NEW DYNAMICS OF AGRICULTURE AND FOOD SECURITY IN THE WORLD

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ABSTRACT

Of the more than one billion undernourished people in the world the majority are in developing countries with Africa at over 200 million. Consumers in high-income countries and transitional economies in South and East Asia are choosing to spend their additional income on some combination of increased quality, convenience, and variety of foods. Food delivery systems and consumption patterns in middle-income countries like China and Thailand are converging with those of higher income countries. Income growth is a primary force behind converging global consumption patterns, but globalization of the food industry is also contributing (IRIN, 2009, FAO, 2009). The world produces enough food to feed everyone. World agriculture produces 17 percent more calories per person than it did 30 years ago, despite a 70 percent population increase. This is enough to provide all at least 2,720 kilocalories (kcal) per person per day (FAO, 2002). Current world food price increases are allied with diminishing food stocks and difficulties in accessing food by some communities particularly in Africa. This is driven by a number of factors that include: oil prices; demand for higher input food; decreasing food stocks; climate change and environmental degradation; growing use of bio fuels; inelastic food production markets; population growth; and stock markets trends. Proposed solutions to this crisis are a combination of: increasing food supply through greater public sector budget support and investment in agriculture and policy reforms; institutional and governance capacity including addressing the climate change issue; and realigning the role of international trade (export, input and food aid) with sustainable development strategies. The root cause of Africa's ongoing food insecurity is the lack of investment in agricultural production. Whilst food aid has been increasing, aid for agricultural production in sub-Saharan Africa dropped by 43 percent in the 1990s.

1.0 INTRODUCTION

1.1 Food Security in Perspective

World hunger is increasing and global food security is facing the greatest challenge in modern history. IFRI (2008) notes that over 1 billion human beings in the world, mostly in developing countries, presently do not have sufficient food to meet their daily basic nutritional needs. The number of hungry people in the world increased by several million in 2007 and 2008 as a consequence of high food prices and is expected to go up by a further 105 million in 2009 because of the economic and financial crisis, which is affecting jobs and deepening poverty. Food security is central to poverty reduction, good public health, sustainable economic growth and world peace and security, as was witnessed in 2007-2008 with riots in 22 countries around the world, threatening government stability. There are still 31 countries in the world in a situation of food crisis requiring emergency assistance.

Food Security is defined by FAO as a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Following Schmidhuber and Tubiello (2007) this meaning posits four key dimensions which are availability, stability, access, and utilization.

As explained by Schmidhuber and Tubiello (2007), availability refers to overall ability of the agricultural system to meet food demand. It is underpinned by the agro-climatic fundamentals of crop and pasture production and the entire range of socio-economic and cultural factors that determine where and how farmers perform in response to markets. Stability relates to individuals who are at high risk of temporarily or permanently losing their access to the resources needed to consume adequate food access. It also covers access by individuals to adequate resources (entitlements) to acquire appropriate foods for a nutritious diet. Entitlements are the set of commodity bundles over which a person can establish command given the legal, political, economic, and social arrangements of the community of which he or she is a member. Thus a key element is the purchasing power of consumers and the evolution of real incomes and food prices. However, these resources need not be exclusively monetary but may also include traditional rights, e.g., to a share of common resources. Finally, utilisation integrates all food safety and quality aspects of nutrition. It therefore links to health, including the sanitary conditions across the entire food chain.

Ayalew [1](1992[2]), in a report entitled ‘What is Food Security and Famine and Hunger?’ reflects that in 1979 a World Food Programme Report conceptualized food security, equating it with an "assurance of supplies and a balanced supply-demand situation of stable foods in the international market." The report also emphasised that increasing food production in the developing countries would be the basis on which to build their food security. This would mean that the monitoring by famine early warning systems for food insecurity should focus on the availability of food in the world marketplace. Focus should also be on the food production systems of developing countries. The same author however notes that food availability in the world market does not ensure food security to any particular country. This is because what is available on the world market (or the surplus in the US or Canada) cannot be accessed by famine-affected

people in African countries. This is mainly because the economies of these countries, in general, cannot generate the foreign currency needed to purchase food from the world market.

Alayew (1992) in an argument also supported by Caritas Internationalis and CIDSE (2002) posit that the concept of food security would have more meaning if it were understood in line with the legal commitments of the United Nations. The Universal Declaration of Human Rights (1948) accepts the "right to adequate standard of living," including food. The International Covenant on Economic, Social, and Cultural Rights (1966), encapsulates insurance of “an equitable distribution of world food supplies in relation to need". The Universal Declaration on the Eradication of Hunger and Malnutrition (1974), declares that "every man, woman, and child has an inalienable right to be free from hunger and malnutrition." To date the Millennium Development Goals also precisely set a goal on eradication of hunger and malnutrition. Each of these tenets suggests implicitly or explicitly the distribution of world food to the needy.

A report on the Challenges Of Agricultural Production And Food Security In Africa (A Report Of The Proceedings Of An International Conference Organized By The Africa Leadership Forum Edited By Hans d’Orville In 1989) highlighted that food must not be seen just in terms of what is edible. It should also be seen in terms of the nutritional value, constituents and what the people in a defined area consume for energy, growth and sustenance. This draws essentially on the area’s natural endowments or available resources and capacity. It was agreed that African countries must avoid the trap of reliance on imported foods. This was such that food self-sufficiency can be defined in terms of the ability and capacity to produce or procure substantially, within the region, essential food items and constituents required by the people of Africa. The same issues still dominate any efforts to solve the food insecurity problems in some parts of the world.

The same report (Hans d’Oville, 1989) conceptualized food security at both national and household levels. National food security was defined within the context of national food self- reliance. It must imply adequate access by all people at national, local and household levels to adequate and largely domestically- produced food at all times. It involves regular and sustainable access without dependence on commercial and foreign exchange-consuming imports or food aid detrimental to local production in Africa. Back then, the leaders agreed that food security should not hinder intra-African trade as a policy instrument; rather it should encourage and emphasise the full utilisation of Africa’s productive food resources. These historical articles show that ‘food security’ is a situation in which all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active healthy life. However they also show that a global concept of food security does not guarantee food security at either the household or the national level.

Availability of food at the national level is but one factor for food security. Supporters of this idea try to work out a food balance sheet for a given country and, if food availability is more or less equal to the food needs of the country's population in general, they conclude that the country is food- secure. The assumption underlying this perspective is that whatever food is produced in the country will be evenly distributed to each region and to each household. But the facts are different. Those who failed to produce will have

access to the surplus in the country (through the markets) if, and only if, they have purchasing power. Access will also depend on the efficiency of the markets. The problem with many poor nations is that many of the hungry are located in areas where market failures are dominant. In most poor countries, however, many people do not have such power. National governments, too, often lack the necessary financial resources to purchase the surplus and to distribute it to those without, especially when millions become destitute. Therefore, food availability at the national level does not provide food entitlement to households and individuals.

Food security at the household level has been defined by Eide (quoted in Maxwell and Frankenberg, 1992) as "access to adequate food by households over time." This implies that each member of the household is secure, if the household in general has access to food. The assumption here is that household members' strong family ties would ensure that food is shared equally by each. Although food availability at the household level is a key issue, there are intra-household factors that may affect equitable and adequate access to food by all members. Maxwell and Frankenberger (1992) pointed out that "it is misleading to assume that household members share common preferences with regard to (a) the allocation of resources for income generation and food acquisition or (b) the distribution of income and food with the household." The head of the household may have more power in determining the use of food resources and may misappropriate it. Moreover, household members' nutritional requirements may vary, for example, if some exert more energy in work than others. Cultural factors can also deprive members of the household (i.e., women and children) from getting an equitable share. Thus, the concept of household-level food security, in general, does not fit into the accepted definition of food security.

Following the World Bank (1986) food security may be defined as access by all people at all times to enough food for an active and healthy life. This definition encompasses many issues. It deals with production in relation to food availability; it addresses distribution in that the produce should be accessed by all; it covers consumption in the sense that individual food needs are met in order for that individual to be active and healthy. The availability and accessibility of food to meet individual food needs should also be sustainable. This implies that early warning systems of food insecurity should monitor indicators related to food production, distribution, and consumption. The performance of these indicators, therefore, will detect whether a certain area or population is food secure or insecure in relation to the spirit of the above definition.

Given these broad definitions therefore, food security is affected by a complexity of factors. These include unstable social and political environments. These preclude sustainable economic growth, war and civil strife, macroeconomic imbalances in trade, natural resource constraints, poor human resource base, gender inequality, inadequate education, poor health, and natural disasters, such as floods and locust infestation, and the absence of good governance. All these factors contribute to either insufficient national food availability or insufficient access to food by households and individuals (USAID, 2009).

