, residents of Central and South America. This have had over decades led to Food travels across the oceans every day, monthly and yearly, and the [United States is the largest exporter of food](https://www.worldatlas.com/articles/the-american-food-giant-the-largest-exporter-of-food-in-the-world.html).

**Definition of food aid:**

Chris Barrett of Cornell University and Dan Maxwell of CARE, in a presentation titled, [*Food Aid After Fifty Years: Recasting Its Role*](http://aem.cornell.edu/faculty_sites/cbb2/presentations/barrettmaxwellapr2004.ppt)  (2004), say Food aid is hard to summarize succinctly due to many related issues, but in general “it is about providing food and related assistance to tackle hunger, either in emergency situations, or to help with deeper, longer term hunger alleviation and achieve food security where people do not have to live in hunger or in fear of starvation”.

And according to Barrett and Maxwell, they also summarized, food aid started off in the 1950s with the US and together with Canada accounting for over 90% of global food assistance until the 1970s when the United Nations World Food Programme (WFP) became a major player.

**Types of food aid:**

Before discussing the food aid limitations, it would be wise to discover major types of food aid. Based on Mousseau’s detailed report, *Food Aid or Food Sovereignity? Ending World Hunger in Our Time* (2005) also summarizes 3 types of food aid:

**Program Food Aid; i**s a form of in-kind aid whereby food is grown in the donor country for distribution or sale abroad. This is typically a government to government transfer of food of cash for food. It never being free food as such, recipient countries typically purchase the food with money borrowed at lower than market interest rates.

**Relief, or Emergency Food Aid;** is typically for emergency situations, such in cases of war, natural disasters like the foods that has affected twenty seven major areas in the Republic of South Sudan, where food is distributed for free. However, as retrieved from Oakland Institute notes, a number of countries facing some forms of chronic food insecurity have also become permanent recipients of this form of aid.

**Project Food Aid;** is form food aid delivered as part of a specific project related to promoting agricultural or economic development, nutrition and food security, such as food for work and school feeding programs. Such a programme is very common in South Sudan especially in the former States of Jonglei, Upper Nile, Baher El Ghazal and some areas in Equatoria region due to the impact of 2013 and 2016 conflicts. As with relief aid, project food aid is typically distributed by the World Food Programme (WFP), Non-governmental organizations (NGOs), and occasionally by government institutions.

**Limitations of food aid:**

For some few years now, Europe, developing countries, and some development International Non-Governmental Organizations (INGOs) have been criticizing US food aid for being dumping, distorting free trade and serving its own commercial interests. The shift to relief aid is therefore more welcome by Europe and some relief organizations, but Mousseau asks if this seemingly welcome shift is actually benefiting the hungry. But over many decades, in most Less Developed Countries (LDCs), food aid was never part of any development policy, other than the support of export growth for developed countries. That is why Food for Agriculture Organization (FAO) had warned of the potentially harmful effects of food aid on local agriculture less developed countries. With this in mind, the below are the four food aid limitations.

**Donor-Driven System;** One of the fundamental problems which always remains with food aid in that it is still a donor driven, and as such seen as compensation for economic reforms as Mousseau notes. In other words, food aid is tied aid, conditional upon economic reforms that could be like [structural adjustments](http://www.globalissues.org/article/3/structural-adjustment-a-major-cause-of-poverty) in country of origin of food aid.

According to Mousseau’s report, the fluctuations in the share of food aid received by priority countries between 1990 and 2004 reflected the fact that in periods of low international cereal prices, additional food aid deliveries are oriented to other countries, and are mostly linked to be tied to commercial transactions especially in periods of depressed markets.

Further, it is even remarkable that during periods of need due to increased cost of food imports food deliveries to priority countries dropped. However, it remains on bi-lateral agreement in form of cash donations to most affected countries which has to come inform of food aid. This modality has been adopted by many governments as well as United Nations and Non-governmental organizations agencies. In south Sudan during this ongoing crisis, a lot of money has been donated for humanitarian work and it comes inform of food aid. This kind of support renders the recipients country develops dependency syndrome.

So this wasn’t necessarily a mistake with good intentions. Throughout history, powerful countries do what they can to maintain or extend their power, and to compete with other centers of power. This may mean political power play, influencing economic policies to their favor, and, ultimately, war.

