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Global agricultural policies: reforms and future agriculture

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Abstract: Globally, Agriculture it seems is back on the development agenda, seen as a key to spurring growth and reduction poverty, and as a key route to meeting the Millennium Development Goals. Continent -wide policy can safeguard each country's independence. The main focus of this paper is to analyse global agricultural policies and critically appraisal of their policies and arrive the best policies. The study is based on meta-analysis. The status of global agricultural policies in general and selected continent wise policies in particular is analysed. It also suggests the best future global agricultural policies. World as a whole the pressures on agriculture to produce much less than indicated projections for the period to 2050 because of deceleration population growth. The basic changes in Europe models concerning the transformation from supply driven models of traditional agriculture to the concept of modern agriculture focusing on demand-driven types of market agriculture. The North American Model; United States, Mexico, and Canada have each made significant changes to their agricultural policies over the past several years particularly in the area of income supports. The Latin America continent was confronted with a new twist to the Green Revolution model, with the introduction of genetically modified (GM) crops and run by transnational corporations. In Africa, agriculture is runs by the significance of aid provided by donors. The successful Asian State Green revolution model focuses more on seed and technologies to increase production. The most common policy response taken by the emerging economies – and also worldwide – has been to reduce or suspend import tariffs on food products. The year 2011 highlighted after many years of neglect, agriculture and food security are back on the development and political agendas. The study suggests to focus future policies on agriculture as a global agenda and global efforts.

Keywords: Global Agriculture, reforms and policies

1. Introduction

The perceived limits to producing food for a growing global population have been a source of debate and preoccupations for ages. Already in the third century AD, Tertullian, a church leader, raised the issue (Alexandratos, 1997). The debate gathered momentum in the late eighteenth century, following Malthus, and more recently with Paul Ehrlich's Population Bomb. Yet, world food production grew faster than population (Alexandratos and Bruinsma, 2012).

Global food security – or, in more traditional terminology, world hunger – remains a serious concern. However, even at the global level, current food supplies are sufficient to nourish the world population. Food insecurity, therefore, results from uneven distribution. In the coming decades, calorific production is projected to further outpace population growth (Valentin, 2011).

Global food crises are turning out to be far too frequent to be dismissed any longer as a freakish phenomenon. A spike in the prices of agricultural commodities is again looming, threatening a repetition of the 2007-2008 global food crisis when international prices skyrocketed to their highest in 30 years (Caliber,2012).

The International Monetary Fund (IMF)'s food price index rose by over 80 per cent between the start of 2007 and mid-2008. Severe drought in the United States, flooding in several parts of Europe, a massive shortfall of rain in Africa and India are feared to lead to huge loss of output and a scramble for markets and supplies (Subramaniam, 2012). As in many other parts of the world, soaring food prices during the period 2007/08 had major impacts on the countries of Southeast Asia.

Population increased to 6.9 billion in 2010. The UN population projections–from the medium variant of the 2008 indicate that the world total could reach 9.15 billion in 2050. Thus, we expect an increase of 2.25 billion over the next 40 years, which is lower than the 3.2 billion increased that materialized between 1970 and 2010. This deceleration will

impact world agriculture by lowering its rate of growth compared to the past (FAO, 2012). According to the Medium Variant projection world population is expected to peak around the year 2075 at 9.4 billion and then start declining slowly to 9.2 billion by 2100 (UN, 2009).

Experts and the public alike seem to alternate between pessimism and optimism, anxiety and complacency, about the world food situation and outlook. For the past several decades, the rate of growth in world food production in both developed and developing countries has exceeded the population growth rate. During the 1970s and 1980s the food situation improved tremendously. But by the 1980s and 1990s the increasing scarcity of land and water resources, environmental degradation, and loss of biodiversity had begun to limit the expansion of food production in both developed and developing countries (Dastagiri, 1998).

World Watch Institute (2004) reports that Increases in food production, per hectare of land, have not kept pace with increases in population, and the planet has virtually no more arable land or fresh water to spare. FAO (2011) emphasis agricultural investment is essential to promoting agricultural growth, reducing poverty and hunger, and promoting environmental sustainability. Reports on global food security in 2011 by the FAO, the World Bank, and the International Fund for Agricultural Development all highlighted the need for governments to ensure responsible investment in agriculture.

Demand for cereals, for both food and animal feed uses are projected to reach some 3 billion tonnes by 2050, up from today's nearly 2.1 billion tonnes. The advent of biofuels has the potential to change some of the projected trends and cause world demand to be higher, depending mainly on energy prices and government policies.