While the rest of the world has made significant progress towards poverty alleviation, Africa, in particular Sub-Saharan Africa continues to lag behind. The root

cause of food insecurity in developing countries is the inability of people to gain access to food due to poverty. Achieving food security in its totality continues to be a challenge not only for the developing nations, but also for the developed world. The difference lies in the nature and magnitude of the problem in terms of its severity and proportion of the population affected.

1.2 Brief Review of Historical Development

Main highlights:

(i) Agriculture has prospered until it was disturbed by actual hostilities affecting either supply or demand.
(ii) There have been sustained surpluses and increasing food stocks.
(iii) Real world food prices have maintained a sustained downward trend that reached a hundred year low in 2000.
(iv) Over the years, there have been changes in the factors or drivers determining world food supply and demand.
(v) Contemporary food security issues are characterised by declining food stocks and rapidly rising food prices.

Predictions and concerns about global food security historically heat up with rising grain prices and or diminishing food stocks (McCalla and Revoledo, 2001). The same authors note that one also needs to know the rate of income growth and have good estimates of the evolution over time of how food expenditure changes as incomes rise (demand side). Demand models would be even more conceptually complete if changes in income distribution could be included for all countries. On the other hand issues around world food supply have graduated from trend projections of land area and yields. They now recognise the need to project changes in production intensity, the relationship between yields and research investment, the degree to which stocks of resources—water, land, energy—potentially constrain output, and the impact of declines in fisheries on food security. These reflect the underlying factors determining historical global trends in food security.

The number of countries requiring analysis goes on rising, as does the demand for more complete commodity coverage. The early models (Malthusian) focused on a potential food gap by comparing rates of growth of population with land availability. Right after World War II the focus shifted to a requirements approach where minimum nutritional needs were multiplied by population to produce projected food needs. In the same period the potential of increasing yields of existing land was added to supply projections.

The late 1960s and 1970s led to further complicating issues. On the supply side, the Green Revolution focused us on favoured versus less favoured areas (McCalla and Revolado, 2001). It also began to raise environmental and social issues about rapid increases in crop yields. In addition, the 1960s showed that, while modern medicine was cutting death rates rapidly, birth rates remained high, leading to population growth rates never before experienced. Concerns about environmental issues and the depletion of non renewable natural resources also emerged in the 1960s and early 1970s. All of these issues—new varieties, population, and resource limits—were added to the issues of global food security (McCalla and Revolado (2001).

According to the FAO (2009), during the 1950s and 1960s it was widely believed that only industrial growth could deliver economic development. As a result, industry was protected while agriculture was heavily taxed or afforded low priority. By the end of the 1970s, there was increasing emphasis on the structural reform of economies. It was hoped that privatization, the liberalization of internal and external trade, lower taxes and reduced government intervention would produce higher economic growth and reduce the bias against agriculture.

To complicate the issue of global food security modelling further, the price instability of the early 1970s illustrated that earlier models' assumptions of constant prices were clearly inadequate. Prices affect both consumers and producers and therefore own- and cross-commodity relationships were needed both in demand models and in supply projections to reflect changes in prices and the resulting substitution among commodities. Moreover, the price run up illustrated that domestic policies significantly influence world markets. Therefore new models had to include domestic supply and demand, country by country, with appropriate cross commodity relationships embedded and explicit recognition of policy built in. Finally, it should be noted, that starting in the 1970s and strengthening in the 1980s and 1990s, there was expanded interest in poverty and income distribution. Given the prevalence of rural poverty in developing countries, linkages between food production and poverty became highlighted. Yet introducing explicit projections of poverty into models proved difficult. In sum, the number of issues related to the supply and demand sides of the food balance equations has significantly increased. Modelling approaches have grown more sophisticated, clearly much larger, and more expensive.

1.3 What were the Issues Driving Food Security Trends in each Period?

Table 1: Historical development of world food security and drivers

Period	*Shocks/drivers/key events shaping trend*	*World Food Demand /supply behaviour*	*World Food Price behaviour*
1920's	Effects of high Productive capacity built from emerging from world war one	Excess supply	Falling food prices
1930's-1940's	World depression	Inadequate world food demand and thus excess supplies This triggered domestic price support	Trade and price collapse
1950's-1960's 1965-1966	Korean war temporarily held prices higher Massive grain shipments to Asia (India) following two bad monsoons	Surpluses and surplus disposal Institutionalised International food dumping programs(food aid) e.g. USA public law 480 of 1954 as an international surplus dumping activity Growing food stocks Decreasing food stocks	Falling prices Rising food prices
1967-1970	Rapid introduction of miracle wheats and rices –the green revolution	Massive increases in world food supply	Steadying of world prices and maintenance of long term downward trend
1972-1974	Major Soviet Grain purchase	Supply shortfalls	Prices were back to their long term downward trend
1974-2000	Population growth(a billion added in each decade(IFPRI, 2006)	Increases in food supply	At 2000, real world food prices were at their 100 year low
2000-2009	New drivers becoming more evident(climate change, biofuels, etc)	Declining food stocks and increasing demand	Rapid increases in world food prices epitomise in 2008

Source: Compiled by author from various articles

1.4: Overview of World Food Security Policies

Paarlberg (2002) notes that the biggest contrast between rich and poor countries can usually be seen in the pro-farmer versus anti-farmer bias of agricultural policies. In wealthy industrial countries national policy has long tended to subsidize farming thus generating surplus production, whereas in poor countries governments have more often

imposed explicit or implicit taxes on farming, causing a slowdown in productivity growth. It is a perverse irony that governments in rich industrial countries, where farmers are few in number and already productive, tend to support investments in farming more than governments in poor agricultural countries where hunger persists and productivity is lagging.

The CIC (2007) note that some commodity analysts apportion part of blame for recent food price rises to US and EU agriculture subsidies. These are seen to have made agriculture unprofitable for various other countries e.g. Goldman Sachs (as highlighted by CIC, 2007): "The US and Europe were exporting agricultural deflation; now they're exporting agricultural inflation. This is on the back of growing imports in some areas. FAO (2008) also point out that developing countries will become increasingly dependent on imports of cereals, which are expected to nearly triple to some 270 million tonnes by 2030. Most of this will have to come from traditional exporters in North America, Western Europe and Australia. The Near East and North Africa will continue to account for the bulk of imports - nearly 40 per cent.

Net cereal imports for developing are actually projected to increase. There are a number food security related policies that have contributed in shaping the current trends and regional differences in food security. A rough division of the world into three categories that are developed countries, transitional countries and developing countries helps to see wide differences in the food security(and related) policies for each region. Table 2 shows the differences in agricultural tax/subsidy, import/export, support and spending for different regions.

Table 2: Differences in food security policies across different regions in the world

Policy variable	*Region*		
	Developed nations (mainly America and EU)	*Transitional economies (India, china, Asian economies)*	*Least developed countries*
Subsidy/tax on agriculture	Continued direct and indirect subsidies for agriculture	Some slowly moving away from taxing towards subsidies	Agriculture still taxed in most poor countries(seen as a source of income)
Food import export conditions	Export subsidies still very high, Effective Import barriers through high import duty and some stringent phytosanitary requirements	Export promotion, some rely on imports in times of disasters	Few food import restrictions and limited export support hence they are net importers of agricultural products
Agricultural support	All forms of support still effectively high	Improved agricultural support	Weak support for agricultural sector
Agricultural Technology development	Direct Fiscal support for local technology development(research and development)	Promotion of local and appropriate technologies	Limited fiscal allocations for local agricultural technology development
Spending on agriculture	Though small compared to other sectors, in comparison to other regions spending on agriculture still very high	Gradually increasing	Small proportions of budget spend on agricultural sector(majority of countries spend less than 10% on agriculture)

Source: Compiled by author

Spending in agriculture is one policy area that one would want to explore further. This is because there are large disparities between spending levels for developed nations and developing countries. It is quite evident that developed countries spend far more on their agricultural sectors although the percentages might be small owing to the sizes and level of diversification of their economies. Table 3 shows spending in agriculture by selected African countries.