Parallels can be seen with European colonial powers attempting to undermine Chinese, Indian and others’ markets during the European colonial/imperial age, or the British Empire trying to prevent a new America from being truly independent from Britain. Accompanying those tactics were messages and propaganda back to the home populations that they were civilizing the others, bring them modernization, development and various other benefits.

Development is not necessary the aim/objective: The concept of food aid for development is therefore quite questionable for most LDCs (Least Developed Countries), food aid is and will never be part of any development policy, other than the one in support of export growth for developed countries. As early as the 1950s, FAO [The Food and Agriculture Organization] had warned of the potentially harmful effects of the US in-kind food exports that is used as aid, food aid on local agriculture has detrimental effect.

Unfortunately, not always successful, and for many countries, food aid is integrated into policies leading to structural food deficits and increased dependency on food imports. For the poorest countries like South Sudan; my own Country, such dependency combined with scarce resources to finance imports has resulted in increased poverty and hunger.

**Institutional Institutions are driven by exporters-multi-companies;** “Dominance of large multinational agribusinesses” Food and Agriculture Organization notes that, increasingly large transnational trading, processing and distribution companies dominate world agricultural commodity markets and wield direct and increasing inﬂuence on what is produced.

Looking at this statement, such large companies often go directly to farmers, so those with sufficient capabilities and resources win out and larger enterprises benefit in both respects. This is coupled with the fact that many structural adjustments that have been implemented in most developing countries including the Republic of South Sudan over the past two decades, have generally led to the elimination of public intervention in the agricultural sector, including state-led institutions such as marketing boards, which in the past supported small-scale farmers through credit, inputs and facilitation of market access. Structural adjustments have also encouraged the concentration of agricultural trade and production, which excludes small-scale farmers from business and growth which are mainly in Least Developed Countries and have remained big recipients.

**It is a foreign policy tool by government for government;** Mousseau (2005) adds that, the negative correlation between food aid flows and international cereal prices shows that the main driver of food aid remains the domestic support to farmers and agribusiness interests rather than needs of the developing countries. Typically, food aid flow increases in periods of low prices and high level of food stocks in developed countries. As noted earlier, this is typically a government to government transfer rather than being free food as such; recipient countries typically purchase the food with money borrowed at lower than market interest rates.

Therefore, In-kind food aid has been criticized in particular for also being expensive. In addition, while it appears to release resources for the recipient government, those resources may not necessarily be used for development; they can be used for military purchases, for example and countries like those in the United States, European Union, China, Rusia mention but a few are often the [major arms sellers](http://www.globalissues.org/Geopolitics/ArmsTrade/BigBusiness.asp) and this is harmful condition to sustainable peace and agriculture.

Programme of Food Aid has helped with this although phrases such as development and helping the hungry are what makes media headlines, but these could have been the objectives, however, such policies had another effect: creating new markets for rich countries to export their own products.

**Conclusion:**

It is commonly heard in the media outlets that governments of countries that have huge populations suffering from hunger and starvation are to blame for their corruption and diversion of money, food and related resources, despite all the good intentions from donor organizations and western countries.

It seems as though if there is ever criticism of donor organizations and countries, then Non-Governmental Organizations are easy targets for having to use some donated money to fund their operations, as are United Nation bodies for they seem to provide further proof that the United Nation is a bureaucratic beast needing reform in corrupt Countries.

**QUESTION THREE**

DISCUSS THE ROLE OF GMOS ON FOOD AND NUTRITION SECURITY

**Introduction:**

In response to this question surrounding the controversies of genetically modified organisms (GMOs) for food security, we shall precisely to look at possible definition of GMOs, approved products, products still in development, risks and controversies and use for food security. In this question, much of the materials is obtained from the work ofTheresa Phillips, Ph.D. (*Write Science Right*) 2008, and with some citations from Phillips, T. (2008) genetically modified organisms (GMOs): Transgenic crops and recombinant DNA technology material.

**Definition:**

From <http://www.organicconsumers.org>, Genetically Modified Organisms is understood as modified gene with transgenic techniques, which have been available since the mid 1990s. These GMOs are essentially living organisms whose genetic material has been artificially altered in a laboratory through genetic engineering process, creating combinations of plant, animal, bacteria, and virus genes that do not occur in nature or through traditional crossbreeding methods.