The projections show that feeding a world population of 9.1 billion people in 2050 would require raising overall food production by some 70 percent between 2005/07 and 2050. Production in the developing countries would need to almost double. This implies significant increases in the production of several key commodities. Annual cereal production, for instance, would have to grow by almost one billion tonnes, meat production by over 200 million tonnes to total of 470 million tonnes in 2050, 72 percent of which in the developing countries, up from the 58 percent today.

Agriculture in the 21st century has multiple challenges. It has to produce more food and fiber to feed a growing population with a smaller rural labour force, more feed stocks for a potentially huge bioenergy market, contribute to overall development in the many agriculture-dependent developing countries adopt more efficient and sustainable production methods and adept to climate change (FAO, 2012).

In the face of climate change, global political and food insecurity, volatility of global market prices and the resurgence of health crises, only an ambitious, continent -wide policy can safeguard each country's independence.

The specific objectives of the paper are:

1. To document the continent wise global agricultural policies and other reforms in agriculture
2. To do meta-analysis of global agricultural policies and critically appraisal of their policies and arrive the best policies
3. To assess governments' actions and policies response to increase world food prices
4. To suggest suitable policies to address issues of global food security and help to overcome the constraints faced by global agriculture.

2. Data and Methodology

This is basically diagnostic study based on meta-analysis. The data on global agricultural policies collected from secondary and published secondary sources and websites. The policies collected are classified into 6 continents. The continent wise policies are critically appraised and compared with one another and best policies are arrived. The status of global agricultural policies in general and selected continent wise policies in particular is analysed. These changes were compared with requirements of WTO and trade liberalization. Finally, suggestions are made to integrate global agricultural policies for the future. The study used Delphi survey method to validate the results obtained through secondary data. It also suggests the best future global agricultural policies.

3. Results and Discussion

The global key variables beyond 2050 which influence on food security are presented in Table 1. It shows that for the world as a whole the pressures on agriculture to produce more food for the growing population will much decrease

Table 1. *Global key variables beyond 2050 which influence on food security.*

	2005/07	2050	2080	2100
Population (million)- UN 2008 Revision	6592	9150	9414	9202
Population (million)- UN 2010 Revision	6584	9306	9969	10125
Cereals, food (kg/capita)	158	160	161	
Meat, food (kg/capita)	38.7	49.4	55.4	
Oilcrops (oil. equiv.), Food (kg/cap)	12.1	16.2	16.9	
Cereals, production (million tonnes)	2068	3009	3182	
Meat, production (million tonnes)	258	455	524	
Cereal yields (tonnes/ha; rice paddy)	3.32	4.3	4.83	
Arable land area (million ha)	1592	1661	1630	

Source: Alexandratos and Bruinsma 2012.

beyond 2050 indicated in projections for the period to 2050. It results show that global agricultural production would need to grow at 0.4 per cent per year from 2050 to 2080, i.e. less than half the growth rate projected for the period 2005/2007-2050.

3.1. The European Model of Agricultural Policy in the Global context

The European Model of Agricultural Policy in the Global context is in Table 2. The results show that the basic changes concerning the transformation from supply driven models of traditional agriculture to the concept of modern agriculture focusing on demand-driven types of market relations. In this context, among the crucial factors evaluating achievements of agricultural enterprises, new items significantly appear–items of the knowledge economy.

Table 2. *The European Model of Agricultural Policy in the Global context.*

Characteristics	**Traditional concept Supply –Determined Model**	**New concept Demand-determined Model**
Agriculture position	Agriculture is agricultural production	Agriculture is a part of food final production
Output character	Commodity as a final product	Commodity as a raw material
Production structure	Structure of production under natural conditions	Demanded plants / animal products
Determining production factor	Production facilities, land, capital	Customers demands
Competitive advantage	Land quality, technology, buildings	People, knowledge, strategy, organization
Production strategy	Universal structure based on availability of production factors and inputs	Specialized in particular/ demanded raw materials
Success determiner	Capital in finance and in kind	Knowledge, information
Labour force (LF)	LF is a part of cost and investment	LF is an investment and part of costs
Type of trade Market characteristics	Sells product, offers service Impersonal relationships/ Open markets	Sells service, offers product Personal relationship – contracted
Supplier/customer relations	Mainly adverse	Correct, friendly
Input purchase	Bulk quantities, various suppliers	Mainly from one source
Own input production	Strong tendency	Purchases
Approach to product price	Pressure on high prices	Low costs preferred
Crucial risks	Market failure (price)	Loss of relationships
Business characteristics	Stability	Change, flexibility
Crucial Knowledge	Technical	Economic, communication
Agriculture approach	Traditional, experimental based	Learning and knowledge base, Innovative
Approach to natural sources	Exploitation, usage	Usage, protection
Production philosophy	Production, waste liquidation	Production, waste recycling

Source: Věra Bečvářova (2011).