Table 3: Spending in agriculture by selected African countries

Country	***Current public spending in agriculture at constant 2008(US$)***	***Share in total spending (%)***	***Headcount poverty rate in 2007(%)***
Angola	n/a		52
Cameroon	107	3.8	28.7
Ethiopia	360	13.6	38.9
Ghana	119	6.7	28.2
Kenya	174	4.2	61.3
Liberia	n/a		28.7
Madagascar	9	1.6	87.7
Malawi	22	2.7	64.6
Mali	205	14.5	61.2
Mozambique	66	4	41.7
Nigeria	934	3.2	77.4
Rwanda	21	4	67.2
Senegal	88	4.4	57.2
Sierra Leone	8	3.1	77.4
Tanzania	115	4.4	37.9
Uganda	99	5	29.4
Zambia	44	2.7	66.1
Rest of E. Africa	9	3	52
Rest of S. Africa	161	4.3	30
Rest of W. Africa	646	6.7	30

Source: IFPRI (2006) originally from Government finance statistics of the International Monetary Fund (IMF), supplemented by statistical appendix and poverty reduction strategy papers. The definition of agricultural expenditure is the standard definition used by the IMF in the GFS Manual (2001). Public spending on agriculture and total spending are updated to 2007 at 2008 US dollars using historical trends. Poverty rates are also updated using trends.

Whilst many of the poor households that are susceptible to hunger largely depend on agriculture, their country governments have devoted very small percentages to their agricultural sectors. This is on the back of weak private sector investment in agricultural support including technology development. Overall, this policy position by many African countries has contributed significantly to Africa's hunger. Further to this, foreign aid towards agriculture has been decreasing.

2.0 WORLD FOOD SECURITY TRENDS AND FOOD BALANCE

2.1 World Agricultural Production (Commodity Crop Production per Region)

According to IFPRI (2008) the index of total agricultural production from 1990 through 2006, the latest year for which comprehensive data are available, shows rising output for the world as a whole and most country groups, with the exception of developed countries, where output has been flat during most of the period. In per capita terms, output levelled off after 2004 for the world as a whole, and declined in the least developed countries in 2006 after nearly a decade of modest growth.

The world has experienced an unprecedented increase in population during the past century, with a billion people added every decade during the last three decades alone (IFPRI, 2001). Dramatic shifts in production and consumption of food have accompanied this population explosion, including a surge in grain production, a spectacular rise in meat production and consumption, and the emergence of an increasingly vital role for international trade. As indicated in earlier sections, high-yielding varieties of wheat and rice swept across much of Asia during the 1970s and early 1980s (Green Revolution), easing fears of imminent famine. Cereal yields have risen more modestly in recent years, but they have still outstripped gains in other crops such as cassava, potatoes, and beans (IFPRI, 2001).

In the mid-1990s world cereal prices rose dramatically as cereal stocks fell sharply, and some observers foresaw a starving 21st century world unable to meet growing food demands from a deteriorating natural resource base. Worries eased in the late 1990s as global cereal production hit record levels in response to high prices and falling stocks, while declining incomes due to the East Asian economic crisis reduced the demand for food commodities. As cereal prices plummeted in response, the policy focus in much of the world shifted from concern over long-term food supply and demand problems to concerns about subsidy provision to financially distressed farmers (IFPRI, 2001)

There were improvements in world food production between 2008 and 2009. The improvement has largely concerned cereals, the critical sector for food security, after production in 2008 overshot prior expectations, yielding even larger crops than originally forecast. The increased global production was sufficient to meet demand for food and other uses but also facilitated a replenishment of global reserves to pre-crisis levels. With the new 2009/10 marketing seasons commencing, prospects continue to be positive, as world cereal production is expected to be the second largest ever, after last year's record (FAO/GIEWS, 2009).

In spite of strong gains in recent weeks, international prices of most agricultural commodities have fallen in 2009 from their 2008 heights, an indication that many markets are slowly returning into balance, in sharp contrast to what was witnessed this time last

year. The apparent easing of market conditions is reflected in the benchmark FAO Food Price Index, which has fallen by one-third from last June's peak (FAO/GIEWS, 2009)

By contrast, for oilseed products and sugar, production setbacks in major producing countries together with expanding consumption are stirring up prices on world markets. And the heave in soybean quotations in recent weeks, on the back of shrinking world reserves, is emerging as a cause for concern given its strong bearing on food and feed prices. On the other hand, expansions in fish, meat and milk production have coincided with faltering demands, in the wake of slowing or contracting economies and recurring animal diseases. Prices have tumbled, seriously eroding the profitability of the sectors (FAO/GIEWS, 2009).

The impact of sudden and sharp corrections to high prices of last year in several markets will have major repercussions for many producers. That markets can swiftly swing from shortages into surpluses, especially when trade is thin, is being illustrated by recent developments in the dairy economy, which, following sharp recovery in outputs has seen prices plummet. The return to the use of export subsidies, following three years of extensive use of export restrictions bears evidence of such extremes (FAO/GIEWS, 2009). Table 4 shows world cereal production from 2007 and table 5 shows world cereal facts;

Table 4: World cereal production[1] (million tonnes)

	2007	2008 estimate	2009 forecast	Change: 2009 over 2008 (%)
Asia	955.7	968.7	980.2	1.2
Far East	852.3	885.0	884.0	-0.1
Near East in Asia	69.6	55.0	65.6	19.3
CIS in Asia	33.7	28.7	30.5	6.3
Africa	132.9	148.4	156.8	5.7
North Africa	28.5	29.5	37.3	26.6
Western Africa	46.4	54.0	52.8	-2.2
Central Africa	3.2	3.3	3.3	1.4
Eastern Africa	32.6	33.8	34.7	2.7
Southern Africa	22.1	27.8	28.6	2.9
Central America & Caribbean	39.2	41.8	40.4	-3.3
South America	131.8	134.8	116.4	-13.6
North America	461.1	457.0	431.9	-5.5
Europe	389.7	501.8	448.7	-10.6
EU	260.1	314.6	286.8	-8.8
CIS in Europe	115.1	169.3	143.9	-15.0
Oceania	25.4	34.4	35.3	2.5
World	2 134.5	2 285.5	2 208.5	-3.4
Developing countries	1 206.9	1 240.0	1 239.9	0.0
Developed countries	927.5	1 045.5	968.6	-7.4
- wheat	610.9	683.8	655.2	-4.2
- coarse grains	1 082.5	1 142.7	1 093.1	-4.3
- rice (milled)	441.0	459.1	460.2	0.2

[1]Includes rice in milled terms.

Note: Totals computed from unrounded data.

Source: FAO (2009)

Table 5: Basic facts of the world cereal situation (million tonnes)

	2007/08	***2008/09***	***2009/10***	***Change: 2009/10 over 2008/09 (%)***
PRODUCTION [1]				
Wheat	610.9	683.8	655.2	-4.2
Coarse grains	1 082.5	1 142.7	1 093.1	-4.3
Rice (milled)	441.0	459.1	460.2	0.2
All cereals	2 134.5	2 285.5	2 208.5	-3.4
Developing countries	1 206.9	1 240.1	1 239.9	0.0
Developed countries	927.5	1 045.5	968.6	-7.4
TRADE [2]				
Wheat	112.8	128.6	114.0	-11.3
Coarse grains	129.5	111.9	112.0	0.0
Rice	30.0	31.0	30.6	-1.4
All cereals	272.3	271.5	256.6	-5.5
Developing countries	84.4	68.8	64.7	-6.1
Developed countries	187.9	202.7	191.9	-5.3

[1]Data refer to calendar year of the first year shown.
[2]For wheat and coarse grains, trade refers to exports based on July/June marketing season. For rice, trade refers to exports based on the calendar year of the second year shown.
[3]Data are based on an aggregate of carryovers level at the end of national crop years and, therefore, do not represent world stock levels at any point in time.
[4]The major wheat and coarse grain exporters are Argentina, Australia, Canada, the EU and the United States. The major rice exporters are India, Pakistan, Thailand, the United States and Viet Nam.

FAO (2009)

2.2 World Food Consumption Trends (Commodity Crop Consumption per Region)

Despite the persistence of food insecurity, food consumption has been rising in many developing countries, and with it has come higher rates of overweight and obesity. Income disparity within and among developing countries explains how there can be obesity in the midst of under nutrition. Rising incomes, urbanisation, global integration, and more supermarkets have contributed to increased consumption of convenient; high-calorie foods among the higher income population obesity-related diseases have become more widespread in developing countries (Rosen and Shapouri (IFPRI), 2008)

The first decade of this century has seen rapid and sustained economic growth and increased urbanisation in a number of developing countries, most remarkably in large emerging economies such as China and India. These two countries alone account for more than 40 percent of the world's population. As the purchasing power of hundreds of millions of people has increased, so has their overall demand for food. This new wealth has also led to changes in diet, especially to greater consumption of meat and dairy products, which are heavily dependent on cereal inputs (Frazao et al, 2008). However, the recent high commodity prices do not appear to have originated in these emerging markets. Cereal imports by China and India have declined from an average of about 14 million tonnes in the early 1980s to roughly 6 million tonnes in the past three years, suggesting that changes in consumption patterns have largely been met through domestic production. While continued strong economic development in China and India may increasingly affect food prices, this has not yet been an exceptional factor(Undernourishment report, 2008).