Based on the above understanding several Genetically Modified Organisms are said to have been engineered to withstand the direct application of herbicide. It is also noted that, new methods are now being used to artificially develop other characters in plants, including resistance to browning in potatoes for example.

**Risks and Controversies:**

Despite this technology as explained in the above definition, it is unfortunately that, Genetically Modified Organism claims are not legally or scientifically defensible. It is feasibly that a large percentage of crops especially grown for exports are Genetically Modified, so there is an ongoing risk of contamination of non-genetically modified crops due to cross-pollination by their genetically modified organism counterparts. This risk makes it difficult to claim that any product is 100% genetically modified organism-free “[*Non-GMO Project Standard*](https://www.nongmoproject.org/wp-content/uploads/Non-GMO-Project-Standard-Version-15.pdf)*for more information”.*

What does high risk mean? What crops are high risk? It should be noted that, the Non-genetically modified organism project says a crop is at a “high-risk,” it does not mean that crop is harmful or worse than other crops. It means a genetically modified organism version of that crop is widely commercially available, and that crop is therefore at a “high risk” of being a genetically modified orgnism.

Here below are some of the controversies from different schools of understanding and prepositions;

Despite the fact that the genes being transferred occur naturally in other species, there are unknown consequences to altering the natural state of an organism through foreign gene expression. According to Muir & Howard (1999), they note that enhanced mating advantages of the genetically modified fish for example led to a reduction in the viability of their offspring. Thus, when a new transgene is introduced into a wild fish population, it propagates and may eventually threaten the capability of both the wild-type and the genetically modified organisms thus these controversies below:

**Unintended Impacts on Other Species;** One example of public debate over the use of a genetically modified plant involves the case of Bt corn. Bt corn expresses a protein from the bacterium *Bacillus thuringiensis*. The benefit of the expression of this protein by corn plants is a reduction in the amount of insecticide that farmers must apply to their crops. Unfortunately, seeds containing genes for recombinant proteins can cause unintentional spread of recombinant genes or exposure of non-target organisms to new toxic compounds in the environment.

As such, Jesse & Obrycki (2000) suggested that natural levels of Bt corn pollen in the field were harmful to their monarchs (Kings or Queens).

**Unintended Economic Consequences;** Another concern associated with genetically modified organisms is that private companies will claim ownership of the organisms they create and not share them at a reasonable cost with the public. If these claims are correct, it is argued that use of genetically modified crops will hurt the economy and environment, because monoculture practices by large-scale farm production dominate over the diversity contributed by small farmers. Demont *et al*., (2007)says, such benefit shares are exhibited in both developed and developing countries.

**GMOs and the General Public: Philosophical and Religious Concerns;** In a 2007 survey of 1,000 American adults conducted by the International Food Information Council (IFIC) says, 33% of respondents believed that biotech food products would benefit them or their families, while only 5% of those polled said they would take action by altering their purchasing habits as a result of concerns associated with using biotech products.

However, Hoban (2004) notes that, it is attitudes toward cloning, biotechnology, and genetically modified products that differ depending upon people's level of education and interpretations of what each of these terms mean.

Furthermore, there are people who would resist consumable genetically modified foods because of personal or religious beliefs. The ethical issues surrounding genetically modified organisms include debate over our right to "play God," as well as the introduction of foreign material into foods that are abstained from far religious reasons, so tampering with nature is intrinsically wrong and immoral.

**History of International Regulations for GMO Research and Development;** Devos *et al*., (2007) says initially, safety issues were a concern to individuals working in laboratories with GMOs, as well as nearby residents as they can easily be infected with DNA from a tumor-inducing virus. There is also the concern that recombinant organisms might be used as weapons as there is the debate around Ebola in Africa.

Devos *et al*., (2007) notes that, worldwide commercialization of biotech products sparked new debate over the [patentability](https://www.nature.com/scitable/topicpage/Diagnostic-Testing-and-the-Ethics-of-Patenting-709) of living organisms, the adverse effects of exposure to recombinant proteins, confidentiality issues, the morality and credibility of scientists, the role of government in regulating science, and other issues.