3.2. The North American countries Agricultural policies

The three largest agricultural producers of the northern half of the Western Hemisphere—the United States, Mexico, and Canada—have revised their Agricultural policies (Table

3). The United States, Mexico, and Canada have each made significant changes to their agricultural policies over the past several years. In the area of income supports, each country has instituted a countercyclical program that provides additional assistance to producers during downturns in commodity prices, and each continues to decouple key support programs from production decisions. In other areas, the reforms of the three countries have different points of emphasis. The United States has expanded spending on conservation activities, especially on lands in production; it has made important changes to peanut and tobacco programs; and it has implemented a new program that assists producers who are adversely affected by competition with imports. Mexico's new efforts to strengthen the competitiveness of its agricultural sector include energy discounts for producers, and a revamped approach to agricultural finance. And Canada's comprehensive evaluation of its farm programs is leading to new efforts concerning the environment, food safety and food quality, science, and the renewal of the Agricultural sector.

Table 3. *The North American countries Agricultural policies.*

	United States	**Mexico**	**Canada**
Key initiative(s)	2002 Farm Act	Agri-food Armor and National Agreement for the Countryside.	Agricultural Policy Framework (APF).
Description	Legal framework for U.S. farm programs through 2007 crops.	Separate but overlapping outlines of intended agricultural policies.	Comprehensive effort to reshape Canada's agricultural policies.
Status	Signed into law, May 2002.	Many elements were previously planned; others are being implemented in a piecemeal fashion.	All Provinces have signed on for the APF to take effect.
Income support	Triad of programs—direct payments, countercyclical payments, and Marketing loans—provides income support for wheat, feed grains, upland cotton, rice, peanuts, and oilseeds. New countercyclical program replaces ad hoc emergency assistance. Marketing loans extended to certain pulses, mohair, wool, and honey. Extensive planting flexibility is maintained.	PROCAMPO continues to provide direct payments on a simple per hectare basis, while the Subprogram of Direct Supports to Target Income provides countercyclical assistance to grain and oilseed producers. Marketing supports geared for commercial producers continue under The guise of the Program of Direct Supports to the Producer through Marketable Surpluses.	The new Canadian Agricultural Income Stabilization (CAIS) program integrates income stabilization and disaster protection. It replaces an earlier subsidized savings program for producers, as well as a previous ad hoc program of emergency assistance.
Conservation	Almost all programs are Expanded. Land retirement through the Conservation Reserve Program remains the primary conservation program	Secretariat of the Environment and Natural Resources (SEMARNAT), which is separate from the agricultural secretariat, operates other conservation programs.	APF intends to finance voluntary farm environmental plans.
Rural development	Funding provided for planning and coordination between rural areas and officials, addressing backlog of applications for water and wastewater programs, and several new programs.	Emergency spending and credit allocations bolster ongoing efforts to reduce rural poverty. Alianza Contigo continues efforts to boost agricultural productivity.	APF plans to offer producers a broad range of services (training, consulting, marketing information, and networking). Science and innovation efforts require further planning.
Agricultural credit	Rules of Farm Service Agency are relaxed to expand eligibility and streamline program delivery.	FIRA implements new services and financial strategies.	---
Nutrition	Food Stamp and commodity distribution programs are reauthorized.	Rural development efforts include nutritional initiatives; strong focus on the less fortunate and marginalized communities.	Nutrition falls within the jurisdiction of Health Canada a cabinet ministry.
International trade	All trade programs reauthorized. New programs concern international food aid for education, trade barriers, and online help.	Policies promise more vigorous enforcement of trade-remedy laws and request consultation regarding NAFTA's provisions for corn and beans.	Key element of Canada's agricultural strategy is improving market access, even though trade is not explicitly one of the APF's pillars.

Source: Zahniser etal 2005.

3.3. Asian Countries Agricultural Policies

The successful Asian State Green revolution model focuses more on seed and technologies to increase production. The basic philosophy behind the seed laws of Asian countries is to regulate the seed market and to ensure the availability of 'good quality' seeds. The changes in these seed laws are being introduced firstly, to bring harmony between them and seed laws of other countries of the world and secondly, to ensure that the seed markets are open to big businesses. The seed laws of 13 Asian countries have been outlined in

Table 4 along with the reforms and implications. The shift in paradigm and liberalization of seed policies towards market access and privatization are also outlined in the table. The seed laws of all the Asian countries require that the notified varieties must be regulated and certified. The seed laws and policies, in general, encourage participation of the private sector in the seed market. The amendments in the seed laws are offering several incentives to the local seed companies and are providing a better market access to the foreign seed companies.

