Introduction

Food security is a massive problem world-over, with a staggering estimated 854 million “hungry” worldwide in 2011-13. A large majority of which, around 295 million are in South Asia. 1 About 40% of the world’s food insecure population is located in South Asia. Although this region has made several attempts to reduce hunger and undernourishment, there has not been much progress since the mid-1990s. The global food crises of 2008 has caused millions more to become food insecure. Also, the region of South Asia has a rapidly growing population (1.44%) 2, further aggravating the issue for food insecurity and undernourishment. Soaring prices cause the poor to spend over 70% of their income on food, and climate change exacerbates the problem. 3 If food vulnerability is reduced in Southern Asia, rapidly developing countries like India will have a greater opportunity of becoming more economically and politically important and others like Bangladesh will have a shot at economic stability.

Definition of Key Terms

Agricultural Inputs

These are the components required for agricultural processes (e.g.: seeds, water, labour, temperature, soil).

Agricultural Outputs

These are the end results of the agricultural processes (e.g.: harvest, meat).

Leguminous Plants

These are plants with nitrogen fixing nodules on their roots. Nitrogen gas is unreactive, so these nodules convert gaseous nitrogen from the atmosphere into nitrogen containing compounds in the soil which can be utilized plants. Leguminous plants enrich the nutrient content on the soil since nitrogen is integral for protein synthesis and growth.

Malnutrition

This is a condition caused by inadequate, unbalanced or excessive consumption of macronutrients and/or micronutrients. Malnutrition includes undernutrition and overnutrition as well as micronutrient deficiencies.

Resilience

It is a characteristic which refers to someone or something’s ability to withstand or recover from disturbances, both short term (e.g.: pest outbreak) and continuous (e.g.: low average rainfall)

Undernourishment

This is a condition that results from consuming an insufficient amount of food in order to meet the minimum daily energy requirements. This can be either short-term (transitory undernourishment) or long-term (chronic undernourishment)

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8 Ibid.
9 Ibid.
Subsidies

They are benefits given by the government to groups or individuals usually in the form of a cash payment or tax reduction. The subsidy is usually given to remove some type of burden and is often considered to be in the interest of the public. 10

Support Price

It is the price at which the government will purchase commodities, especially farm produce, in order to maintain a certain price level.11

Procurement Prices

It is the set of prices price the government announces at which it guarantees to procure wheat and rice if the market prices fall below the previously announced price.12

Background Information

In South Asia, 80% of the poor live in rural areas, where the prevalent sector is the agricultural sector. Due to the low energy levels caused by food shortages, people cannot produce food or even earn money to buy any. Often, even if enough food has been produced, it gets spoilt or attacked by pests, adding to the problem. The demand for food is soaring, due to the booming world population. This causes an increase in prices, driving already poor families further into poverty.

Death due to food insecurity diminishes the working force of the South Asian countries, this reducing the chances of economic growth. This complex problem not only attacks countries on a humanitarian and ethical level, but also. The repercussions of food insecurity are widespread. It can be seen as affecting aspects of life that are key to socio-economic growth by reducing productivity, decreasing learning ability, lowering fulfilment of human productivity and also resulting in poor health and well-being. Bhutan, for example, has a literacy rate of 52.8%, which leads to a low-skilled population. These factors all contribute to an inability to contributing to a county’s economy.

Food Availability, Food Accessibility, Food utility and Food Stability

In 1996, the World Food Summit described food security as “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.”

Achieving food security requires all of its different dimensions to be appropriately addressed. Food security is measured by four main criteria: food availability, accessibility, utility, and stability. Only if the countries in question reduce food vulnerability will they be able to advance, gain political and economic relevance, and improve the lives of their citizens.