**Increased Research and Improved Safety;** Proponents of the use of GMOs believe that, with adequate research, these organisms can be safely commercialized. Ma *et al*., (2003) to him, issues such as the risk of vaccine-expressing plants being mixed in with normal foodstuffs might be overcome by having “*built-in identification factors, such as pigmentation”,* that facilitate monitoring and separation of genetically modified products from non-genetically modified organisms. For instance, built-in control techniques that include having inducible promoters like induced stress, chemicals, geographic isolation, using male-sterile plants, and separate growing seasons. However, based on commercialization aspects the full potential of genetically modified organisms cannot be realized without due diligence and thorough attention to the risks associated with each new genetically modified organism on a case-by-case basis.

**Uses of Genetically Modified Organism:**

Agricultural plants are one of the most frequently cited examples of genetically modified organisms (GMOs). Some benefits of genetic engineering in agriculture are increased crop yields, that lead to reduced costs for food or drug production, reduced need for pesticides, enhanced nutrient composition and food quality, resistance to pests and disease, greater food security, and medical benefits to the world's growing population. Advances have also been made in developing crops that mature faster and tolerate aluminum, boron, salt, drought, frost, and other environmental stressors, allowing plants to grow in conditions where they might not otherwise flourish.

Takeda & Matsuoka (2008) say, applications include the production of non-protein (bioplastic) or non-industrial (ornamental plant) products. A number of animals have also been genetically engineered to increase yield and decrease susceptibility to disease. For example, salmon have been engineered to grow larger and mature faster, and cattle have been enhanced to exhibit resistance to mad cow disease.

**Approved products:**

1. Herbicide tolerance; Soybean Glyphosate herbicide (Roundup) tolerance conferred by expression of a glyphosate-tolerant form of the plant enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) isolated from the soil bacterium *Agrobacterium tumefaciens*, strain CP4.
2. Insect resistance; Corn Resistance to insect pests, specifically the European corn borer, through expression of the insecticidal protein Cry1Ab from *Bacillus thuringiensis.*
3. Altered fatty acid composition; Canola High laurate levels achieved by inserting the gene for ACP thioesterase from the California bay tree *Umbellularia californica.*
4. Virus resistance; Plum Resistance to plum pox virus conferred by insertion of a coat protein (CP) gene from the virus.

**Products still in development:**

1. Vitamin enrichment; Rice Three genes for the manufacture of beta-carotene, a precursor to vitamin A, in the endosperm of the rice prevent its removal (from husks) during milling.
2. Oral vaccines; Maize Fusion protein (F) from Newcastle disease virus (NDV) expressed in corn seeds induces an immune response when fed to chickens.
3. Vaccines; Tobacco Hepatitis B virus surface antigen (HBsAg) produced in transgenic tobacco induces immune response when injected into mice.

**QUESTION FOUR**

COPING STRATEGIES IN CROP FAILURE

**Key Term**

**Strategy:**

Simple definition of the term as summarized from many readings is, it is a method or plan chosen to bring about a desired future, such as achievement of a set goal or solution to a problem.

However, Michel Peter (1980) gives three generically definitions to include cost leadership, differentiation and focus. The cost leadership strategy advocates gaining competitive advantage due to the lowest cost of production of a product or service, the 'differentiation' strategy involves creation of differentiated products for different segments. A variety of products, each branded and promoted differently with levels of function, allows a company to 'desensitize' prices, and on the basis of being different, charge premium or higher prices, and the 'focus' strategy involves focusing on a narrow, defined segment of the market, also called a 'niche' segment.

Turning to household coping strategies in crop failure, it is important to understand that farm risk is defined as any event, be it environmental or socio-economic, that could make the household's income or crop output fall below a minimum disaster level.

These risks have dimensions which are both climatic conditions and man-made effects, and derived from price fluctuations and access to markets and food. The need to identify and analyse the various sources of farm risk and how households cope with them has become increasingly important as a result of the continuing food crises in sub-Saharan Africa todays. The declining food output in Africa and the recent acute famine crises both imply that many poor rural producers have become more vulnerable to food insecurity. The range of risks and stresses they face, and the coping strategies they employ, have to be investigated and understood in order to see how rural development programmes can best help them.

South Sudan, officially known as the Republic of South Sudan, is a landlocked country in East-Central Africa. It gained independence from the Republic of the Sudan in 2011, making it the most recent sovereign state with widespread recognition. Its capital and largest city is Juba. South Sudan has an estimated population of 12.58 million; World Bank (2017).

This study or response to the above question will refer to Sakure County as my my community. It is a border town between the Democratic Republic of Congo and South Sudan predominately in habited by the Azande.