Table 4. *The seed laws of Asian countries, reforms and Implications.*

Sl No.	Country	Seed Laws and reforms	Implications/shift in paradigm
1	India	The Seed Act of 1966, which only regulated notified varieties, is proposed to be replaced by the Seed Bill, 2004; according to this Bill all seeds for sale must be registered on value for cultivation use (VCU) criteria. Certification is optional. GM varieties may be registered subject to environmental clearance but there is a ban on Terminator GMOs.	Registration of seeds for sale obligatory. The new law (2004) benefits the private seed sector.
2	China	Under the Seed Law of 2000; all the commercial seed production has to be registered and certified for sale. Also the State asserts sovereignty over seed resources. The seed law was modified on 28 August 2004; it now provides better market access to foreign seed companies in China.	All commercial seed production has to be registered and certified. The new law of 2004 provides better market access to foreign seed companies in China.
3	Afghanistan	The law was finalized by the Afghan Ministry of Agriculture, Animal Husbandry and Food. The government has been asked by FAO & ICARDA to set up a system for Seed Certification, Seed Testing, and Plant Quarantine in addition to setting of standards for seed quality. According to the ICARDA draft law, for the formal sector, the registration and certification are mandatory for all crops. However seeds from the informal sector are exempt, as long as they are not sold.	Registration and certification are mandatory for all crops. Seeds from the informal sector exempt as long as they are not sold.
4	Bangladesh	Bangladesh's first seed law was passed in 1977. Like India's existing law only the varieties notified by government are subject to regulation. Five notified crops (rice, wheat, sugarcane, potato and jute) were mainly handled by public institutions. Since an "Agriculture Sector Review" by FAO, UNDP, DANIDA and World Bank, greater participation of the private sector is planned. Under the Structural Adjustment Programs, the agricultural input markets were substantially liberalized. By the 1997 Amendment in the Act and the 1998 Seed Rules, the private sector can import and market any non-notified seeds, while seeds of notified crops may be brought in for trials, tested for suitability and then multiplied and marketed.	Only varieties notified by the government are subject to regulation. By the 1997 Seed Act and 1998 Seed Rules, the private sector can import and market any non- notified seeds.
5	Bhutan	Under the Seeds Act of Bhutan 2000, the Royal Government of Bhutan regulates the seeds of notified kinds and varieties and certification is optional. The system is voluntary and there is no DUS criterion.	Government regulates the seeds of notified kinds and varieties. The system is voluntary and there is no DUS criterion.
6	Indonesia	There is a Plant Cultivation Systems Act of 1992 under which a Government Regulation on Plant Seed Management was passed in 1995. It says that farmers' varieties do not fall under the regulation (these varieties are considered 'natural varieties' and as such they are not controlled by the government).	Government regulates plant seeds. Farmers' varieties do not fall under the regulation.
7	Iran	In 2003 the Government passed the Plant Varieties Registration, Control & Certification of Seeds & Seedlings Act which deals with both plant variety protection and seed certification. Non-improved and wild plant genetic resources are national resources, which can only be patented by the public sector in the name of the Government of Iran; while the private sector may patent "improved" varieties. Commercial seed production requires prior approval from the Seed & Seedling Registration & Certification Research Institute. "Non-improved" varieties (which would essentially be farmers' seeds) also need to be registered, in the name of the State and at no cost. There are no other express exemptions for farmers. Also, the law authorizes the government to attain membership of international institutes such as ISTA and UPOV.	In 2003 the government passed the Plant Varieties Registration, Control & Certification of Seeds & Seedlings Act which deals with both plant variety protection and seed certification. Seed laws and policies are encouraging private participation.
8	Kyrgyzstan	As in other Commonwealth of Independent States new seed laws are in the process of being drafted often with foreign-aid and assistance. For example, the Regulation on certification of cereals seeds in Kyrgyz Republic, 2002 was helped through by USDA (with funding from USAID) and the FAO who implemented a Technical Cooperation Programme project on Seed Legislation and Plant Variety Protection.	Regulation on certification of cereal seeds. New seed laws are in the process.
9	Nepal	The Seeds Act of 1988 & Seed Rules, 1996 deal with the registration and release of 153 varieties of plants. The government plans to introduce require minimum procedures for the barter, sale and exchange of seeds of specific varieties and species, just like in Pakistan. Otherwise, people are free to do what they want. Amendments to the seed law are under discussion.	The Seeds Act of 1988 & Seed Rules, 1996 deal with the registration and release of 153 varieties of plants. State intervention is minimum and people are free to do what they like.
10	Pakistan	Under the Seeds Act of 1976, notified varieties of crops have to be registered and their sale, exchange & barter are subject to regulation. For all other varieties certification is optional. Over 350 crop varieties have been registered. The seed law is currently under revision.	As per 1976 seed acts notified varieties registered and regulated.
11	Philippines	Republic Act No. 7308 Seed Industry Development Act, 1992 was enacted to encourage the development of the domestic seed industry. Farmers can exchange and sell their varieties without certification. The Republic Act No.7607, Magna Carta of Small	The High-Value Crops Development Act of 1995 encourages farmers to cultivate non-traditional crops for which it gives