For this to be possible, all four aspects must be addressed and overcome. But first, it is important to understand what exactly they mean. **Food availability** refers to the production of food, the supply of food and the physical availability of food. Food availability is not only the responsibility of farmers. The government must assist farmers to provide adequate agricultural input, for them to successfully produce enough food. The FAO declared that crop production will have to increase by 70% by 2050 to feed the world’s population. This means that in the next 4 odd decades, more food will have to be produced than that produced cumulatively in the past 10,000 years.

However, only 20% of the world’s “hungry” are classified as urban poor. Of the rest, 10% are pastoralists, fisherfolk and forest dwellers, 20% are the rural landless, and 50% are smallholder farmers. This leads to the conclusion that since 80% of the world’s hungry are actually involved in the process of food production, food insecurity is also an issue of economic distribution, not just food production.13

**Food accessibility** is judged by looking at the economical and physical accessibility of food for individuals. This is affected by the supply of food, because if the demand is greater than the supply, the prices will rise. The South-Asian countries in question have high levels of poverty, with half of the world’s poor living in South Asia. Since, as mentioned above, the producers of food suffer the most from hunger, the inability to meet daily food intake requirements will cause a drop in their productivity and the supply of food will decrease, setting off a cycle of hunger and poverty.

Food utility addresses the way that the human body makes use of the nutrients that it receives through daily meals, and is often measured by whether a particular individual has enough energy and nutrients within the body. This helps determine the nutritional status of an individual.

Food stability is the need to have a consistent supply of food. An individual is considered food insecure if they cannot daily meals.

The Effects of Global Warming on Food Security

Other than the generic causes for food vulnerability and insecurity mentioned above, a major problem in Southern Asia is natural disasters. Due to global warming and climate change, areas have been experiencing droughts and more importantly floods, reducing their crop output greatly. Some regions have relied on importing food resources, reducing their economic growth. Bangladesh, for example is particularly prone to food shortages due to the constant flooding, which destroys the crops. In 2013, Bangladesh was severely affected by floods, followed by Vietnam and India. Many issues and challenges were commonly faced by these countries. Some countries have developed expertise in flood control and environmental management. Sharing of technology, knowledge and resources will greatly benefit the countries involved.

For the past ten thousand years, the Earth’s average temperature has been more or less stable. The maximum variation in the average temperature has been 1° Celsius, and human civilization has been able to survive. However, 250 years ago, the industrial revolution altered this trend. Greenhouse gas emissions have, since then, upset the crucial temperature equilibrium that existed in earlier times. The highly concentrated greenhouse gases in the Earth’s atmosphere have caused the planet to become increasingly warmer, causing climates to change drastically.

Due to this climate change, the world as well as South Asian countries have seen a rise in the price of food (such as grains) as well as grave water and food shortages (due to droughts and floods). Unless collaborative efforts are made towards ameliorating this situation, climate change will continue to cause global temperature rises in the years to come. This will affect several regions, including South Asia, where numerous people are food insecure already.

Considering that countries in South Asia have been food insecure for several years, it is becoming increasingly crucial that this problem is more thoroughly addressed, as its complexity will only continue to increase in the future if adequate measures are not taken now. Climate


change will accelerate the increase in food insecurity, hence, to achieve lasting food security in this region, the following aspects must be considered key.

1. Developing nutrition-sensitive food production.
2. Encouraging agricultural diversity.
4. Creating partnerships between governments and farmers.
5. Developing new resource-efficient technological advances that can increase agricultural productivity.\textsuperscript{16}

**Previous Attempts to Resolve the Issue**

**Initiatives by SAARC Countries\textsuperscript{17}**

The initiatives taken by the SAARC countries include various efforts relating to supply side policies as well as demand side policies. The supply side policies dealt with both, price oriented as well as non-price oriented projects. The demand side policies implemented various “safety nets” and public distribution systems (PDS).

**Supply Side Policies**

\textit{i) Price Oriented Policies}

Price oriented supply policies include measures taken that increase or decrease prices and costs. The price oriented policies include but are not limited to:

1. fixing support or procurement prices for essential crops, along with procurement and distribution activities done via PDS operated by federal or provincial authorities;
2. providing subsidies to processors and/or consumers;
3. Subsidizing agricultural inputs.