**Demography and Geography**

The Azande is the third largest nationality in South Sudan. They are found in Maridi, Yambio and Tambura districts in the tropical rain forest belt of western Equatoria and Bahr el Ghazal. The Azande are also found in DR Congo and Central African Republic; areas, which originally constituted part of the great Azande Kingdom destroyed by the Belgian, French, Mahdist and finally the British in the context of the European scramble for Africa, Gurtong Trust (2019).

The Azande land is tropical rain forest that enjoys high annual rainfall. This has rendered it a very high agricultural potential area. The Azande are agrarian as a dictate of the physical environment. They engage in subsistence production of food crops mainly maize, cassava, Upland rice, ground nuts, sorghum, yams, fruits: mangoes, bananas, citrus, pineapples, palm trees , coffee, etc. They also have exotic and economically important hard wood trees such as mahogany, teak, Cinderella are all found in Zandeland. The Azande engage in hunting and fishing as part of their economic activities.

From this background, there the need to look briefly at the causes of crop failure in this community considered to answer the quest of coping strategy. Crop failure can simply be defined as a situation whereby all crops on a farm are lost. For the situation to be considered a crop failure, it has to be severe enough to adversely affect the farmers, consumers, and the economy. The result of crop failure tends to affect farmers’ income, decrease the amount of food available for consumption, and also negatively affect the economy of a country, especially if it is an agriculture-dependent economy.

**Causes of Crop Failure in Sakure:**

**Adverse Climatic Conditions;** Adverse climatic conditions will most probably top the list of the causes of crop failure. Adverse weather conditions include conditions that are too harsh for crops to survive, including extremely cold or extremely hot temperatures. These adverse weather conditions cause the crops to either dry up due to the scorching sun or fail to grow due to extremely cold conditions. This year ground nuts did not do well as there was long dry spell as such they were not planted in season.

**Unpredictable Weather Conditions;** In the recent past four months in South Sudan, the climatic and weather conditions have been quite unpredictable. The sequence of the cultivation seasons has been interrupted by the constant change in weather conditions. For instance, an extended period of drought, prolonged wet season, flash floods have come starting from June till to date, and complete change of season has taken place. Crops that do not need too much rain have failed such vegetables got rotten. The unpredictable weather conditions are as a result of global warming and other human activities.

**Pests and Diseases;** There are a number of pests that affect the growth of crops in the fields. This year it has been Army fall worm on maize and locusts on rice. Some of these pests tend to be expensive to curb. For instance, most farmers in Sakure watched their crops being consumed by pests. Pest and diseases, if not detected and dealt with early enough, may lead to a massive crop failure.

**Poor Farming Practices;** Poor farming methods and techniques will also lead to crop failure. The Azande community in Sakure has poor farming methods due to lack of knowledge of modern farming techniques and lack of funds to embrace the technology in farming. The farming methods that lead to crop failure include mono-cropping and failure to apply fertilizers and pesticides. Application and practice of the new and the superior farming methods go a long way in curbing and reducing crop failure.

**Human Activities;** There are several human activities that affect the prosperity of crops in the fields. In this community, it has been conflicts and wars which has been interrupting crop production. Crops are not taken good care of, not weeded and as such will not produce enough. These phenomena lead to crop lifeless and the end result is crop failure.

**Neglect by Farmers;** Though not considered a very a major cause of crop failure, neglect of crops in the fields by farmers could lead to the catastrophe. A farmer may plant their crops but fail to take good care of them, especially during their crucial stages of growth, such as flowering and fruiting. It was discovered that there is too much level of alcoholism among local community members. Bulky of the work cannot be done by wives alone. Abandoned crops will lead to minimal or no harvest at all.

**Overcoming Crop Failure:**

Consequences of crop failure can be very frustrating to the Households. It is necessary for households and other concerned parties to be on the look out to reduce and curb crop failure.