		Farmers, defines "good seeds" as "seeds that are the progeny of certified seeds. The High-Value Crops Development Act of 1995 encourages farmers to cultivate non-traditional crops for which it gives several incentives, including low-cost credit, tax exemptions and market linkages. The recommended (similar to 'notified' in South Asian countries) varieties must be registered and certified.	several incentives including low-cost credit, tax exemptions and market linkages. The recommended (similar to 'notified' in South Asian countries) varieties must be registered and certified.
12	Sri Lanka	The Seed Act of 2003 requires that anyone "causing a seed to be placed in the market in Sri Lanka" has to be registered with the Director of Seed Certification in the Department of Agriculture. Any locally produced seed has to conform to the rules of production of certified seeds before its description and sale as "certified seeds. The FAO's post-tsunami rehabilitation project focuses on certified seed production and up gradation of seed testing and certification procedures.	The 2003 Seed Act requires that anyone "causing a seed to be placed in the market " has to be registered , if the farmer wishes to sell seed in the open market, he has to produce and sell certified seeds.
13	Thailand	The Plant Act, 1992 regulates notified varieties through a licensing system for "controlled seeds". All other varieties are free from government control.	Regulates the notified varieties through a licensing system and all other varieties are free from government Control.

Source: Dastagiri, 2008.

3.4. Latin Americas Agricultural Policies

The Latin American Agricultural policies takeover of food and farming by transnational corporations presented in Table 5. In the 1990s, the continent was confronted with a new twist to the Green Revolution model, with the introduction of genetically modified (GM) crops. The GM Revolution extends the logic of the Green Revolution from controlling the inputs (seeds and chemicals) to controlling the whole chain of agro-industrial activities from seed to supermarket packaging. GMOs sneak ahead of regulation Argentina has allowed the most extensive introduction of transgenic crops via its National Advisory Commission for Agricultural Biotechnology (CONABIA). Similar agencies have been set up in Ecuador, Mexico, Brazil, Uruguay, Chile, Bolivia and Colombia. Most of them have been more involved in matters regarding the promotion of the new technologies than with their regulation.

Table 5. *Latin America Agricultural Policies led by Transnational Corporations.*

Country	Regulatory Body	Seed Industry Representatives	Institutes Promoting Agricultural Science and Technology	State of Legislation Governing GMOs	Dominant companies
Argentina	National Advisory Commission for Agricultural Biotechnology (CONABIA)	Argentine Seed ProducersÂ' Association	National Institute for Agricultural Technologies (CONICET) www.inta .gov.ar	Decrees emanating from sub-ministerial level. No specific legislation.	Monsanto Dekalb Cargill Nidera Don Mario
Bolivia	Biosafety Commission and National Seeds Committee	National Association of Oil Seed Producers and Wheat Growers (ANAPO)	Bolivian Institute of Agricultural Technology (IBTA)	National Biosafety Law with implementation problems.	SEMEXA Aventis
Brazil	CTNBio	Brazilian Association of Seed Producers	Brazilian Enterprise For Agricultural Research (EMBRAPA) www.embrapa.br	Biosafety Law. Includes a section on environmental impacts.	Monsanto Agroceres Cargill Braskalb Novartis PioneerÂ +
Colombia	CTN	Colombian Association of Seed Producers	Colombian Corporation of Agricultural Research (CORPOICA) www.corpoica.org.co	---	---
Chile	CALT	National Association of Seed Producers	Agricultural Research Institute (INIA) www.inia.cl	Decree	Pioneer Cargill Agrotuniche Novartis ANASACÂ +
Ecuador	National Biosafety Commission	Ecuadorian Association of Seeds (ECUASEM)	Autonomous National Institute of Agricultural Research (INIAP) www.ecuanex.net.ec/iniap/	The highest level: National Constitution, Art. 89, In. 3, regulates and recognizes the Â"precautionary principleÂ"	SENACA AGRIPAC and Others

México	CIBIOGEM	Mexican Association of Seed Producers (AMSAC)	National Institute for Forestry, Agricultural and Livestock Research (INIFAP) www.inifap.conacyt.mx/	None. Only a general law on seeds.	Monsanto Cimmyt SVS Mexicana Pioneer Aventis Calgene CIICA +
Uruguay	CE RV Commission RV GM	National Association of Seed Producers (ANAPROSE)	National Institute for Agricultural Research (INIA) www.inifap.conacyt.mx/	Decree	Pioneer Monsanto Novartis Nidera Syngenta Don Mario

Source: Walter pengue, 2004.