IFPRI (2008) highlights that many countries have adjusted their trade and consumption policies in response to higher international prices. A sizeable number of countries have changed trade or consumption policies with a view to mitigating the impact of higher prices on consumers. Trade policies are among the most-used measures, with some countries reducing import tariffs on cereals and some imposing export restrictions. Of the latter, some countries have placed quantitative restrictions or outright bans on exports. Consumption policies have included reducing food taxes in some countries or providing consumption subsidies in some. An additional eight countries have adopted price controls. Of these measures, export bans and price controls are the most disruptive to markets and are likely to suppress incentives to producers to increase production. Table 6 shows global and regional per capita food consumption.

Table 6: Global and regional per capita food consumption (kcal per Capita per Day)

Region	**1964 - 1966**	**1974 - 1976**	**1984 - 1986**	**1997 - 1999**	**2015**	**2030**
World	2358	2435(3.3)	2655(9.0)	2803(5.6)	2940(4.9)	3050(3.7)
Developing countries	2054	2152(4.8)	2450(13.8)	2681(9.4)	2850(6.3)	2980(4.6)
Near East and North Africa	2290	2591(13.1)	2953(14.0)	3006(1.8)	3090(2.8)	3170(2.6)
Sub-Saharan Africa	2058	2079(1.0)	2057(-1.1)	2195(6.7)	2360(7.5)	2540(7.6)
Latin America and the Caribbean	2393	2546(6.4)	2689(5.6)	2824(5.0)	2980(5.5)	3140(5.4)
East Asia	1957	2105(7.6)	2559(21.6)	2921(14.1)	3060(4.8)	3190(4.2)
South Asia	2017	1986(-1.5)	2205(11.0)	2403(9.0)	2700(12.4)	2900(7.4)
Industrialized countries	2947	3065(4.0)	3206(4.6)	3380(5.4)	3440(1.8)	3500(1.7)
Transition countries	3222	3385(5.1)	3379(-0.2)	2906(-14.0)	3060(5.3)	3180(3.9)

Source: FAO (2009)

2.3 Who is Hungry, and Where?

Almost all of the worlds undernourished live in developing countries. The FAO (2008) quoted in the world undernourishment report notes that higher food prices have triggered an increase in hunger worldwide. Provisional FAO estimates show that the number of chronically hungry people in 2007 increased by 75 million over and above FAO's estimate of 848 million undernourished in 2003–05, with much of the increase attributed to high food prices. This brought the number of undernourished worldwide to 923 million in 2007. Given the continued and drastic price rises in staple cereals and oil crops well into the first quarter of 2008, the number of people suffering from chronic hunger is likely to have increased further. At 923 million people, the number of undernourished in 2007 was more than 80 million higher than in 1990–92, the base period for the World Food Summit (WFS) hunger reduction target.

This makes the task of bringing the number of undernourished to 420 million by 2015 more difficult, especially in an environment of high food prices and uncertain global economic prospects (Undernourishment report, 2008). At the regional level, the largest increases in the number of undernourished people in 2007 occurred in Asia and the Pacific and in sub-Saharan Africa, the two regions that together accounted for 750 million (89 percent) of the hungry people in the world in 2003–05. FAO estimates that rising prices have plunged an additional 41 million people in Asia and the Pacific and 24 million in

sub-Saharan Africa into hunger. Together, Africa and Asia account for more than three-quarters of the developing world's low-income food-deficit countries (LIFDCs).

Africa is also home to 15 of the 16 countries where the prevalence of hunger already exceeded 35 percent, making them particularly vulnerable to higher food prices. While the numbers affected are smaller, Latin America and the Caribbean and the Near East and North Africa regions have also experienced increases in hunger as a result of rising food prices (a sharp more than a decade of steady progress toward the WFS goal). Overall, the rising prevalence of hunger and the estimated increase of 75 million undernourished people reversal for Latin America after worldwide in 2007 validate concerns about a global food security crisis following high food prices, at least in the short term(FAO, 2009). Table 7 shows countries in food crisis and those at high risk;

Table 7: Countries at high risk and in food crisis

In Food Crisis	*At High Risk*
Central African Republic	Cameroon
Democratic Republic of the Congo	Comoros
Côte d'Ivoire	Djibouti
Eritrea	Gambia
Ethiopia	Madagascar
Guinea-Bissau	Mozambique
Haiti	Nicaragua
Kenya	Niger
Lesotho	Occupied Palestinian Territory
Liberia	Rwanda
Sierra Leone	Senegal
Somalia	Solomon Islands
Swaziland	Togo
Tajikistan	United Republic of Tanzania
Timor-Leste	Yemen
Zimbabwe	Zambia

Source: IFPRI (2007)

In Africa, 50% of the food insecure are farm households whilst 20% are the urban poor. Thirty percent are the rural landless. Figure 3 shows the proportions of the food insecure in Africa whilst tables 8 to 10 show basic world undernourishment facts (percentages, incidence among countries and per capita consumption over time)

Table 8: Developing countries with a given percentage of undernourishment[1]

	Population (million)			kcal/capita/day			% of population			Million people		
	1997-99	2015	2030	1997-99	2015	2030	1997-99	2015	2030	1997-99	2015	2030
Under 5%	349	1 158	5 129	3 187	3 130	3 150	2	3	3	8	37	178
5-10%	1 989	2 162	524	2 999	3 066	2 758	8	6	7	167	134	38
10-25%	1 632	1 939	948	2 434	2 644	2 411	21	13	16	349	250	155
Over 25%	586	544	239	1 988	2 085	2 149	43	35	30	251	190	72
Total	4 555	5 804	6 840	2 681	2 850	2 980	17	11	6	776	611	443

[1] Different countries form each group in the different years.

Table 9: Incidence of undernourishment in developing countries

	% population				*Million People*			
	1990-92	1997-99	2015	2030	1990-92	1997-99	2015	2030
Developing countries	20	17	11	6	815	776	610	443
Sub-Saharan Africa	35	34	23	15	168	194	205	183
Idem, excl. Nigeria	40	40	28	18	156	186	197	178
Near East and North Africa	8	9	7	5	25	32	37	34
Latin America and Caribbean	13	11	6	4	59	54	40	25
South Asia	26	24	12	6	289	303	195	119
East Asia	16	11	6	4	275	193	135	82

Table 10: Population living in countries with given per capita food consumption

Kcal/capita/day	*Population (million)*					
	1964-66	1974-76	1984-86	1997-99	2015	2030
Under 2200	1 893[1]	2 281[1]	558	571	462	196
2200-2500	288	307	1 290[2]	1 487[2]	541	837
2500-2700	154	141	1 337[3]	222	351	352
2700-3000	302	256	306	1 134	2 397[2]	2 451[2]
Over 3000	688	1 069	1 318	2 464[3]	3 425[3]	4 392[3]
World total	3 325	4 053	4 810	5 878	7 176	8 229

[1] Includes India and China

[2] Includes India

[3] Includes China

3.0 DRIVERS FOR CONTEMPORARY FOOD INSECURITY

Be they policy measures, investment decisions or emergency interventions, appropriate actions to address the human and economic impacts of soaring food prices require a thorough understanding of the underlying driving forces. These driving forces are many and complex, and they include both supply-side and demand-side factors. Long-term structural trends underlying growth in demand for food have coincided with short-term cyclical or temporary factors adversely affecting food supply, thus resulting in a situation where growth in demand for food commodities continues to outstrip growth in their supply. Many authors (USAID, 2008, CIC, 2007, OCHA, 2008, IFPRI, 2007, IRIN, 2007, IMF, 2008, among others) have written on the drivers for the current developments in food security. These are analysed in the subsequent sections.

3.1 Increase in Oil Prices

Until mid-2008, the increase in energy prices had been very rapid and steep, with one major commodity price index (the Reuters-CRB Energy Index) more than tripling since 2003. Petroleum and food prices are highly correlated. The rapid rise in petroleum prices exerted upward pressure on food prices as fertilizer prices nearly tripled and transport costs doubled in 2006–08. High fertilizer prices have direct adverse effects on the cost of production and fertilizer use by producers, especially small-scale farmers (OCHA, 2008, Undernourishment Report, 2008, CIC, 2007).

3.2 Demand for Higher-input Food

The first decade of this century has seen rapid and sustained economic growth and increased urbanization in a number of developing countries, most remarkably in large emerging economies such as China and India. As shown in previous sections, these two countries account for a significant percentage of the world's population. Improvements in purchasing power in these countries has not only lead to increased demand for food , but increased demand for higher input foods which puts pressure on cereals as major food security crops.