These policies are focused on augmenting agricultural production in order to meet domestic consumer needs, as well as stabilizing prices and reducing substitute food imports. The prices for the majority of agricultural commodities were kept substantially lower than global prices, and underwent compulsory procurement by


government agencies. However, this resulted in low motivation for producers and hence lowered productivity and output levels.

**ii) Non-price Oriented Policies**

Non-price oriented policies addressed the aspects of infrastructural development and agricultural research and extension. The infrastructure developed, for instance irrigation systems and roads assisted in the food availability and accessibility aspects of food security. The investment in agricultural research has influenced productivity greatly in the SAARC countries.

**Demand Side Policies**

**i) Safety Nets**

Among the SAARC, India has been most active in creating and implementing safety net programs, directed towards household and individual level food insecurity. These programs include but are not limited to:

1) *Mid-day Meal Scheme:* Under this local government operated scheme, free food grains were provided to primary school students free of cost, at the rate of 100 grams per school day per child.

2) *Food for Work Program:* Executed in the 150 most backward districts of the country, this program ensured that at least one person from each household was giver 100 days of employment and paid the minimum wage (100 INR per day\(^\text{18}\)) for the work done.

In Pakistan, the main safety net launched is the Benazir Income Support Program (BISP). Launched in 2008 due to a rise in oil prices reducing purchasing power, the program was created to provide relief to the underprivileged sections of society. BISP enrolled families are given cash assistance @ 1200 PKR monthly. Other benefits include interest free returnable financial assistance and vocational and technical training.\(^\text{19}\)

The Food Support Program (FSP) and Child Support Program (CSP) are other important schemes sponsored by Pakistan Bait-ul-Mal. FSP disburses a support of 3000 PKR per year to over 1.25 million households. CSP focuses on increasing literacy of children by offering beneficiary families 300 PKR if one child is

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http://m.paycheck.in/main/salary/minimumwages

enrolled in school, and 500 PKR for two. The children must be aged 5-12 years and must have a minimum of 80% attendance to reap the benefits of the scheme.

**ii) Public Distribution System (PDS)**

Public distribution systems address the availability aspect of food security. SAARC countries have long distributed staple foods at subsidized (lower than global) prices. The PDS operate using domestic procurements, pre-announced prices, and even in some cases food imports.

However, for all countries, this system involved high incidental costs. Hence, the incidentals of private traders are much lower than state-owned enterprises, for example in Pakistan (2003). Sri Lanka was forced to change to the food stamp system from the presumably ineffective cheap food delivery system. These systems lead to enhanced public expenses, leakages and rent seeking.

**Initiatives by the United Nations**

**Millennium Development Goals**

The Millennium Development Goals were established after the Millennium Summit of the United Nations (UN) in 2000 and the adoption of the United Nations Millennium Declaration. All 198 UN member nations (at that time) and 23 international organizations have endeavored to achieve the 8 Millennium Development Goals by the target date- 2015. The goals are as follows:

- **MDG 1:** To eradicate extreme hunger and poverty.
- **MDG 2:** To achieve universal primary education.
- **MDG 3:** To promote gender equality and empower women.
- **MDG 4:** To reduce child mortality.
- **MDG 5:** To improve maternal health.
- **MDG 6:** To combat HIV/AIDS, malaria and other diseases.
- **MDG 7:** To ensure environmental sustainability.
- **MDG 8:** To develop global partnership for development.\(^{20}\)

MGD target 1.C states:

* Halve, between 1990 and 2015, the proportion of people who suffer from hunger
  - The hunger reduction should be almost met by 2014.
  - Globally, about 842 million people are estimated to be undernourished.
  - More than 99 million children aged under 5 years are still undernourished and underweight.  