In this my community in Sukure County, there are other activities in which they engage when there is crop failure:-

1. Craft work; The Azande produce excellent bark-cloth, baskets woven from barks and leaves of palm, different types and varieties of wooden craft, tables and chairs, bow and arrows and special iron knives and swords, sleeping mats, pottery mention a few. They sell for money and buy food across the border from Democratic Republic of Congo markets.
2. Crop diversification; The Azande community of Sakure plant other resistant crops such as palm trees, coffee, pineapples, oranges which they sell locally to fend money to be used for crops that fail in season.
3. Fishing activities; there are many seasonal rivers which women and men both go and do fishing activities as alternative food source as well for economic purposes.
4. Sakure is one of the recognized areas for exotic and economically important hard wood trees such as mahogany, teaks, Cinderella are all found in that community. When crops do not do well, a proportion of the community fully engage in felling and logging business for local market as well Juba and Wau markets.
5. Hunting of wild animals; the community when faced with crop failure, do carry out pouching activities. This community pouch in Basukangbi game reserves and Garamba Park in DRC to make their end meet in face of crop failure.
6. Raring of small ruminants; although traditionally the Azande are known for not keeping animals, because of crop failures, they are now picking up with keeping of goats, sheep as well pigs roaming all over but in small number.
7. Not depending solely on crop production with its numerous disadvantages in poor economy and conflict stricken area, they also engage in household based economic activities like household shops to sell commodities of community preference.
8. Last but not least, also some so go to the extent of assets disposal. But this practice is minimal in this particular community.
9. Lastly, some go to other next of kin for support and other family members who may have not experienced crop failure. Worth to note is such behaviors not condoned in the Azande community it encourages kind of laziness.

**Conclusion:**

The key variables driving farmers’ coping mechanism are the number of times they experienced crop failure during given number of years. So the coping strategies in my community of Sakure have diversified. Rural households are not static objects that respond arbitrarily to food insecurity or drought; rather, they carefully utilize strategies which help them evolve and adapt to their rapidly changing environments. Their responses to food insecurity include choice of cropping pattern, crop storage, reduced consumption, off-farm work, asset disposal, and making claims on community and kinship ties. The responses vary and may follow sequences, with a poor household likelier to sell its large productive assets to purchase food in time of food crisis than a richer household, which has more options. As vulnerability increases coping strategies will be further diversified, but some will weaken.

With all such interventions, the question deserves to be asked whether they can be so designed and implemented that they will indeed offset recent adverse trends, and decrease the risks, stresses and vulnerability of poor farm households.

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QUESTION FIVE

TECHNOLOGICAL TRENDS THAT INCREASE INDIVIDUAL VULNERABILTY

**Introduction:**

In this question, I will look briefly at what makes individual vulnerability in food security, food insecurity, and the technological trends that increase individual vulnerability to food insecurity. Ellis (2000), vulnerability context as depicted in livelihood frameworks above refers to the same thing as ‘pervasive uncertainty’ and in the vulnerability sequence. This purpose is, however, tackled as an effort to aforementioned nature of vulnerability in order to encompass broader understanding of the question.

**Vulnerability:**

The concept of vulnerability has been around in the poverty and famine scope. A neat definition is provided by Devereux (2002) to the effect that “vulnerability denotes both exposure and sensitivity to livelihood shocks”. Living on the edge evokes the sense of a small push sending a person or people over the edge, and it is just this knife edge between ability to survive and thrive, and sudden loss of ability to do so, that vulnerability seeks to describe.

Resilience and sensitivity permit livelihoods to be described as a grade of being highly robust to highly vulnerable, with respect to food security outcomes. The most robust livelihood system is one that displays high resilience and low sensitivity; while the most vulnerable displays low resilience and high sensitivity to food insecurity.

People’s livelihood chances are not just determined by technological events, but also by political, social and economic trends that are national, regional and sometimes even global in character. The following are examples of vulnerable groups in a vulnerable population.

* Children under the age of 5 (vulnerable especially to under-nutrition, malnutrition, and infectious diseases);
* Lactating mothers (vulnerable to under-nutrition in the context of nursing babies);
* The elderly (vulnerable due to loss of assets, or ability to use their assets productively, or additional burdens of care for the ill and orphans due to

HIV/AIDS or deteriation in age);

* widows and divorced women (vulnerable due to loss of access rights to land, lack of time to cultivate land, and loss of previous partner’s contribution to household livelihood);
* female headed households (vulnerable for the same reasons as the preceding category);
* people with disabilities (lack of access to production or earning opportunities; social exclusion);
* families with members with HIV/AIDS or other chronic illnesses (vulnerable due to lack of labour, and disposal of assets to cover medical costs);
* remote rural populations (vulnerable due to too much reliance on a single livelihood source, lack of diversification options, high transport costs, poor information).

**Technological Trends that increase individual vulnerability to food insecurity:**

FAO (2006) identified a food gap of close to 70 per cent between the crop calories available in 2006 and the expected calorie demand in 2050. To close this gap, it would be necessary to increase food production by making genetic improvements, reduce food loss and waste, shift diets and raise productivity by improving or maintaining soil fertility, pastureland productivity and restoring degraded land.

Ranganathan et al., (2016) says food availability will have to make up for food gap, but not that when this is being done it leads to decreasing arable land, limited water resources and other environmental, ecological, and agronomic constraints.

Science, technology, and innovation can play a critical role in producing more food by creating plant varieties with improved traits, as well as optimizing the inputs needed to make agriculture more productive. This covers genetic improvements to crops by conventional crossbreeding and transgenic modification. As that is being done, it offers adverse effects leading to individual vulnerability to food insecurity as examined below using some of the technological trends;

1. **Conventional cross-breeding for improved plant varieties and increased crop yields;**

Genetic modification of plant varieties can be used for nutrient fortification, tolerance to drought, herbicides, diseases, or pests, and for higher yields. The effort is to harness conventional crossbreeding, facilitate capacity-building among farmers. However, this trends remains to the few educated class and is not helping the vast rural majority and lead to increased individual vulnerability to food insecurity.

1. **Improving agricultural productivity through transgenic crops;**

Transgenic modification involves the insertion of genetic organisms from unrelated organisms that cannot be crossed by natural means. Transgenic modification confers a number of benefits, including tolerance to biotic stresses (insects and disease), abiotic stresses (drought), improved nutrition, taste and appearance, herbicide tolerance and reduced use of synthetic fertilizers posse challenges of increasing water scarcity and land degradation, such technologies potentially increase productivity per area unit or plant.

1. **Soil management for increasing agricultural yields;**

Genetically improved varieties might not increase yields if constraints such as slow soil fertility are not overcome. Fertile soils play a pivotal role in sustaining agricultural productivity and thus food security. Synthetic fertilizers have been used to increase agricultural yields for decades but their capital intensity, dependence on natural gas – particularly in the case of nitrogen – and a large ecological footprint make them unsustainable; soil is never renewable resource and this causes individual vulnerability to food insecurity.

1. **Irrigation technologies: Technologies that make water available for food production;**

Like soil fertility, the availability of water is a critical input for ensuring and improving crop productivity. Approximately 70 per cent of global fresh water supply is devoted to agriculture.20

18 Many farmers do not have access to water for agriculture because of physical water scarcity (not enough water to meet demands) or economic water scarcity (lack of investments in water infrastructure or insufficient human capacity to satisfy water demand), among other factors (Figure 3). In response to such challenges, low-cost and affordable drills, renewable energy-powered pumps and technologies for desalination and improved water efficiency can potentially make water more available for food production. A significant number of smallholder farmers in tropical areas do not have access to affordable harvest equipment. The cost, size, energy needs and maintenance requirements of imported threshers can create a burden for such smallholder farmers.

**General Conclusion:**

In the assignment, the themes that run through surround livelihoods and vulnerability to food security or food insecurity. Many researches suggest that quite different forces work on relative poverty and wealth in rural areas in southern African countries. All rural families straddle farm and non-farm activities, most successful of them construct a non-farm component of their livelihood portfolio that comprises activities and enterprises that are not directly related to agriculture.

This provides them with the resources to improve their farm productivity and therefore strengthen their livelihoods further. The less successful remain in subsistence agriculture and undertake low wage casual work on other farms. The key to rising farm productivity is urban and non-farm economic growth, not farm output on its own. This also reduces vulnerability because it creates diverse income streams that are less prone than reliance on food crop agriculture to crisis in the face of natural shocks.

Providing technical assistance to and sharing best practices with small-scale farmers on crop management and technologies to increase the quality and quantity of their yields, promoting better post-harvest management to reduce crop losses assisting farmer organizations to increase sales and receive fair market prices from buyers purchasing food from participating farmer organizations’ crop surpluses to feed up to infants and children, pregnant and lactating women per year to complement breastfeeding and prevent stunting or chronic under-nutrition, strengthening the business management skills of small-scale farmer organizations and increasing women farmers’ participation, represent a large development of skills for food security.