3.3 Decreasing Levels of Food Stocks versus Accelerating Demand Growth

In 2006-2007, a year's worth of wheat was lost to drought in Australia, and cold weather caused grain crops to fail in Europe and the United States. Extreme weather events in 2005–07, including drought and floods, affected major cereal-producing countries. World cereal production fell by 3.6 percent in 2005 and 6.9 percent in 2006 before recovering in 2007. Two successive years of lower crop yields in a context of already low stock levels resulted in a worrisome supply situation in world markets. Growing concern over the potential effect of climate change on future availabilities of food supplies aggravated these fears (Undernourishment report, 2008, USDA, 2009). On another scenario export restrictions by major grain producers – imposed in order to secure domestic supply – have further exacerbated rising prices, leading to the conclusion that big countries like the USA were now exporting food inflation (OCHA, 2008, CIC, 2007).

On the other hand, historically, demand growth averaged around 1.5 % per year; now 2.0% and others estimate 2.6% within a decade (CIC, 2007). World Bank estimates food

production will have to rise nearly 50% and meat by 85%, from 2000 to 2030. World food consumption has been greater than world food supply for the past 5 years (IFPRI, 2006). The world's population is expected to increase by 50 per cent between 2000 and 2050, with the developing countries home to almost all of that growth. However, analyses indicate that there is likely to be sufficient overall food production at the global level to meet expected increases in effective demand FAO (2006).

3.4 Climate Change and Environmental Degradation

Extreme weather events – drought, floods, and cold snaps – are affecting local harvests and food availability. Global demand for water has tripled in the last 50 years, and high rates of soil loss to erosion and desertification could diminish the capacity to produce enough food (OCHA, 2008).

3.5 Growing use of Bio-fuels

The emerging bio fuel market is a significant source of demand for some agricultural commodities, such as sugar, maize, cassava, oilseeds and palm oil. The stronger demand for these commodities caused a surge in their prices in world markets, which in turn has led to higher food prices (CIC, 2007, IMF, 2008, OCHA, 2008). While bio fuel production and consumption is supported by government policies in a number of countries, rapid increases in crude oil prices have further contributed to growing demand for agricultural commodities for bio fuel feedstock. Bio fuel production will utilize an estimated 100 million tonnes of cereals (4.7 percent of global cereal production) in 2007–08(Undernourishment report, 2008).

Significant potential exists for additional crop production in Southern Africa based on land availability. However, growing crops for bio-fuels feedstock will only be realised if there is concerted effort from key stakeholders to address the food shortages in the region. New analysis from Frost and Sullivan (http://www.chemicals.frost.com), opportunities for bio-fuel feedstock production in Southern Africa), finds that the market is still in its development stage (Undernourishment Report, 2008). Expansion of the agricultural sector to include crop production for bio-fuels has been hampered by the absence of coherent bio-fuel policies, a lack of resources dedicated to the agricultural sector, declining agricultural production and climate change.

Southern African countries including Botswana, Mozambique, Namibia, South Africa and Zimbabwe have sizeable tracts of arable land available. Most of the crops that can be used as feedstock sources are already grown in the region, but the expansion of the current agricultural production to include crops for bio-fuels would require significant investments.

Southern Africa's rapidly declining crop production has left millions facing starvation, with rural populations being the most affected. Although governments favour the establishment of a strong bio-fuels industry, they lack the financial resources to incorporate feedstock production into an already strained agricultural sector (Undernourishment Report, 2008).

3.6 Inelastic Food-production Market

A short-term issue is that food supply is quite inelastic – in other words, supply reacts slowly to increases in demand. IFPRI estimates that aggregate agricultural supply increases by about 1-2 per cent for each 10 per cent increase in price - and by even less when processes are so volatile.

3.7 Population Growth

It is estimated that by 2050 there will be billions more mouths to feed, exacerbating the demand for food (from 6.1 billion people in 2000 to an estimated 9.2 billion in 2050). (OCHA, 2008). Population growth is therefore a long term structural driver for food demand growth.

3.8 Stock Market Trends

The recent turmoil in traditional asset markets has had an impact on food prices, as new types of investors have become involved in derivates markets based on agricultural commodities in the hope of achieving better returns than those available on traditional assets. Global trading activity in futures and options combined has more than doubled in the last five years (OCHA, 2008, Undernourishment report, 2008). In the first nine months of 2007, it grew by 30 percent over the previous year. This high level of speculative activity in agricultural commodity markets has led some analysts to indicate increased speculation as a significant factor in soaring food prices. However, it is not clear whether speculation is driving prices higher or whether this behaviour is the result of prices that are rising in any case. Either way, large inflows of funds could partly account for the persistence of high food prices and their increased volatility. Further research is needed. The role of financial investors in influencing food prices and whether there is a need for appropriate regulations to limit the impact of speculative bubbles on food prices are increasingly issues of concern (Under nourishment report, 2008).

Box 1 is an extract from IMF (2008) explaining the contemporary food security situation.

Box 1: An extract from IMF explaining the contemporary food security situation

Q. Why is this happening?

A. Prices have been propelled by a mix of permanent and temporary factors:

Strong food demand from emerging economies, reflecting stronger per capita income growth, accounts for much of the increase in consumption. Although demand growth has been high for some time now, the recent sustained period of high global growth contributed to depleting global inventories, particularly of grains.

Rising bio-fuel production adds to the demand for corn and rapeseeds oil, in particular, spilling over to other foods through demand and crop substitution effects. Almost half the increase in consumption of major food crops in 2007 was related to bio-fuels, mostly because of corn-based ethanol production in the US; and the new bio-fuel mandates in the US and the EU that favour domestic production will continue to put pressure on prices.

At the same time, supply adjustment to higher prices has remained slow, notably for oil,

and inventory levels in many markets have declined to the lowest levels in years.

The policy responses in some countries are exacerbating the problem: (i) Some major exporting countries have introduced export taxes, export bans, or other restrictions on exports of agricultural products. (ii) Some importing countries are not allowing full pass-through of international prices into domestic prices (less than half a sample of 43 developing and emerging market countries allowed for full pass through in 2007).

Drought conditions in major wheat-producing countries (e.g., Australia and Ukraine), higher input costs (animal feed, energy, and fertilizer), and restrictive trade policies in major net exporters of key food staples such as rice have also contributed.

Financial factors: the depreciating US$ increases purchasing power of commodity users outside of the dollar area; falling policy interest rates in some major currencies reduce inventory holding costs and induce shifts from money market instruments to higher-yielding assets such as commodity-indexed funds.

Q. What are the implications?

A. To date, most developing countries have been able to absorb the balance of payments impact. Higher export earnings or inflows of capital and transfers helped finance the higher commodity imports.

The overall effect of the commodity price hike on the terms of trade has varied widely across countries. In about half the countries of sub-Saharan Africa, the negative impact has been offset by rising food and fuel export prices.

Higher food prices have been passed through to domestic markets in most countries, but the responses to fuel price increases have varied (the pass-through for oil-exporters averaged slightly over half of that for oil importers).

Concerns centre on possible second-round effects on inflation and the poor:

Headline inflation is up in many countries. This is a particular concern in developing countries where food expenditure shares exceed expenditure shares in other goods by a large margin. Food price increases accounted for almost 70 percent of 2007 headline inflation in emerging economies. Looking ahead, the impact on inflation of food price increases will persist through 2008 even without further price increases.

External balances of net commodity importers have deteriorated. The first round effect on 2007 current account balances exceeded 1 percent of GDP in some developing countries. With most of the increase in prices of grains and oil in the 2nd half of 2007, external balances in some LICs may deteriorate significantly in 2008.

The social implications of rising food prices can be severe for the urban poor. Some countries in Africa have recently had food price–related riots. In Burkina Faso, there have been demonstrations in two cities. In Cameroon, political unrest spilled over into protests over food and fuel prices. Niger has also suffered food-price-related riots, while in Indonesia there have been protests over soybean shortages.

At the same time, external balances of net commodity exporters have improved. The

challenge for them is to maintain macroeconomic stability while dealing with rising foreign exchange inflows.