This goal, however ideal it may sound, is now being considered overly ambitious and unrealistic. Despite the UN’s attempt to fulfill this objective, most countries, like those in South Asia, are not close to achieving the objective. It is very unlikely that all countries will be able to successfully halve the people suffering from hunger, so it is becoming increasingly important to develop realistic expectations and realize MGD 1 is likely to fail.

India, for example, is one of the many countries that are unlikely to achieve the goal. Being the second most populous county in the world, India continues to have a high proportion of underweight children under the age of 5. This shows the difficulty India is experiencing in trying to reduce its hunger and malnutrition. The percentage of children under the age of 3 suffering from malnutrition is, according to MGD 1, supposed to reduce from 52% to 26% between 1990 and 2015. However, the expected 2015 result, while an improvement, is significantly higher than MGD 1 at 33%.  

The Zero Hunger Challenge

The zero hunger challenge is a program established in June 2012 by the Secretary-General of the United Nations, Ban Ki-Moon. Despite of attempts to reduce Hunger and food insecurity, the amount of hungry people are still overwhelmingly high. MGD 1 was established to assist these endeavors, but judging by the progress several states would need to achieve by 2015, this goal has started to seem overly-ambitious, and even unattainable. UN Secretary-General Ban Ki-Moon has said that halving the number of those who suffer from food insecurity is no longer adequate, and that eradicating food insecurity completely must replace simply minimizing it.

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Hence, Ban Ki-Moon has established this program to achieve this goal. He has urged Governments farmers, civil societies, as well as scientists, businesses and consumers to help achieve Zero Hunger.

The Zero Hunger has five goals, which are as follows:

1. 100% access to adequate food all year around.
2. Zero stunted children in less than 2 years.
3. All food systems are sustainable.
4. 100% increase in smallholder productivity and income.
5. Zero loss or waste of food.23

The above mentioned goals are meant to act as a guide to assist in the eradicating of hunger while also achieving economic growth and reducing poverty. These goals, if achieved, with immensely help the countries of Southern Asia, since they are the region suffering most from food insecurity.

Major countries and organizations involved

South Asian Association for Regional Cooperation (SAARC)

SAARC is an organisation comprising of the South Asian nations, i.e. India, Pakistan, Bangladesh, Maldives, Bhutan, Afghanistan, Nepal and Sri Lanka. The inception of a regional and economic cooperation in South Asia first conspired in 1990, and the first summit held in Dhaka in 1985 led to the establishment of SAARC by the government of India, Pakistan, Bangladesh, Maldives, Bhutan,


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Nepal and Sri Lanka. In 2007, Afghanistan was also added to the SAARC.\textsuperscript{24}

The SAARC policies include promoting welfare economics, collective self-reliance among the countries, as well as accelerating socio-cultural development. \textsuperscript{25} Food security is also a major concern of this organization, and they have taken several steps to achieve food security for its member nations.

A major, recent initiative by the SAAC is the SAARC Food Bank. It was established in 2007, and consists of contributions by each of the member states. It is used mainly for food shortages, but also aims to provide regional support to national food security efforts, to foster inter-country partnerships and regional integration, as well as to solve regional food shortages through collective actions.\textsuperscript{26}

**Food and Agricultural Organization (FAO)**

FAO is an agency on the United Nations that acts as the spearhead in efforts to combat hunger. It serves both developed and developed countries, while also acting as a neutral forum where member nations meet to negotiate agreements and debate policies. The agency, a source of knowledge and information, also assists countries in modernizing and improving agriculture, forestry, and fishery practices.

**Afghanistan**

For 80\% of the citizens of Afghanistan, Agriculture is the main source of feed and income. However, decades of drought, conflict and inadequate infrastructure has made it increasingly difficult for people to provide for themselves. For many, especially those who live in remote areas or women who head their families, another major issue is the limited access to productive assets. Another obstacle commonly faced is the high price of food; people cannot afford the food that they need.