3.5. Sub Saharan Africa Agricultural Policies

The South Africa Agricultural Policies with Donor agency narratives with regards to the role of the state in agriculture are presented in Table 6. The results show that DFID's most recent agriculture policy strategy places agriculture 'at the heart' of poverty reduction efforts and in achieving the MDGs. OECD stress the need for reframing public sector intervention, exploring synergies between public, private and NGO sectors and ensuring greater intervention of the poor in policy design and implementation. The USAID strategy – in contrast to the two discussed above – seems to be centered firmly on a business and market reform led approach. The World Bank's agenda for agriculture reiterates the importance of agricultural growth for poverty reduction and in meeting the MDGs.

Table 6. *The Sub Saharan Africa Agricultural Policies with Donor agency narratives with regards to the role of the state in agriculture.*

Issues	**DFID** **Growth and poverty reduction the role of agriculture**	**World Bank** **Agricultural growth for the poor: an agenda for Development**	**OECD** **Enabling pro-poor growth through agriculture**	**USAID** **USAID agriculture strategy: linking producers to markets**
1. State vs. market	'Proactive role' for the government in agriculture in the poorest countries in earliest stages of development. Government and markets are complements rather than substitutes. Role for the state in creating markets where they are missing. Targeted and coordinated public spending with priority to public goods that support private investment.	Governments should act as facilitators of private sector development and not any more as active participants in production, processing and trade. The public sector is no longer the main driver of development. It must work in partnership with private sector, NGOs, civil society and international donor and finance organisations.	Institutional support by the state has been discredited. But the introduction of private sector institutions to play more central roles in agriculture only partially successful. Need to develop solutions which exploit the best of the public and private sectors, including the NGO sector.	Don't address the debate directly although stressing the need to create enabling conditions for private sector development throughout.
2.Infrastructure development	Strong case for the state to invest heavily in infrastructures, particularly roads and irrigation. Investment in infrastructures using combination of public and private funds.	Investments in agricultural research, education and rural infrastructures are often the most effective in promoting agricultural growth and reducing poverty.	Need for public investment in roads and transport services and reverse declining trend in government and donor investment.	---
3. Agricultural technology and research	Need for an effective system of publicly funded agricultural research. Build on innovations that involve the public and the private sector. Important role for NGOs In making technology available to the poor.	----	Governments should reinvigorate agricultural research infrastructure investing in research. Involvement of private sector and civil society organisations in technology development and dissemination.	Expand public-private partnerships and networks.
4. Regulation and property rights	Government should introduce the necessary regulations to make markets function properly. Governments need to match legal requirements with administrative capacity – with regards to land titling common property .	The development of private markets depends on public sector provision of an effective and streamlined regulatory environment.	Establish stable and supportive regulatory framework. Improve functioning of land markets and establish more secure access to land.	---

5. Financial services	Government subsidy and guarantees may be justified in circumstances where there is shortage of seasonal credit, in order to build the capacity of rural and agricultural finance providers.	The priority for public policy is to create the conditions for financial institutions and markets to develop, rather than provide credit directly for agriculture.	Develop financial services for agricultural producers through both public and private sector resources.	----
6.Input and output markets	In the immediate term, governments may need to act to protect farmers from price volatility in thin markets. In Africa need overcome market failures in input and output markets including through use of guarantees and targeted subsidies. The provision of subsidies should be a temporary measure focusing on removing barriers to private sector participation in markets.	Policies to liberalise and privatise market functions must be carefully phased and must include institutional mechanisms designed to keep markets competitive, provide support services, facilitate private investment and the provision of private goods, and ensure that markets remain free of political interference.	Competitiveness and potential growth of agriculture has been constrained by inappropriate and inefficient interventions in input and output markets. Policies needed to liberalise trade, reform markets and exploit synergies of both public and private sectors.	Open markets and private sector development.
7. Social protection	Provision of free agricultural inputs is problematic – Malawi experience – distorts markets. Cash transfers as a promising solution.	---	Introduction of new instruments such as weather-based crop insurance and price hedging, buffer stocks and technologies. Personal insurance, cash transfers, saving and investment schemes and promotion of non-farm employment opportunities.	---
8. Governance structures	Institutional reforms, including decentralisation, make governments more receptive to poor people's voices. Need to strengthen public sector institutions so that they can deliver important function to support agricultural development.	Agricultural issues now involve multiple ministries, from environment to trade and health. Need to provide support across these ministries and their counterpart departments in donor and development banks.	Decentralised governance structures and service delivery with greater involvement of the poor in policy design and implementtation. Dialogue with private sector and creation of new public-private partnerships.	---
9.Public spending in agriculture	Direct public spending where it will have the greatest impact on agricultural growth and poverty reduction.	Reduction in the share of public spending in agriculture is consistent with agriculture structural transformation. Efficient use of available funds more important than level of spending.	Carefully targeted public expenditure in improving infrastructures and transport services. Invest in research that addresses the needs of the poorer and more vulnerable producers.	----

Source: Cabral L and Scoones (2006)

3.6. Government policy measures responses to higher food prices in the World

Policy measures taken by governments to reduce the impact of higher food prices in Table 7. Along with number of other countries, the seven emerging economies made various policy interventions in response to higher food prices. These different measures in terms of their orientation: whether policies are directly orientated to affect consumers, producers or trade. The most common policy response taken by the emerging economies – and also worldwide – has been to reduce import tariffs on food products. The next most common response has been to impose export barriers. The measures imposed by India, Russia and Ukraine were particularly significant given the potential quantities involved. Another common response was to release government held stocks, particularly of grains, on to the domestic market to ensure supply and reduce upward price pressure. Another response has been to stimulate domestic production by raising minimum prices and expanding input subsidies. Retail price controls have been introduced in China, Russia and Ukraine. China and South Africa made changes to their biofuel policies to reduce pressure on food security. Chile

and South Africa provided additional direct transfers to those most vulnerable to the effect of higher food prices: a cash-based transfer in Chile and the provision of food in South Africa.

Table 7. *Policy Measures taken by governments to reduce the impact of higher food prices.*

	Consumer orientated					**Producer orientated**		**Trade orientated**		
	Macro-economic	**Social**	**Market**			**Production support**	**Market management**	**Import**	**Export**	
	Interest and exchange rates	Food subsidies and others	Price controls and taxes	Release stocks	Food procurement and others	Producer credit and other	Minimum producer prices and other	Import tariffs and other	Quantitative export controls	Export price controls and tax measures
Brazil	Increased interest rates	---	Lowered the excise tax on petrol and diesel	Released stocks of beans, maize and wheat	Increased funds to raise safety stocks	Increased access to credit and expanded extension services	Increased minimum prices for 2008/09 crop season	Reduced tariffs on wheat, sardines, palm kernel oil and some fertilisers.	---	---
Chile	Increased interest rates	One-off Cash bonus for the 40% poorest	---	---	---	---	---	---	---	---
China	Allowed the CNY to appreciate	---	Price control on cooking oil, pork, eggs, instant noodles, milk, grains.	Released stocks of grain	Stopped approval for any new grain-based biofuel processing plant	Increased subsidies for the purchase of farm machinery, fuels, fertilisers & HYV seeds.	Increased minimum purchase prices for wheat and rice	Reduced tariffs for pigmeat, cod fish, infant food, soybean and peanut meal.	Imposed export licences on grains, soybean and flour	Reinforced by provisional export taxes on grains, soybeans, flour and fertilisers
India	Increased interest rates	Increased food subsidies	Administratively fixed prices of key food products for public distribution kept unchanged.	Efforts to secure sufficient supplies of grain for buffer stocks	---	Increased input subsidies particularly for fertilisers	Increased minimum prices and banned futures trading on a range of agricultural products	Removed tariffs on wheat, rice, maize and pulses	Export ban on wheat, corn, pulses and non-Basmati Rice	Introduced minimum export price and duty on basmati rice
Russia	Increased interest rates	---	Price freeze on wheat and rye bread, milk and fermented milk, sun flower oil and eggs;	Released stocks of grain	---	Fuel subsidies to mitigate higher energy prices; subsidies for pigmeat and poultry	---	Reduced tariffs on milk and milk products, cheese, some vegetable oil and vegetables	temporary ban on exports of wheat to Belarus and Kazakhstan	Introduced export taxes on grain

South Africa	---	Increased spending on the food package programme	---	---	Lowered biofuel target level in liquid fuel from 4% to 2.5%	---	---	Removed tariffs on maize if the world price is > USD 110 for more than two weeks	---	---
Ukraine	---	---	Mark-up limits on flour and retail price limits on breads,	Released stocks of grain, flour, sugar and meat	---	---		Granted preference to state trading enterprises	Export quotas for grains and oilseeds	---

Source: OECD Secretariat, 2008. The table structure is based on that developed by the FAO Global Information and Early Warning System (GIEWS) on food and agriculture.

3.7. Food Policy Actions and Events in 2011 in the World

The food policy actions and events in 2011 in the world are highlighted in Table 8. First, the good news: after many years of neglect, agriculture and food security are back on the development and political agendas. Both China and India continued to expand their spending on food security and agricultural production. Some 20 African countries have adopted national agricultural and food security investment plans in which they will devote 10 per cent of their national budget to agriculture to achieve agricultural growth of 6 per cent a year. The US Agency for International Development (USAID) moved forward with its Feed the Future Initiative, begun in 2010, and the World Bank Group maintained its recent increased annual commitments to agriculture and related sectors at about US$6 billion. The Consultative Group on International Agricultural Research (CGIAR)—a global partnership for sustainable development, of which IFPRI is a part—initiated an array of large, innovative research programs in 2011. And the Bill & Melinda Gates Foundation refreshed its agriculture strategy with a strong focus on agricultural development in Sub-Saharan Africa and South Asia. More broadly, agriculture was increasingly seen as part of a larger context.

Table 8. *Food policy actions and events in 2011 in the world.*

January 28	WORLD ECONOMIC FORUM ON AGRICULTURE	A "New Vision for Agriculture" is presented at the World Economic Forum in Switzerland, promoting market-based solutions to accelerate sustainable agricultural growth.
January 29	CHINA NO.1 DOCUMENT	China's No. 1 Document focuses for the eighth consecutive year on water conservation and water infrastructure, due to the previous year's droughts and floods.
February 10-12	IFPRI NUTRITION/HEALTH CONFERENCE	IFPRI-organized conference, focus on "Leveraging Agriculture for Improving Nutrition and Health," in New Delhi, India.
May 24-25	AFRICA/INDIA FORUM SUMMIT	At the Africa–India Forum Summit in Addis Abba, Ethiopia, "Enhancing Partnership, Shared Vision," leaders release a framework to reinforce cooperation between African countries and India.
June 22-23	G20 AGRICULTURE MINISTERS MEET	The first-ever meeting of the G20 agriculture ministers, in Paris, results a proposal to tackle food price volatility and strengthen food security.
July 1	RUSSIA LIFTS EXPORT BAN ON GRAIN	Russia removes grain export bans put in place the previous year after wildfires destroyed a significant amount of the annual harvest.
July 20	UN DECLARES SOMALIA FAMINE	The United Nations announces that the drought in the Horn of Africa has led to outright famine in areas of Somalia.
September 19-20	UN FOCUSES ON NON-COMMUNICABLE DISEASES	The first-ever United Nations General Assembly on the prevention and control of non-communicable diseases declares the need for a whole-government approach that includes the agricultural sector.
September 19-20	UN ON LAND-DEGRADATION	The United Nations General Assembly calls for building a land-degradation-neutral world, a target reflecting the green economy theme of the Rio+20 UN Conference on Sustainable Development.
October 7	ASEAN RICE RESERVE	ASEAN (Association of Southeast Nations) Plus Three ministers endorse the establishment of a rice emergency reserve scheme.
October 31	FOOD/NUTRITION SECURITY IN AFRICA	Africa Food and Nutrition Security Day takes place for the second time and examines "Investing in Intra-Africa Trade for Food and Nutrition Security."
November 16-18	BONN 2011 CONFERENCE LOOKS AT FOOD SECURITY	The German government hosts the Bonn 2011 Conference on water, energy, and food security links in preparation for the Rio +20 UN Conference on Sustainable Development.

November 28 – December 9	UN: CLIMATE CHANGE AGREEMENT	At the United Nations Climate Change Conference in Durban, South Africa, the attendees decide to adopt a universal legal agreement on climate change before 2015.
December 22	NATIONAL FOOD SECURITY BILL IN INDIA	The Indian government introduces the National Food Security Bill in parliament, shifting to a rights-based approach to food security.

Source: IFPRI Global food policy report-2011.

4. Conclusions

Continent-wide policy can safeguard each country's independence. World as a whole the pressures on agriculture to produce much less than indicated projections for the period to 2050 because of deceleration population growth. The basic changes in Europe models concerning the transformation from supply driven models of traditional agriculture to the concept of modern agriculture focusing on demand-driven types of market relations. The North American Model, United States, Mexico, and Canada have each made significant changes to their agricultural policies over the past several years. In the area of income supports, each country has instituted a countercyclical program that provides additional assistance to producers during downturns in commodity prices, and each continues to decouple key support programs from production decisions. The Latin America continent was confronted with a new twist to the Green Revolution model, with the introduction of genetically modified (GM) crops and run by transnational corporations. In Africa, agriculture runs by the significance of aid provided by donors. The successful Asian State Green revolution model focuses more on seed and technologies to increase production. The most common policy response taken by the emerging economies – and also worldwide – has been to reduce or suspend import tariffs on food products. The year 2011 highlighted after many years of neglect, agriculture and food security are back on the development and political agendas. Bill & Melinda Gates Foundation refreshed its agriculture strategy with a strong focus on agricultural development in Sub- Saharan Africa and South Asia. The study suggests to focus future policies on agriculture as a global agenda and global efforts.

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