Source; IMF(2008)

3.9 Poverty as a Central issue (in Africa and South Asia?)

Poverty is the principal cause of hunger. The causes of poverty include poor people's lack of resources, an extremely unequal income distribution in the world and within specific countries, conflict, and hunger itself. According to World Hunger Facts(2009) as of 2008 (2004 statistics), the World Bank has estimated that there were an estimated 982 million poor people in developing countries who live on $1 a day or less (World Bank, Understanding Poverty, Chen, 2004). This compares to the FAO estimate of 850 million undernourished people. Extreme poverty remains an alarming problem in the world's developing regions, despite the advances made in the 1990s till now, which reduced "dollar a day" poverty from (an estimated) 1.23 billion people to 982 million in 2004, a reduction of 20 percent over the period. Progress in poverty reduction has been concentrated in Asia, and especially, East Asia, with the major improvement occurring in China. In sub-Saharan Africa, the number of people in extreme poverty has increased (World Hunger Facts, 2009).

4.0 TOWARDS SUSTAINABLE SOLUTIONS TO THE WORLD FOOD SECURITY CHALLENGE

4.1 Role of Country Governments in ensuring Food Security (Budget and Support)- Investment in Agriculture

Growth in agriculture and in associated rural non-farm employment can have a broad impact in reducing poverty in rural areas, where seven out of ten of the world's poor live (FAO, 2009). Governments therefore need to establish the basics that are roads, irrigation systems, research, extension and land reform. This would be followed by kick starting the markets achieved through local and seasonal finance as well as input and outputs markets. The last phase would be withdrawal characterised by effective private sector markets (Kirsten and Vink,2005).

As shown in preceding sections many of the world's poor and hungry are smallholder farmers in developing countries. Yet they have the potential not only to meet their own needs but to boost food security and catalyse broader economic growth. To unleash this potential and reduce the number of hungry people in the world, governments, supported by the international community, need to protect core investments in agriculture so that smallholder farmers have access not only to seeds and fertilisers but to tailored technologies, infrastructure, rural finance, and markets (IFAD, 2009).

4.2 Climate Change as a Long Time Driver

Climate change will have impacts on soil quality, water resources, temperature regime, and growing season duration on net primary productivity of different biomes. It will also affect soil carbon dynamics and cause changes in carbon dioxide and ecological environments on agronomic yields and food production in different regions of the world. This will change the terrain of world food demand and supply in the 21st century.

Schmidhuber and Tubiello (2007) note that the impacts of climate change are significant, with a wide projected range (between 5 million and 170 million additional people at risk of hunger by 2080) strongly depending on assumed socio-economic development. The impacts of climate change on food security can be seen on food availability, supplies, access, utilisation and food prices as explained below (Schmidhuber and Tubiello, 2007);

Impacts on Food Production and Availability

Climate change affects agriculture and food production in complex ways. It affects food production directly through changes in agro-ecological conditions and indirectly by affecting growth and distribution of incomes, and thus demand for agricultural produce. Changes in temperature and precipitation associated with continued emissions of greenhouse gases will bring changes in land suitability and crop yields.

Impacts on the Stability of Food Supplies

Global and regional weather conditions are also expected to become more variable than at present, with increases in the frequency and severity of extreme events such as cyclones, floods, hailstorms, and droughts. By bringing greater fluctuations in crop yields and local food supplies and higher risks of landslides and erosion damage, they can adversely affect the stability of food supplies and thus food security.

Impacts of Climate Change on Food Utilisation

Climate change will also affect the ability of individuals to use food effectively by altering the conditions for food safety and changing the disease pressure from vector, water, and food-borne diseases.

Impacts of Climate Change on Access to Food

Access to food refers to the ability of individuals, communities, and countries to purchase sufficient quantities and qualities of food. Over the last 30 years, falling real prices for food and rising real incomes have led to substantial improvements in access to food in many developing countries. Increased purchasing power has allowed a growing number of people to purchase not only more food but also more nutritious food with more protein, micronutrients, and vitamins. By coupling agro-ecologic and economic models, scientists have gauged the impact of climate change on agricultural gross domestic product (GDP) and prices. The strongest impact of climate change on the economic output of agriculture is expected for sub-Saharan Africa, which means that the poorest and already most food-insecure region is also expected to suffer the largest contraction of agricultural incomes.

Impacts on Food Prices

Some projected development paths describe a world of robust economic growth and rapidly shrinking importance of agriculture in the long run and thus a continuation of a trend that has been underway for decades in many developing regions. This will thus be a world where income growth will allow the largest part of the world's population to address possible local production shortfalls through imports and, at the same time, find ways to cope with safety and stability issues of food supplies. Therefore where income levels are low and shares of food expenditures are high, higher prices for food may still create or exacerbate a possible food security problem. The basic messages on the effects of climate change on food prices are that; first, on average, prices for food are expected to rise

moderately in line with moderate increases of temperature (until 2050); some studies even foresee a mild decline in real prices until 2050. Second, after 2050 and with further increases in temperatures, prices are expected to increase more substantially. In some studies and for some commodities (rice and sugar) prices are forecast to increase by as much as 80% above their reference levels without climate change. Third, price changes expected from the effects of global warming are, on average, much smaller than price changes from socioeconomic development paths.

4.3 Institutions and Governance

To ensure sustainable global food security and promote sustainable management of water, forest and other natural resources, there should be special focus on small farmers, women and families. Focus should also be placed on their access to land, water, inputs, and financial services including microfinance and market. There is a need to strengthen capacity building in particular through knowledge transfer using North-South, South-South and triangular cooperation to achieve increased agricultural production and productivity with a stimulus to pre- and post-harvest intervention, with emphasis on preservation of the natural resource base, expansion of employment and decent work opportunities(FAO, 2009).

FAO (2009) notes that in the 1960s and 1970s, support to small farmers through the provision of inputs, the purchase of their output, credit and extension services was provided by public institutions and national marketing boards. In the 1980s, in line with market liberalization policy and as part of the structural adjustment programmes, these institutions were weakened and in some cases even dismantled. Yet no effective and consistent policies or continuous operational programmes were adopted and implemented to ensure their replacement with adequate private or semi-private institutions to continue to provide the same services to small farmers. It has become clear today that small farmers need public policy and institutional support to enable them to organize themselves to collect information, improve their production and benefit from economies of scale in input access and product marketing.

Against such a background, FAO (2009), highlights that there is the need to rebuild the institutional capacity of developing countries to help smallholders to access the technologies, inputs, credit and markets they need to become more productive, as well as to enable them to organize themselves better and to market their output. These include services for research and extension, access to inputs, product marketing, rural credit and capacity building of trade organizations, in particular by training producers and administrators in the sector.

The importance for developing countries to rebuild their institutional capacity and strengthen and empower farmers' organizations is critical. Developed countries and relevant international organizations should provide them with the necessary support. These renewed institutions should include more farmers' organisations and the private sector and use modern management techniques and control systems, to avoid the inefficiency and politicization that plagued some of the old institutions.

Paarlberg (2002) argues that the problems of hunger and food insecurity urgently require a national, not global focus. Many national governments in developing countries

still do not provide essential public goods, such as civil peace, rule of law, transport infrastructure, clean water, electrical power, and public research to generate new agricultural productivity— essential ingredients in the effort to boost incomes. For tackling hunger, the weak performance of nation-states remains most critical—and in most critical need of improvement. According to Paarlberg, the governance challenge as far as food security is concerned is to persuade sovereign governments to provide the necessary public goods that would ensure access to adequate food.

Kirsten and Vink (2005) conclude that in Africa, there is the 'agricultural development paradox'; *the need for pro poor state services is high while state failure is profound*. They also post some policy related success and failure factors which are:

(i) 'Partial implementation' with the argument that poor results can be attributed to government failures to fully liberalise their agricultural sectors. This view does not however recognise the fact that there are important institutional constraints to market development in rural areas
(ii) 'Weak institutions' argument attribute failures in market liberalisation policy in delivering expected benefits to weak institutional support for market and private sector development
(iii) Lack of long term productive investments in agricultural research, extension and rural infrastructure
(iv) 'Coordination failure' which is characterised by pervasive failure of state activism and the superiority of liberalised markets. It is noted that there are dramatic successes and failures which show that there is limited success in stimulating significant broad based poverty reduction and growth processes.

4.4 The Role of International Trade(Export, Import and Food Aid)

According to IFPRI (2008), the volume of major crop exports increased by 9 percent (55 billion tonnes in wheat equivalent) from 2003–05 to 2007 and is forecast to continue growing almost as rapidly to 2010. Comparing trade patterns with production for major traded commodities highlights the role that imports and exports play in different countries. Supply disruptions in major exporting countries can have important implications for export supplies and international agricultural markets even if they have little impact on global production.

FAO (2009) reiterates that a rules-based international agricultural trading system that is open, non-distorted, non-discriminatory, equitable and fair can promote agricultural and rural development and contribute to world food security. Thai necessitates the need for a successful conclusion to the Doha round of trade negotiations. While international trade in agricultural and food products has expanded, many developing nations, in particular the least developed countries have remained at the margins of these developments. These countries face specific challenges and their supply-side constraints and trade capacity in agriculture need to be addressed effectively. Their farmers will also need to be provided with adequate incentives to increase their production and productivity and to profit from increased trade opportunities. Agriculture policy should play a critical role in providing incentives to stimulate production. However, it could have adverse impacts if it is not properly designed to avoid distorting effects to the detriment of small and poor farmers. There is need for all farmers of the world, in developing and developed countries alike, to

ensure the food security of the 1 billion hungry people and to double agricultural production by the year 2050 for a world population that is projected to reach 9.2 billion by then.

FAO (2009) notes that farmers in both developed and developing countries should have an income comparable with those earned by workers in the secondary and tertiary sectors of their respective countries to remain in rural activity. This objective should be achieved through support that causes no distortions on the international markets. Developed countries should continue to shift their support to 'decoupled' forms of support authorised under WTO provisions, while for developing countries, appropriate support measures to boost production should be designed, particularly using effective support mechanisms to facilitate access to inputs, direct payments to achieve income targets and compensatory financing in cases of natural disasters. Food and agricultural trade policies should be conducive to fostering world food security. They should not be hampered by actions taken in response to the economic climate.

FAO (2009) stresses that all countries should remove food export restrictions or extraordinary taxes, especially for food purchased for humanitarian purposes, and to consult and notify in advance before imposing any new restriction. This position however remains an issue to grapple with in world where there are GMOs which have been rejected by consumers in countries which produce them. However, the WTO Agreement on Technical Barriers to Trade (TBT) sets out the rules that should govern trading practices at the international level for all consumer type products, with a view to ensuring that regulations and product standards do not create unnecessary and unjustified obstacles to trade.

It is noted FAO (2009), however, that developing countries continue to face many stringent technical requirements for their exports. Governments should be urged to refrain from using TBT-type measures to block imports, particularly from the developing countries, and to adhere fully to the provisions of the TBT Agreement as set by the WTO. There is also the need to provide developing countries with the information, training and resources needed to comply with standards and regulations governing their exports.

In an attempt to minimise the impacts of higher food prices on vulnerable population groups within countries, a number of governments and private-sector actors have taken measures that have at times exacerbated the effects of the underlying trends on food prices in international markets. The adoption of export restrictions and bans by some countries has reduced global supply, aggravated shortages and eroded trust among trading partners. In some countries, such actions have also reduced farmers' incentives to respond to higher international prices. Speculative re-stocking or pre-stocking by large importers with relatively strong cash positions has also contributed to higher prices (FAO, 2008).

FAO (2008) notes that more liberalisation would mainly benefit developed countries. It is noted that complete liberalisation of agricultural trade could produce valuable overall welfare gains, but some groups would win while others would lose. The benefits would go mainly to consumers and taxpayers in industrial countries, where agriculture is most protected, and to developing country agricultural exporters. In contrast, urban and landless rural consumers in developing countries might end up paying higher prices for some

foodstuffs, especially cereals, milk, meat and sugar. This will pose serious threats to food security. Specific measures would be needed to help such loser groups.

Agriculture accounts for 11 per cent of the value of all world exports. A quarter of Latin America's exports are agricultural and 18 per cent of Africa's. According to the FAO (2001) the measures and strategies that would ensure that the poorest and most vulnerable countries and population groups receive an equitable share of the benefits of trade liberalisation should be aimed at:

(i) Eliminate direct and indirect export subsidies.
(ii) Rationalize and simplify access to OECD markets. Specifically, rationalise and simplify trade preferences, assist countries whose preferences have been eroded through multilateral liberalisation, and deepen existing preferences for very poor countries.
(iii) Reduce OECD tariffs and consumer taxes on processed agricultural products, with special preferences for products from developing countries.
(iv) Eliminate tariff escalation for tropical commodities, in the developing as well as the developed countries. Tariffs are rising even faster in the former than in the latter group. The purchasing power of China's or India's rapidly growing middle class could turn these countries into major importers of some tropical agricultural products over the next 30 years.
(v) Create or expand safety nets and food distribution schemes, to ensure that low-income consumers are not penalised by rises in the prices of food imports.

5.0 EMERGING ISSUES FOR AFRICAN FOOD SECURITY

5.1 Drivers for Sustained Trends in Food Security (Why Does Africa Remain Poor?)

A widely accepted objective for agricultural development in Africa is to achieve sustainable agricultural intensification (Kirsten and Vink *et al*., 2005). This would be achieved through use of advanced technologies that increase land and labour productivity. They concede that for most of the rural poor in Africa, there is significant direct and indirect dependence of the local economy on agriculture. These authors also highlight that there is a set of problems which inhibit such processes from occurring. For sustainable turn around of processes there is need to address these problems. The problems include:

(i) Absence of markets because of low purchasing power in domestic markets and poor access to global markets because of trade distortions such as rich country agricultural subsidies
(ii) Long production and sales cycles which lead to significant seasonality in labour use, cash flow, food availability, prices and risks
(iii) High returns to timely labour at peak labour demand which makes poor farmers want to hire out their labour because of poverty
(iv) Technical progress and land pressure increase farmers needs for inputs which are however purchased in uneconomic quantities therefore high transaction costs
(v) Farmers input purchases that need seasonal financing which brings the issue of how such financing may be provided given that significant shares of output are for subsistence

(vi) Land which is the basis for of agriculture with tenure arrangements affecting farmers ability to borrow , expand or exit with a lumpsum via land market transactions and also influence incentives for land improvement

Kirsten and Vink (2005) also note that in addition to these general problems, substantial numbers of poor farmers face problems unique to their circumstances which have an idiosyncratic effect. Such problems include;

(i) Human health issues(HIV/AIDS, Malaria, TB etc)
(ii) Poor animal health and care systems
(iii) Heterogeneous patterns of population density
(iv) Scarcity of water for both human consumption and for direct production in irrigation agriculture
(v) Particular role of women has not been given the attention it deserves
(vi) Large parts of Africa have been subject to successive phases of colonial exploitation and manipulation
(vii) Environmental degradation that affects soil nutrient depletion , soil erosion , destruction of water catchment areas and salination
(viii) Fragile and weak states often induced by the type of development aid dispensed by the developed ,countries
(ix) Competition with food aid whose main purpose is to get rid of rich country food surpluses produced though subsidies and whose main effect is to crowd local farmers out of markets.
(x) Limited agricultural support by national governments in Africa
(xi) Limited capacity to respond to disasters and plan for the future, depend on donations from developed world
(xii) Trade of between present day political gains versus long term development policies in Africa

5.2 The Role of Land Grabs in African Agricultural Production

A report from GRAIN (http://www.grain.org/)(2009) points out that investing in farms abroad to produce food for a tight world market is a hot way to make money in the face of rising food prices. It is noted that an avalanche of investment houses, private equity managers and hedge funds have been out purchasing farmland throughout the world. The plan is to capitalise on low land costs and high food prices wherever fertile farmland is available, such as in Ukraine, China, Russia, Nigeria, Argentina, Brazil and Kazakhstan. They are getting help from agencies like the World Bank, its International Finance Corporation and the European Bank for Reconstruction and Development, who are pressing target countries to change their laws and make stronger land ownership by foreigners possible.

The contemporary food and financial crises have triggered a new global land grab. "Food insecure" governments that rely on imports to feed their people are snapping up farms all over the world to outsource their own food production and escape high market prices. Private investors, hungry for profits in the midst of the deepening financial crisis, are eyeing overseas farms as an important new source of revenue. As a result of both trends, fertile agricultural land is being swiftly privatised and consolidated by foreign companies in some of the world's poorest and hungriest countries.

Saudi Arabia and China are two nations out buying farms, from Sudan to Cambodia, to satisfy their own food needs. In these cases, governments, sometimes through sovereign wealth funds, are negotiating rights to foreign land -- whether by purchase, concession or lease -- so that their corporations can come in and produce food to export back home. In return, they are offering oil contracts, soft loans, infrastructure projects and development funds. The food-hungry land grabbers include China, India, Japan, Malaysia, Korea, Egypt, Libya, Bahrain, Jordan, Kuwait, Qatar, Saudi Arabia and United Arab Emirates. Those giving up their land, in exchange for the oil deals or investments, include the Philippines, Mozambique, Thailand, Cambodia, Burma, Laos, Indonesia, Pakistan, Sudan, Uganda, Brazil, Paraguay, Uruguay, Ukraine, Russia, Kazakhstan and Zimbabwe.

IRIN (2009) notes that between 15 and 20 million hectares of farmland in such countries have been subject to transactions or negotiations since 2006. IFPRI estimates the value of such deals at up to $30 billion. The effects are diverse. Not only will it displace small farmers but it will likely have serious environmental consequences given that the land grabbers are leasing land, not buying it, would have no interest in long-term development of the farmland they are seeking access to. Box ‘’2’’ is an extract from the IRIN article showing some of the consequences of land grabs in Philippines and Myanmar

Box 2: Consequences of land grabs in Philippines and Myanmar

In Kamukhaan village in the Philippines, such effects have become well documented, according to the AHRC. Since a Filipino company took over 613ha in the village to build a banana plantation in 1981 – to supply US-based fruit company Dole – hundreds of villagers have suffered skin and respiratory ailments from pesticide use, the group claims. The farmers had lost their farmland, their children, their natural sources, their health and their future. Now the Philippines' food sovereignty is absent and the self-sufficiency is almost zero. In the Philippines this year, Bahrain secured 10,000ha for agro-fishery, Qatar leased 100,000ha, and an unknown company from China leased 1.24 million hectares, though the deal has been put on hold, according to an April policy briefing by IFPRI. Such deals are often done in secret, it says, stopping civil society groups from overseeing the terms and defending the rights of local farmers. In Myanmar, Chinese companies have driven farmers off their land to cultivate an oil plant, according to Welt Hunger Hilfe, a German NGO. The farmers already faced seasonal changes that threatened food security, but had their last source of food taken from them by the government, the group says.

Source:IRIN

5.3 GMOS and Food Security

In 2006 the global area under genetically modified crops was 102 million hectares (252 million acres)(Shattuck, 2009). The largest areas were devoted to cotton, soybean and rape seed. Most GM crops are growing in Argentina, Canada, China and the United States. The USA Senate’s Foreign Relations Committee (US) approved the Global Food Security Act in 2009. The legislation includes a provision sought after by aid groups that would allow food aid to be purchased — at least in part, locally. The bill aims to reform aid programs to focus on longer-term agricultural development, and restructure aid agencies to better respond to crises. While the focus on hunger is commendable, funding for agricultural

development — some $7.7 billion worth of it — under the proposed law would be directed in large part to genetically modified crop research. In contrast, the International Assessment of Agricultural Knowledge Science, and Technology for Development (IAASTD), a recent four-year study conducted by the World Bank and the Food and Organization (FAO) in consultation with more than 400 scientists and development experts, reached the opposite conclusions(Shattuck, 2009). The IAASTD found that reliance on resource-extractive industrial agriculture is unsustainable, particularly in the face of worsening climate, energy, and water crises. And it concluded that expensive, short-term technical fixes — including GM crops — don't adequately address the complex challenges of the agricultural sector and often exacerbate social and environmental harm. The IAASTD called for land reform, agro-ecological techniques (proven to enhance farmers' adaptive capacity and resilience to environmental stresses such as climate change and water scarcity), building local economies, local control of seeds, and farmer-led participatory breeding programs.

Other radical scientists argue that the Global Food Security Act isn't just about feeding the hungry — it's about advancing the interests of U.S.A agribusiness (Shattuck, 2009). The IAASTD found that agro ecological techniques, stricter regulation of multinational agribusiness, and increased democratic control of the global food system can address the root causes of hunger in a way that a biotechnology never will. The Global food security act’s focus on agricultural development is welcome but that focus must come with a commitment to put the interests of small farmers before that of industry.

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APPENDIX

Table 11: Population and GDP data projections

	Total population								
	Millions					*Annual Increments (millions)*			
	1979-81	1997-99	2015	2030	2050	1995 to 2000	2010 to 2015	2025 to 2030	2045 to 2050
World (UN)[1]	4 430	5 900	7 207	8 270	9 322	79	76	67	43
World (FBS)	4 416	5 878	7 176	8 229	9 270	78	76	66	43
Developing countries	3 245	4 573	5 827	6 869	7 935	74	74	66	45
Sub-Saharan Africa	345	574	883	1 229	1 704	15	20	24	23
Near East and North Africa	238	377	520	651	809	8	9	9	7
Latin America and Car.	357	498	624	717	799	8	7	6	3
South Asia	885	1 283	1 672	1 969	2 258	23	22	19	12
East Asia	1 420	1 840	2 128	2 303	2 365	20	16	9	-1
Industrial countries	789	892	951	979	986	5	2	1	0
Transition countries	382	413	398	381	349	0	-1	-1	-2
	Growth rates (% per year)								
	Population					Total GDP		Per capita GDP	
	1969 to 1999	1979 to 1999	1989 to 1999	1997-99 to 2015	2015 to 2030	1997-99 to 2015	2015 to 2030	1997-99 to 2015	2015 to 2030
World (FBS)	1.7	1.6	1.5	1.2	0.9	3.5	3.8	2.3	2.9
Developing countries	2.0	1.9	1.7	1.4	1.1	5.1	5.5	3.7	4.4
Sub-Saharan Africa	2.9	2.9	2.7	2.6	2.2	4.4	4.5	1.8	2.3

Near East and North Africa	2.7	2.6	2.4	1.9	1.5	3.7	3.9	1.8	2.4
Latin America and Car.	2.1	1.9	1.7	1.3	0.9	4.1	4.4	2.8	3.5
South Asia	2.2	2.1	1.9	1.6	1.1	5.5	5.4	3.9	4.3
East Asia	1.6	1.5	1.2	0.9	0.5	6.1	6.3	5.3	5.8
Industrial countries	0.7	0.7	0.7	0.4	0.2	3.0	3.0	2.6	2.8
Transition countries	0.6	0.5	0.1	-0.2	-0.3	3.7	4.0	4.0	4.3

[1] World (UN) covers all countries; World (FBS) covers all countries for which FAO Food Balance Sheet data are available.
Sources: Population: UN (2001)
GDP to 2015: World Bank (2001b)

Table 12: Changes in commodity composition of food

Table A4: Changes in commodity composition of food							
	Cereals	Roots and tubers	Sugar (raw eq.)	Pulses(dry)	Vegetable oils, oilseeds (oil eq.)	Meat(carcass weight)	Milk and dairy (fresh milk eq.)
	kg/capita/year						
World							
1979-81	160	74	23.5	6.5	8.4	29.5	77
1997-99	171	69	24.0	5.9	11.4	36.4	78
2015	171	71	25.1	5.9	13.7	41.3	83
2030	171	74	26.3	6.1	15.8	45.3	90
Industrial countries							
1979-81	139	67	36.8	2.8	15.7	78.5	202

1997-99	159	66	33.1	3.8	20.2	88.2	212
2015	158	63	32.4	4.0	21.6	95.7	217
2030	159	61	32.0	4.1	22.9	100.1	221
Transition countries							
1979-81	189	119	45.9	3.1	9.2	62.9	181
1997-99	173	104	34.0	1.2	9.3	46.2	159
2015	176	102	35.0	1.2	11.5	53.8	169
2030	173	100	36.0	1.1	14.2	60.7	179
Developing countries							
1979-81	162	70	17.6	7.8	6.5	13.7	34
1997-99	173	67	21.3	6.8	9.9	25.5	45
2015	173	71	23.2	6.6	12.6	31.6	55
2030	172	75	25.0	6.6	14.9	36.7	66
Sub-Saharan Africa							
1979-81	115	172	9.9	9.8	8.5	10.6	34
1997-99	123	194	9.5	8.8	9.2	9.4	29
2015	131	199	11.3	9.8	10.7	10.9	31
2030	141	202	13.0	10.5	12.3	13.4	34
Near East and North Africa							
1979-81	199	26	28.2	6.4	11.1	17.4	85
1997-99	209	34	27.6	6.7	12.8	21.2	72

2015	206	33	28.7	6.9	14.4	28.6	81
2030	201	33	29.9	6.9	15.7	35.0	90
Latin America and Caribbean							
1979-81	130	74	48.5	12.6	10.2	40.6	97
1997-99	132	62	48.9	11.1	12.5	53.8	110
2015	136	61	48.2	10.7	14.5	65.3	125
2030	139	61	47.9	10.6	16.3	76.6	140
South Asia							
1979-81	151	20	20.7	11.2	5.8	4.0	42
1997-99	163	22	26.7	10.9	8.4	5.3	68
2015	177	27	29.5	9.1	11.6	7.6	88
2030	183	30	32.2	7.9	14.0	11.7	107
East Asia							
1979-81	181	83	8.1	4.3	4.7	13.0	5
1997-99	199	66	12.4	2.1	9.7	37.7	10
2015	190	64	14.6	2.0	13.1	50.0	14
2030	183	61	16.6	2.1	16.3	58.5	18