**Bangladesh**

Bangladesh, with a population growth rate of 1.6%27, is struggling to feed its citizens in spite of the recent increase in rice production. The issues faced by Bangladesh include shrinking land and water resources, as well as rising climatic threats. The country is very densely populated, with 166,280,712 people. These challenges along with high food prices and animal disease, make it difficult for many farmers to get ahead. FAO is working with the Government of Bangladesh to improve the availability of safe and nutritious food, increase the country’s resilience to threats and ensure coordinated responses to food security needs.

Bangladesh, a low-lying area, is highly prone to natural disasters. In 2007 alone, consecutive floods, followed by Cyclone Sidr, destroyed crops and fishing boats, killed livestock and uprooted trees. This caused food prices to soar. This is just one of many examples of the natural disasters Bangladesh has faced. In the aftermath, quick rehabilitation as well as providing them with quality seeds, chickens, goats, tree seedlings and fishing gear so they can produce food and earn money, is critical to the Bangladeshis. It is as, if not more important than reducing their risk to future shocks.

**Bhutan**

Food security in Bhutan is an issue of access to resources and economic opportunities. For rural households, a group that is about 69 percent of the population, issues are normally due to a lack of access to land and water, which prevents subsistence farming. For the urban, non-farming rural and landless populations, difficulties arise largely due to unstable employment opportunities.

Food access issues in the country in Bhutan are related to the extreme topographical variation, wide ecological, agricultural and economic diversity, and poor connectivity. Despite increased rice and maize yields, production has only been able to meet rural demands; the government is forced to import food in order to feed the urban population. This is mainly because agriculture in Bhutan has remained at subsistence levels due to limited arable land, inadequate market access, and high transaction costs. Some other difficulties faced by Bhutanese are the prevalence of natural calamities such as landslides, floods, droughts, crop failures, pests and diseases, wildlife crop damage, poor irrigation infrastructure, and an rural unemployment.

India

While India has seen impressive economic growth in recent years, the country still struggles with widespread poverty and food insecurity. India’s poor population amounts to more than 300 million people and almost 30 percent of India’s rural population live in poverty. India is also home to 25 percent of the world’s hungry population. An estimated 43% of children under the age of five years are malnourished. Agriculture’s share in the India’s economy is declining; nevertheless, it remains an important global agricultural player. It has the world’s largest area under cultivation for wheat, rice, and cotton, and is the world’s largest producer of milk, pulses, and spices. Agricultural productivity in the country’s semi-arid tropical region is hindered by water shortages, and environmental degradation and vulnerability to weather-related disasters pose challenges to the entire country.

India’s poor also face a lack of access to productive assets, financial resources, education, health care, and basic social services. The government has recently begun to resort to microenterprise development as a way to address these challenges, as well as initiatives to bring basic services to the rural poor.

Nepal

Agriculture plays an important role in Nepal’s economy, but the country’s small-scale producers face many challenges. Access to good quality agricultural inputs, infrastructure, irrigation and markets is very unpredictable and inconsistent. Natural disasters destroy crops, while livestock diseases threaten an important food and income source – as well as public health.

Most people in rural Nepal, a country recovering from a decade-long conflict, survive by subsistence farming. When a natural disaster strikes, like the severe winter drought in 2008/2009 or landslides in 2011, the impact on the food and nutrition security of farmers is massive.

Pakistan

Agriculture is the most influential sector in freeing Pakistan's poorest families from hunger, malnutrition and dependence on external aid. In addition to providing food and income to 80% of the population, agriculture has a direct bearing on whether vulnerable rural households can provide for themselves at all: from paying off debt, to affording medical services, to keeping their
children enrolled in school. Safeguarding agricultural production has proven very crucial for emergencies, which have increased in frequency and scale over the past decade, including two major earthquakes (2005/07), four severe floods (2007/08/10/11) and continued conflict and displacement in the north since 2001.

After a major disaster, rapid response to agricultural needs can reverse losses that would otherwise exacerbate food insecurity. Providing seeds to small-scale farmers in time for a major planting season can translate to six months of food supply and income. Also, reacting in time to save animals enables families to retain a continuous income as well as flow of nutrient-rich food, including eggs, meat and milk.

**Timeline of Events**

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
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<tbody>
<tr>
<td>1944</td>
<td>Creation of the World Bank</td>
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<td>1945</td>
<td>Creation of FAO (Food and Agricultural Organization)</td>
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<tr>
<td>1961</td>
<td>Creation of World Food Program: it is the world’s largest humanitarian agency, and fights hunger worldwide by getting food to victims of war, civil conflict and natural disasters28</td>
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<tr>
<td>Mid-1960s</td>
<td>Introduction of the Green Revolution</td>
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<tr>
<td>1972-1974</td>
<td>Global Food Crisis: It was caused by a rise in oil prices, market shocks on both, supply and demand sides, and long term pressure on food commodity markets.</td>
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<tr>
<td>1974</td>
<td>First World Food Conference: It was held by the FAO, in Bangladesh</td>
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<tr>
<td>2000</td>
<td>Millennium Development Goals</td>
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<td>2007</td>
<td>Floods and Cyclone Sidr in Bangladesh</td>
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<td>2007-2008</td>
<td>Major floods in Pakistan</td>
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<td>2008</td>
<td>Word Food Price Crisis</td>
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<tr>
<td>2008</td>
<td>The High-level Task Force (HLTF) was created.</td>
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<tr>
<td>2008/2009</td>
<td>Sever winter drought in Nepal</td>
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Possible Solutions

One Possibility is the sharing of technology, resources and knowledge between countries (possibly worldwide, but specifically in southern Asia and other nearby Asian regions). However, some countries might not be in agreement according to their policies (e.g. China, India-Pakistan).

The green revolution could be introduced and/or better implemented in the affected countries. This refers to the application of modern, more developed farming methods in LEDCs (use of high yielding varieties of crops, machinery, irrigation systems). But on the downside, the green revolution has downsides, including but not limited to loss of cultural food, eutrophication, and the establishment of a cycle of poverty.

Another method, that is also a part of the green revolution, is the use of genetically modified crops. Some examples are orange-fleshed sweet potatoes and golden rice, crossbred African and Asian rice, and drought resistant maize, which are products of biofortification.

Farmers could be provided with technology (such as mobile phones, internet) so that they can be aware of market prices, pests that could be affecting their crops, and can research on how to improve and optimize their farming methods. However, this method could be expensive, and there would be an issue of how they would be supplied, the criteria to obtain this technology, and who would regulate and manage the distribution.

Educating farmers in rural areas about farming methods and providing them with modern machinery is another method that could be implemented. This process would require considerable effort, in deciding whether this would be handled by NGOs, governments or UN bodies. Also, the quality and content of the education and machinery would have to be monitored and decided. The empowerment of women and educating them about farming could also be considered, since women were found to be responsible for more agricultural output than males. This would pose the aforementioned issues as well as cultural tension is backward societies.
Investment in affected countries by transnational/ multinational agricultural companies would be a good way to ameliorate the quality and level of food production in rural areas. However country policies might interfere, and there are several adverse effects of MNCs and TNCs investing in LEDCs.

Improving irrigation and water management systems is a way to help improve food security, as there are often water shortages in the regions in question. Additionally, an important crop in southern Asia is rice, which requires a lot of water. Also, needy farmers could be provided with fertilizers at subsidized prices.

The formation of agricultural cooperatives (whereby farmers share machinery, seeds, etc.) should be encouraged, so that output as well as profit is maximized allowing them to buy food by allowing farmers to use modern, expensive machinery which they otherwise would not be able to afford.

Bibliography
Works cited
http://www.foodsecurityatlas.org/btn/country/food-security-at-a-glance
http://www.foodsecurityportal.org/india


For pictures:


**Appendix**

**Useful Links**


2. An Introduction to the Basic Concepts of Food Security:


