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**Working Paper**

## Inputs for Philippine Hosting of APEC 2015: Food Security

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## Inputs for Philippine Hosting of APEC 2015: Food Security

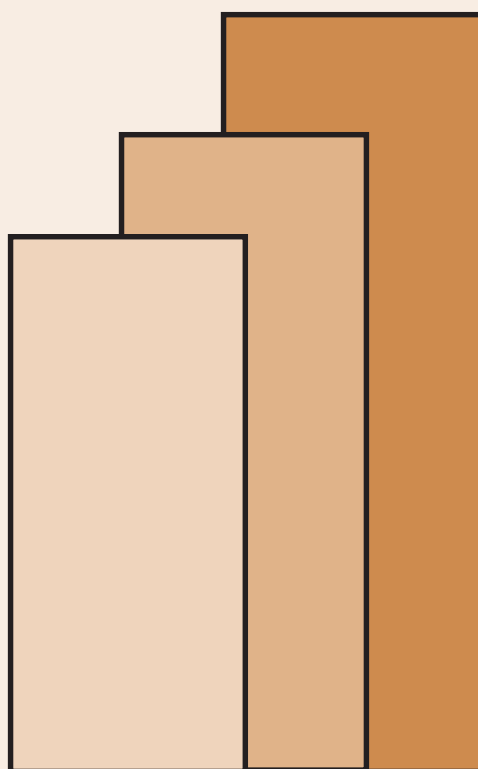
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# Inputs for Philippine Hosting of APEC 2015: Food Security<sup>1</sup>

**Dr. Roehlano Briones, Ivory Myka Galang and Dr. Danilo Israel**



Philippine Institute for Development Stud

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<sup>1</sup>This paper is an output of the APEC 2015 Research Project commissioned by the Department of Foreign Affairs. The main objective of the project is to provide the analytical framework that will form part of the basis for the substantive priorities the Philippines will push for as APEC host economy in 2015. The project's main output is a set of policy studies with recommendations that can serve APEC 2015 purposes and can be used as inputs to the Philippine government's future development planning, strategizing, and visioning exercise in a post-2015 scenario.

## INPUTS FOR PHILIPPINE HOSTING OF APEC 2015: FOOD SECURITY

Roehlano Briones  
Ivory Myka Galang  
Danilo Israel

### Abstract

Initiatives toward the attainment of global food security have been done not just unilaterally but also regionally and globally. Among the platforms which have made great efforts in this aspect is the Asia-Pacific Economic Cooperation (APEC). In 2015, the Philippines will host the next APEC Summit. Food security shall be high on the agenda of the Summit and of various Meetings. To provide advice to the Philippine Government on the possible Philippine position on food security during its hosting, this paper recommends that the Philippines should adopt agribusiness development based on sustainable food supply chains as its priority advocacy, while continuing to promote elements of food security as expressed in the APEC Road Map. This "branding" integrates a strong position on Blue Economy with the agribusiness development and road map thrusts of DTI and DA.

**Keywords:** *Food security, Blue Economy, agribusiness development, and sustainable food supply chains*

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## **EXECUTIVE SUMMARY**

The recent food price hikes have led governments around the world to refocus their priorities on agriculture, particularly in addressing food security issues. The plateauing capacity to grow food in the next decades as foreseen by some scientists, as well as the continued threats of climate change, contributes to the anxiety of many countries to have a more abundant food supply.

Initiatives toward the attainment of global food security have been done not just unilaterally but also regionally and globally. Among the platforms which have made great efforts in this aspect is the Asia-Pacific Economic Cooperation (APEC). In 2015, the Philippines will host the next APEC Summit. Food security shall be high on the agenda of the Summit and of various Meetings. Food security shall be high on the agenda of the Summit and of various Meetings. This paper seeks to provide advice to the Philippine Government on the possible Philippine position on food security during its hosting.

Discussions on food security in APEC meetings have reached the Ministerial level twice. In the First APEC Ministerial Meeting on Food Security in Niigata, Japan in 2010, APEC economies agreed to collectively work on two shared goals, which are Sustainable Development of the Agricultural Sector, and Facilitation of Investment, Trade and Markets. The Second Ministerial Meeting was held in Kazan on May 2012, and it reaffirmed the objectives set under the Niigata Declaration and added emphasis on five key issues: i.) increase agricultural production and productivity, ii.) facilitate trade and development of food markets, iii.) enhance food safety and quality, iv.) improve access of socially vulnerable groups to food, and v.) ensure a sustainable ecosystem-based management and combat illegal, unreported and unregulated (IUU) fishing and the associated trading activities.

The growth experienced by the Philippine economy in recent years has been one of the fastest among Asian countries. However, this notable achievement has not yet trickled down to the poor, especially the agriculture-dependent households. The agriculture sector's share in the country's Gross Domestic Product (GDP) remained at 12 percent in 2010. About one-third of the labor force depends on that relatively small share in GDP. This has serious implications in the poverty incidence in rural areas. In addition, the worsening poverty incidence in the country has resulted in hunger and malnutrition cases.

To achieve greater food production and productivity, one promising strategy is to develop biotechnology. The country has a long history of biotechnology activities, such as plant and animal varietal improvements, biosafety, disease and pest management, among others. However, although the country was among the first to develop its biotechnology regulatory framework in Asia, the civil society is not yet ready to embrace science-based improvements in the agriculture sector, especially those that employ genetic engineering. If the country is to promote biotechnology initiatives, this would entail huge public investments, which has been the problem of the agriculture research and development sector. In addition, standards and regulations in relation to product safety and quality of the country are adequate but the implementation of these is quite problematic because of the overlapping functions of some government agencies.

The second possible option would be trade facilitation. Since 1980s, the Philippines has embraced the concept of liberalization in its trading activities. Export taxes and government trade monopolies in the agriculture sector (except for NFA) were abolished. When the Philippines joined the World Trade Organization (WTO) in 1994, trade barriers such as quantitative restrictions (except for rice) and ceiling rates on tariff were further reduced and/or removed.

The Philippine government has implemented trade facilitation reforms such as customs modernization, simplified export procedures through the One-Stop Shop Export Documentation Center (OSED), National Single Window, automation in economic zones, among others. However, despite these reforms, the government continues to adopt trade-restricting and investment-restricting policies in pursuit of food self-sufficiency based on protectionism. Among the products under the sensitive list are rice and sugar.

The third option would be promotion of sustainable food supply chains. This is well-supported by key government agencies. Furthermore, this has been a priority strategy for inclusive growth of the country. A key aspect that must be considered is sustainability of these food supply chains. A sustainable food supply chain must have a steady resource base, must be financially viable, and must be resilient to shocks or threats (e.g. climate change, growing population, and others). The elements of this agenda cut across the components of the APEC's Road Map for Food Security by 2020.

A major application of a sustainable food supply chain is in the fishery sector. This coincides with the Blue Economy Agenda. The Philippines can aggressively champion the Blue Economy approach as an innovative way of managing the national and APEC-wide fisheries resources and coastal and oceanic waters. The Blue Economy stands for a way of designing business by using the resources available in cascading systems, where the waste of one product becomes the input to create a new cash flow. It aims at creating jobs, building up social capital and rising income while saving the environment.

In fisheries, Blue Economy is a term used to emphasize the sustainable utilization of marine resources, spanning fisheries, energy and international trade, among other aspects. It is also seen as showing how the Green Economy approach to sustainable development is to be applied in the marine environment and the ocean sector.

Consequently, this paper recommends that the Philippine position on food security adopt agribusiness development based on sustainable food supply chains as its priority advocacy, while continuing to promote elements of food security as expressed in the APEC Road Map. This "branding" integrates a strong position on Blue Economy with the agribusiness development and road map thrusts of DTI and DA. The Philippines can continue to highlight the looming threat of climate change, the need to initiate and sustain growth of incomes of smallholders within resilient value chains, ensure farm to fork integrity of supply chains to ensure food security for the consumer.



## Introduction

The recent food price hikes have led governments around the world to refocus their priorities on agriculture, particularly in addressing food security issues. The plateauing capacity to grow food in the next decades as foreseen by some scientists, as well as the continued threats of climate change, contributes to the anxiety of many countries to have a more abundant food supply.

According to the World Food Summit (1996), food security is found “when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food which meets their dietary needs and food preferences for an active and healthy lifestyle.”<sup>2</sup> Given this definition, food security can be characterized into four dimensions, namely, availability, accessibility, utilization, and stability. To satisfy all of these dimensions, an entire food system that is robust to threats (e.g. climate change, rising population, and continuing poverty) must be put in place.

Initiatives toward the attainment of global food security have been done not just unilaterally but also regionally and globally. Among the platforms which have made great efforts in this aspect is the Asia-Pacific Economic Cooperation (APEC).

The Philippines will host the next APEC Summit on 2015. Food security shall be high on the agenda of the Summit and of various Meetings. This paper seeks to provide advice to the Philippine Government on the possible Philippine position on food security during its hosting.

The rest of the paper is organized as follows: Section 2 discusses some of the initiatives done by APEC in ensuring a more secure regional food supply. Section 3 contextualizes the food security issue in the Philippine setting by discussing the current state of Philippine agriculture and fisheries and some policies related to food security. Section 4 provides assessment on the current policies and discussion on the impact of climate change in food production. Section 5 presents the possible options for the Philippines’ position in APEC for the 2015 Summit. Section 6 concludes.

## Food security in APEC

### *Agriculture and food security*

Discussions on food security in APEC meetings have reached the Ministerial level twice. In the First APEC Ministerial Meeting on Food Security in Niigata, Japan in 2010, APEC economies agreed to collectively work on two shared goals, which are Sustainable Development of the Agricultural Sector, and Facilitation of Investment, Trade and Markets. The elements of the first goal toward food security are expansion of food supply capacity, disaster preparedness, development of rural communities, and addressing climate change and natural resource management challenges. The second goal includes agricultural investment, facilitation of trade in food and agricultural products, firming up of agricultural markets, improved agribusiness, and advancement of food safety practices. The Meeting recognized the contributions of APEC Business Advisory Council (ABAC) in proposing the establishment of

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<sup>2</sup> Food and Agriculture Organization. 2008. An introduction to the basic concepts of food security.

an APEC Food System (AFS) in 1999, as well as in coming up with a framework called “Strategic Framework for Food Security in APEC” in 2009 that served as a guide for APEC economies’ efforts toward a more sustainable supply of safe and healthy food. In addition, the Meeting instructed Senior Officials to integrate ABAC into the region’s overall efforts toward food security attainment. In the said Meeting, an Action Plan was proposed to be implemented by individual economies. Senior Officials were tasked to monitor and report the progress of implementation to the APEC Ministers.

The Second Ministerial Meeting that was held in Kazan on May 2012 reaffirmed the objectives set under the Niigata Declaration and added emphasis on five key issues: i.) increase agricultural production and productivity, ii.) facilitate trade and development of food markets, iii.) enhance food safety and quality, iv.) improve access of socially vulnerable groups to food, and v.) ensure a sustainable ecosystem-based management and combat illegal, unreported and unregulated (IUU) fishing and the associated trading activities.

The first key issue, which is on increasing agricultural production and productivity, is a very significant factor in attaining food security. One of the proposed approaches of the Kazan Declaration to address this one is through the development of agricultural biotechnologies.

In the run up to the Second Ministerial Meeting, Senior Officials had already agreed to create a Policy Partnership for Food Security (PPFS) in 2011. This was followed by a PPFS Management Council Meeting in 2012 held in Vladivostok, Russia where the PPFS Action Plan for 2012-2013 was proposed. The said Action Plan was discussed by APEC member countries on January 2013 at the Plenary Meeting in Jakarta, Indonesia. Four Working Groups (WGs) were established and each had a Chair/Co-Chairs: i.) Stock-take and Road Map Towards 2020 (Japan, Russia, and US); ii.) Sustainable Development of Agricultural and Fishery Sector (Indonesia); iii.) Facilitation on Investment and Infrastructure Development (Russia); and iv.) Enhancing Trade and Market (Australia)<sup>3</sup>.

After the Kazan meeting, the First PPFS Management Council Meeting was held in Singapore on April 2013. The agenda of the meeting included the ironing out of the existing plans of action of each WG, and the drafting of the agenda for the Second PPFS Plenary Meeting in Indonesia.

In the Second PPFS Plenary Meeting, in Medan, Indonesia on June 2013, the topics that were discussed include, but not limited to, the following: i.) Sharing of experiences on best practice and partnership between food companies and small holders; and ii.) reports of Working Group’s work. Also, the strategic road map was finalized. In the same Meeting, the need to formulate an operational Business Plan, which aimed to engage the private sector participation in the food security efforts of the region, was raised.

### *Fisheries*

In 1990, APEC established the Marine Resource Conservation Working Group (MRCWG) to promote initiatives to facilitate balanced and integrated domestic and regional policies and programs leading to the sustainability of the marine and coastal environments in the APEC region. The following year, APEC created the Fisheries Working Group (FWG) to achieve

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3 [http://mddb.apec.org/Documents/2013/PPFS/PPFS-MC2/13\\_ppfs\\_mc2\\_003.pdf](http://mddb.apec.org/Documents/2013/PPFS/PPFS-MC2/13_ppfs_mc2_003.pdf)

well-managed fisheries and aquaculture to yield optimal economic value and support of local communities and livelihoods.

**Seoul Oceans Declaration of 2002** - The first APEC Ocean Related Ministerial Meeting (AOMM) was held in Seoul, Republic of Korea, on 25-26 April 2002. The main outcome of the meeting was the Seoul Ocean Declaration which sets a useful future agenda for ocean and coastal conservation and sustainable management in the Asia-Pacific region.

**Bali Plan of Action** - The second APEC Ocean Related Ministerial Meeting (AOMM2) was held in Bali, Indonesia on 16-17 September 2005. This meeting produced the Bali Plan of Action which provides a framework to ensure the sustainable development of APEC's marine environments and resources to achieve sustained economic benefits from ocean resources and resilient marine-resource dependent communities.

**Paracas Declaration and Action Agenda** - The Paracas Declaration was formulated during the 3rd APEC Oceans-related Ministerial Meeting (AOMM3) in Paracas, Peru on 11 - 12 October 2010. It focused on four main areas: sustainable development and protection of the marine environment; impact of climate change on the oceans; free and open trade and investment; and the role of oceans in food security to address key oceans-related challenges.

Specifically, the Paracas Declaration stated that food security is threatened by fishing overcapacity, Illegal, Unreported and Unregulated (IUU) fishing, maritime crime and piracy, marine invasive species, climate change and other stressors. It argued that these activities must be addressed through effective measures including sustainable resource management, while processing, distribution and trade systems must be oriented in such a way as to maximize and balance these economic, social and nutritional benefits. With the Paracas Declaration, the Paracas Action Agenda was formulated which provided specific actions to be undertaken.

In 2011, the MRCWG and the FWG jointly decided to merge and form the Ocean and Fisheries Working Group (OFWG). Over the years, these groups have actively implemented projects and engaged in annual meetings and other activities focusing on marine pollution among other issues. More recently, the attention has expanded to activities such as illegal, unreported and unregulated (IUU) fishing and the sustainable development of aquaculture. The 1st OFWG Meeting was held in Kazan, Russia 24-26 May 2012. Among the outcomes of the meeting was the endorsement of its Work Plan.

In 2012, the leaders of APEC gathered in Vladivostok, Russia 2012 for the 20th APEC Economic Leaders' Meeting. This meeting produced the Vladivostok Declaration. Among others, this declaration recognized that natural resources and the ecosystems upon which they depend are important foundations for sustainable economic growth.

## **Food security in the Philippines**

### *State of Food Security*

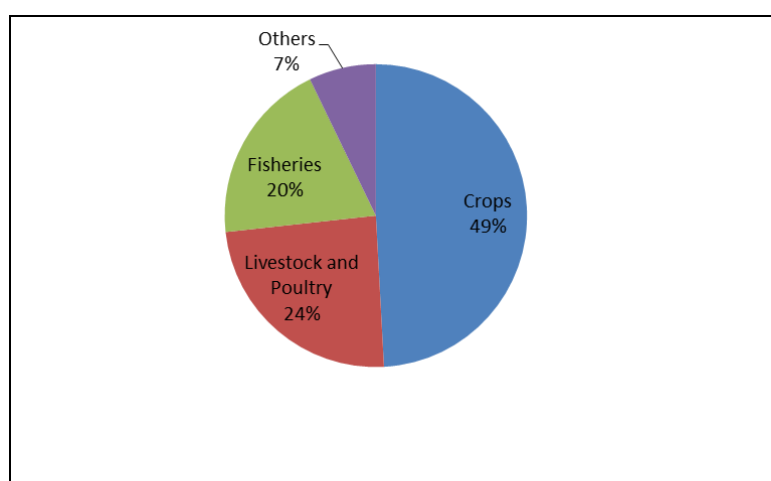
The growth experienced by the Philippine economy in recent years has been one of the fastest among Asian countries. However, this notable achievement has not yet trickled down to the poor, especially the agriculture-dependent households. The agriculture sector's share in the country's Gross Domestic Product (GDP) remained at 12 percent in 2010. About one-third of the labor force depends on that relatively small share in GDP. This has serious implications in

the poverty incidence in rural areas. Based on a study by Reyes et al (2012), poverty incidence among agriculture-dependent households was 57 percent in 2009, while that of non-agricultural households was only 17 percent.

The worsening poverty incidence in the country has resulted in hunger and malnutrition cases. For 2010 up to 2012, the average proportion of undernourished in the population was 17 percent (Global Hunger Index, 2013). Although this has substantially decreased from an “alarming” rate of 24.2 percent in early 1990s, this figure is still under the “serious” rating. In terms of stunting, the Philippines has greater prevalence of stunting among children under five years of age at 32.3 percent compared to Viet Nam’s 30.5 percent.

Within the agriculture sector, there are several subsectors that differ in contributions to the economy (refer to Figure 1). The biggest share in the gross value added (GVA) in agriculture and fisheries is still the crop subsector. The major crops are *palay*, corn, coconut, sugarcane, banana, mango, pineapple, coffee, cassava and rubber, among other crops. The second biggest share is that of the combined shares of livestock and poultry subsectors. Hog and cattle are among the major livestock products, while chicken and chicken eggs are the major poultry products. As for the fisheries sector, which accounts for a 20-percent share in the GVA, the major fishery products are from the aquaculture and municipal fisheries. Agriculture’s contribution to value added also spans elements to manufacturing and services through forward linkages (e.g. processing and storage) and backward linkages (e.g. fertilizers, and veterinary services).

**Figure 1. Average Shares in Gross Value Added in Agriculture and Fisheries (constant prices), 2010-2012**



Source: BAS

### *Policies*

**Agriculture and Fisheries Modernization.** Food security is one of the principles guiding the Agriculture and Fisheries Modernization Act (AFMA) of 1997. It was legislated to empower the different agriculture and fisheries sector to become more developed and more competitive. The main objectives of AFMA include, but not limited to, the following: i.) to modernize the agriculture and fisheries sector by developing them into technology-based industries, ii.) to increase the profit and income of small farmers, iii.) to ensure that food supply is accessible,

available, and affordable at all times, iv.) to encourage horizontal and vertical integration to make these industries more consolidated in terms of activities and functions, and v.) to encourage value-adding activities in the production of agricultural and fishery outputs.

The comprehensive plan known as Agricultural and Fisheries Modernization Plan (AFMP), which was formulated to address several issues (e.g. food security) confronting the sector, include provisions on production and marketing support services (i.e. credit, irrigation, information and marketing support service, infrastructures, and product standardization and consumer safety), research, development, and extension (RDE), and trade and fiscal incentives, among others.

**The Philippine Fisheries Code of 1998 (R.A. 8550).** The Fisheries Code provides for the development, management and conservation of fisheries resources and codifies all laws on fisheries and aquatic resources. It declares that it is the policy of the state to achieve food security as the overriding consideration in the utilization, management, development conservation and protection of fishery resources in order to provide the food needs of the population.

The Code mandates that a flexible policy towards the attainment of food security shall be adopted in response to changes in demographic trends for fish, emerging trends in the trade of fish and other aquatic products in domestic and international markets, and the law of supply and demand (Section 2, a).

It states that food security may be achieved through self-sufficiency (i.e. ensuring adequate food supplies from domestic production) through self-reliance (i.e. ensuring adequate food supplies through a combination of domestic production and importation) or through pure importation (Section 4, 45).

**CARP.** The Comprehensive Agrarian Reform Program (CARP) is the redistribution of both public and private agricultural lands to landless farmers and farm workers within a ten-year period. The legal basis of this Program is the Comprehensive Agrarian Reform Law (CARL), which was signed in 1988 under the Aquino Administration. Aside from land redistribution, the Support Services Office, which was created under CARL, was also tasked to provide support services to help the agrarian reform beneficiaries (ARBs) uplift the quality of their lives—socially and economically. Among these services are technological, marketing, and credit support. In addition, the Office provides infrastructure development, irrigation facilities, and price support, among others.<sup>4</sup> These support services are consistent with Strategy 1.3 of the Philippine Development Plan (PDP), which is about the transformation of agrarian beneficiaries (ARBs) into viable entrepreneurs, to be discussed below.

The current version of the Program known as the Comprehensive Agrarian Reform Program Extension with Reforms (CARPER) will effectively terminate new land acquisition and distribution. This means that the agrarian reform in the country is gearing up for the next phase.

**PDP: Competitive and Sustainable Agriculture and Fisheries Sector.** A more recent development plan for the agriculture and fisheries sector is the Philippine Development Plan (PDP) for 2011 to 2016. The agriculture and fisheries sector plays a significant role in the

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<sup>4</sup> <http://www.dar.gov.ph/ra-6657-what-is-carp-comprehensive-agrarian-reform-program>

attainment of the twin goals of PDP, which are inclusive growth and poverty reduction. Apart from it being the resource base of the industry and the services sectors, its contribution to employment offers great potential in improving the level of income of a huge part of the labor force.

The Plan envisions to create a “competitive, sustainable and technology-based agriculture and fisheries sector, driven by productive and progressive farmers and fisherfolk, supported by efficient value chains and well-integrated in the domestic and international markets contributing to inclusive growth and poverty reduction.” To attain this, there are three specific goals that must be met: i.) Food Security Improved and Incomes Increased; ii.) Sector Resilience to Climate Change Risks Increased; and iii.) Policy Environment and Governance Enhanced.

In pursuing food security and higher income, the Plan suggests the following strategies: i.) raise productivity and income of agriculture-dependent households through production diversification, market development, rural infrastructure development, research and development, and secured food supply, ii.) expand and improve the value chains to attract more investments and to create more employment opportunities, and iii.) transform agrarian beneficiaries (ARBs) into viable entrepreneurs.

The second goal has direct implications to the food security issue. Extreme weather disturbances (e.g. typhoons) that the country has experienced, which have been more frequent in the recent decades, have adversely affected the domestic food production. The negative impacts of climate change include damage to infrastructures, crop losses, and livestock and poultry losses, among others. The Plan proposes several strategies to address these problems, and these are some of them:

- Adopt ecosystem-based approaches, conservation efforts, and sustainable environment and natural resources-based economic activities (e.g. agri-ecotourism)
- Invest in the development of technologies that are climate change-sensitive, of infrastructures and food production systems that are climate-resilient.
- Strengthen the insurance system
- Include natural hazards and climate risk in agricultural land use plans.
- Empower the communities to build the capacity to respond to climate risks and natural hazards.
- Continue assessing the vulnerability and adaptation of food-producing areas.

**Food staples sufficiency program.** The Food Staples Sufficiency Program (FSSP) was launched by the Department of Agriculture in 2012 to achieve the main goals set under the PDP 2011-2016 for the agriculture sector—food security and increased incomes. The FSSP covers staples such as white corn, cassava, among others, but greatly focuses on rice since it is the main staple of the country.

The Agriculture Department has pursued self-sufficiency for three reasons. The first reason rests on the trust issue among countries. The proponents of FSSP believe that “countries can be held to ransom by any reason (economic, political, ideological) even in a highly globalized world.” World rice trade involves government decisions that are politically motivated at times. The second one tackles the power of major rice-producing countries over rice exportation. According to the FSSP document, 80 percent of the total rice exports is being produced by the top five exporters of rice. Being one of the world’s top rice-consuming countries in the world,

the Philippines is vulnerable to trade restrictions that the exporting countries could impose in the future for whatever purpose. The third reason rests on the nature of world rice market being “vulnerable to destabilizing speculation and panic.”<sup>5</sup>

The three main goals of the FSSP are: i.) to raise farm productivity and competitiveness, ii.) to enhance economic incentives and enabling mechanisms, and iii.) to manage food staples consumption. The proposed strategies for the first main goal focus on improving the provision of support services such as irrigation, research, development, and extension, post-harvest facilities, and high-quality seeds and fertilizer. As for the second goal, the strategies proposed include raising of domestic procurement, minimizing NFA’s role in importation and distribution, improving credit access, and expanding the coverage of crop insurance. The third set of strategies focuses on diversification of food staples and on food waste reduction.

### **BFAR Programs/Projects**

BFAR has ongoing programs and projects that promote the conservation of fisheries and aquatic resources. Among others, an important program is fisherfolk empowerment through the organization of Fisheries and Aquatic Resources Management Councils (FARMCs). Another major program is the Bantay Dagat which, among others, seeks to provide the necessary logistics such as patrol boats equipped with navigational tools to strengthen local capabilities to curb illegal fishing activities.

BFAR also has on-going livelihood programs under which it regularly provides the fisherfolk with appropriate hands-on training on various technologies in the culture of fish and other aquatic organisms. One of these technologies is aquasilviculture which is an environment-friendly culture system in mangrove areas. Still another continuing program of BFAR is offshore fisheries which seek the promotion of offshore fishing through its research and oceanographic vessel - M/V DA-BFAR.

From 2010 to the present, the specific activities of BFAR falling under the category of production support services include fish seed production and distribution, maintenance of tilapia and bangus satellite hatcheries, maintenance of mariculture parks/zones, conduct of production-related research activities and other related projects. The specific activity listed under the category of market development services is market matching and participation in agri-aqua fairs and exhibits.

From 2010 to the present, the specific activities of BFAR falling under the classification of infrastructure and post-harvest development services include mariculture parks/zones, establishment of cages for livelihood, establishment and maintenance of seaweed tissue culture laboratories, construction and improvement of municipal fish ports, distribution of postharvest equipment and machineries and other similar activities. The projects of the bureau listed under the classification of regulatory services include coastal resources management, red tide monitoring, mangrove protection, fish health management and other similar activities.

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<sup>5</sup> FSSP

### *Biotechnology and varietal improvement*

To achieve greater food production and productivity, one promising strategy is to develop biotechnology. The country has a long history of biotechnology activities, such as plant and animal varietal improvements, biosafety, disease and pest management, among others.

Aside from genetic engineering, the country pursues other areas for research and development (R&D) in the field of Science and Technology (S&T), such as nanotechnology and genomics. Both of which are under the emerging technology sector handled by the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) <sup>6</sup>.

#### **Evolution of the Philippine Biosafety System<sup>7</sup>**

In 1987, a committee composed of scientists from the University of the Philippine Los Baños (UPLB) and International Rice Research Institute (IRRI), quarantine officer of the Bureau of Plant Industry (BPI), and the Director for Crops of the Philippine Council for Agriculture, Forestry and Natural Resources and Development (PCARRD) drafted a Philippine biosafety policy after becoming aware of the imminent harm posed by exotic species entering the country, as well as of the issues in genetic engineering.

Then President Corazon Aquino issued Executive Order (EO) 430 in 1990 to establish the National Committee on Biosafety of the Philippines (NCBP), which was tasked to “formulate, review, and amend national policy on biosafety and formulate guidelines on the conduct of activities on genetic engineering.” The Committee consisted of 4 representatives from the line agencies (DENR, DOH, DA, and DOST), 4 scientists, and 2 community representatives. In 1991, the Philippine Biosafety Guidelines was released as a result of consultations with different stakeholders about the draft Philippine biosafety policy.

In 1998, the NCBP issued the “Guidelines on Planned Release of Genetically Modified Organisms (GMO) and Potentially Harmful Exotic Species (PHES)”. In 2001, the Policy Statement on Modern Biotechnology was issued by Former President Gloria Macapagal-Arroyo to emphasize the government’s role in the promotion and use of modern biotechnology. A year after, DA Administrative Order No. 8, Series of 2002 was issued to implement the “guidelines for importation and release into the environment of plants and plant products derived from the use of modern biotechnology.”

The NCBP was reorganized in 2006 based on EO 514, which established the National Biosafety Framework (NBF). The committee is composed of 5 scientists, 3 representatives (consumers, community, and industry), and 7 representatives from line agencies (DENR, DOH, DA, DOST, DFA, DTI, and DILG).

The introduction of genetically-modified corn and eggplant known as Bt corn and Bt eggplant, respectively, had different consequences. Both of these genetically modified organisms (GMOs) have been criticized for health and environmental safety issues. Bt corn was approved by the Department of Agriculture for commercialization in 2003. The Bt eggplant, however, did not attain the commercialization stage that Bt corn has achieved because of a court ruling that was released this year 2013 to halt the Bt eggplant’s confined field trials<sup>8</sup>.

6 PCIEERD Annual Reports

7 <http://biotech.da.gov.ph/>

8 <http://www.fda.gov.ph/news-and-events/76473-bcp-president-nyu-science-dean-express-disappointment-over-bt-eggplant-ruling>



In 2011, DOST, through PCIEERD, identified genomics as one of its priority programs<sup>9</sup>. Genomics is a discipline in genetics that studies the gene sequences or genetic blueprint of organisms. Such genetic information are being used in different fields like health, forensics, and agriculture<sup>10</sup>. The Philippine Genomics Roadmap for 2012 to 2018 was developed during this year<sup>11</sup>.

Some of the initiatives in genomics, which are agriculture-related, include identification of markers for bunchy top virus-resistant abaca, drought-resistant eggplant, bananas, cultured bangus, and tilapia. Marker-assisted breeding, an application of genomics, “involves the identification of desirable traits in plants at the early stage of the breeding cycle”<sup>12</sup>. In 2013, DOST, through the Philippine Genome Center (PGC), initiated research on how to identify and propagate better sugarcane varieties that would boost the sugar industry. PGC is also conducting research on DNA markers of coconuts<sup>13</sup>.

Based on the Genomics R&D Roadmap for 2012 to 2018, expected outputs include the following:

- Marker-assisted breeding for varietal improvement of economically important endemic crops and staples.
- DNA fingerprinting of biofertilizer, biopesticides, and probiotics for improvement of industrial products.
- Marker-assisted breeding for varietal improvement of economically important aquaculture resources
- Marker-assisted breeding for varietal improvement of economically important livestock resources

### *Integration of markets*

Since 1980s, the Philippines has embraced the concept of liberalization in its trading activities. Export taxes and government trade monopolies in the agriculture sector (except for NFA) were abolished. When the Philippines joined the World Trade Organization (WTO) in 1994, trade barriers such as quantitative restrictions (except for rice) and ceiling rates on tariff were further reduced and/or removed. Other international agreements that the Philippines has been engaged in are the ASEAN Free Trade Agreement, and Philippines-Japan Economic Partnership Agreement or PJEPA (Briones, 2009).

Tariff Reform Programs (TRPs), which are the restructuring of the tariff system, have been undertaken by the Philippines to significantly reduce its tariff rates. The fourth TRP, which was implemented during the early part of 2000s, targeted to set uniform tariff rates at about 5 percent<sup>14</sup>. However, some products referred to as “sensitive” agricultural commodities are

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9 <http://www.pcieerd.dost.gov.ph/index.php/news/earlier-press-releases/100-dost-sets-plans-for-genomics-research>

10 <http://www.pcieerd.dost.gov.ph/index.php/news/earlier-press-releases/100-dost-sets-plans-for-genomics-research>

11 <http://www.pcieerd.dost.gov.ph/index.php/news/134-genomics>

12 [http://dost.gov.ph/index.php?option=com\\_content&view=article&id=1295:dosts-genomics-research-to-boost-sugar-industry&catid=1:latest&Itemid=150](http://dost.gov.ph/index.php?option=com_content&view=article&id=1295:dosts-genomics-research-to-boost-sugar-industry&catid=1:latest&Itemid=150)

13 <http://newsinfo.inquirer.net/494445/new-dna-facility-can-keep-ph-scientists-at-home>

14 <http://www.tariffcommission.gov.ph/tariff1.html>

15 Briones, R. 2009. Agricultural Diversification and the Fruits and Vegetables Subsector: Policy Issues and development Constraints in the Philippines. PIDS Discussion Paper No. 2009-02. Philippine Institute for Development Studies, Makati City

exempted from tariff reduction. The sensitive products are rice, sugar, corn, among others (Briones, 2009).

**Trade facilitation.** Regional market integration is being pursued by regional organizations such as ASEAN. This integration encourages the member countries to develop their industries as stricter competition brought about by freer trade policies is anticipated. Alongside the strengthening of national industries, member countries are also expected to harmonize their policy and regulatory frameworks, which include health and safety standards in the case of food products.

**Free flow of investment.** Not all industries for services incidental to agriculture, fisheries, and forestry are open to foreign investors. There is a foreign equity limit (40%) for certain sectors or assets:

- “Culture, production, milling, processing, trading except retailing, of rice and corn and the by-products thereof”
- Operation of deep-sea commercial fishing vessels
- Lease of Agricultural and Foreshore Lands
- Land Ownership

Note: Marine (inshore) fishing is however closed to foreign participation.

### *Agribusiness*

Agribusiness involves a set of value-adding activities at the different stages of a value chain (e.g. seed supply, processing, storage, and distribution) <sup>16</sup>. This organized chain of food production activities offers great opportunities for farmers, farmer organization, farmer cooperatives, and other stakeholders to substantially increase their income and improve their welfare. Through contract growing schemes involved in agribusiness ventures, farmers are able to access quality inputs, capital, technology, technical support, and most importantly access to guaranteed markets<sup>17</sup>. Agribusiness accounts for a sizable amount of national output, exceeding by far the contribution of agriculture alone to GDP (Table 1). In general the higher a country's income, the greater the GDP contribution of agribusiness relative to agriculture.

Existing agribusiness sub-sectors include, but not limited to, the following: (Balisacan et al)

- Rice and corn milling
- Flour, cassava, and other grains
- Sugar milling and refining
- Tobacco leaf flue-curing and drying
- Manufacture of desiccated coconut
- Fish canning
- Slaughtering and meat packing

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<sup>16</sup> [http://www.neda.gov.ph/ads/mtpdp/mtpdp2004-2010/pdf/mtpdp%202004-2010%20neda\\_chapter2\\_agribusiness.pdf](http://www.neda.gov.ph/ads/mtpdp/mtpdp2004-2010/pdf/mtpdp%202004-2010%20neda_chapter2_agribusiness.pdf)  
<sup>17</sup> DAR MC 09, s2007

The main government agencies involved in agribusiness development are the Department of Agriculture (DA), the Department of Agrarian Reform (DAR), and the Department of Trade and Industry (DTI).

**Table 1. Share of agriculture and agribusiness in GDP, selected developing countries, recent years (%)**

	Agriculture	Agribusiness
Cameroon	40	17
Cote de Ivoire	28	26
Ethiopia	56	30
Ghana	44	19
Kenya	26	23
Nigeria	42	16
Indonesia	20	33
Thailand	11	43
Philippines	12	15
Agri-based countries	39	22

Source: Wilkinson and Rocha (2009); Philippines – from Balisacan et al (2011)

DTI is in the process of preparing industry Road Maps based on multi-stakeholder consultation. One of the priority areas is agribusiness. The Road Maps aim to create a more conducive business environment for investors. This is done through the streamlining of business processes, automation of transactions, and formulation of transparent policies.<sup>18</sup>

The Agribusiness and Marketing Assistance Service (AMAS) under DA has a vital role in agribusiness promotion both locally and internationally. AMAS serves as DA's official representative in key negotiations pertaining to agribusiness investments. It also does the evaluation of agribusiness proposals. Apart from being involved in the formulation of long-term plans for the agribusiness sector's competitiveness enhancement, it actively promotes agribusiness investment through different venues (e.g. investment matching and dialogue). The Department of Agriculture is also supporting the preparation of agriculture Road Maps covering elements of the agricultural value chain.

Another key supporter of agribusiness is DAR. The Department is looking to sustain the gains from land reform by focusing on three components: Land Tenure Improvement (LTI), Agrarian Justice Delivery (AJD), and Program Beneficiaries Development (PBD). In addition, the AJD serves as a guide for PBD lawyering which shall ensure that agrarian reform beneficiaries' (ARBs) right to free and informed consent is exercised, especially when entering into agribusiness agreements.<sup>19</sup>

DAR has adopted several strategies toward agribusiness development. In 1993, the Agrarian Reform Community (ARC) Development was adopted by DAR to help the CARP beneficiaries

<sup>18</sup> <http://dti.gov.ph/uploads/DownloadableForms/DTI%20Roadmap%202011-2013%20-%20Part%202.pdf>

<sup>19</sup> <http://www.dar.gov.ph/about-us/about-the-department>

to maximize the potential of the land in generating high income. It was used as a strategy to attain LTI and to provide support services to ARBs.

In 1999, DAR issued the “Agribusiness Development Program Framework for Agrarian Reform Areas.” It served as a road map for the stakeholders in ARCs. The empowerment of ARB organizations and ARC households was necessary to have successful and sustainable area-based rural enterprises. The Program aimed to enhance the skills of ARBs and/or ARCs to manage rural enterprises. This also enabled the target beneficiaries to gain access to support services. The Framework established for this Program recognized the need to differentiate interventions based on spatial dimensions (i.e. ecological, socio-political, and economic), area and crop, existing development programs. It also considered the orientation of ARCs and/or ARBs toward the agribusiness system (i.e. profitability as a rural agriculture-based enterprise). To operationalize the framework, the program interventions were the following:

- Production and marketing assistance
- Credit assistance and microfinance development
- Economic and enterprise development
- Appropriate technology and extension services

In 2007, DAR came up with a document “Harmonizing the Implementation of Agribusiness Development Programs and Initiatives in the Department” which mainly delved into the definition and options for agribusiness, program imperatives, guiding principles, the agribusiness development components (i.e. agricultural land development, social infrastructure and local capacity building, and sustainable area-based rural enterprise development), and the development process. The sustainable area-based rural enterprise development (SARED) incorporated the concept of food security. In 2009, the operational guidelines for the development of ARC Clusters were released. ARC Clusters (ARCCs) were developed to enhance ARC connectivity. Among the activities for developing the ARCCs were capacity building and federation and alliance building.

## **Assessment of food security policies and initiatives**

### *Assessment of current priorities*

Briones (2012) made some assessments on the feasibility of FSSP targets based on two approaches. One is comparison with historical trends, and the other is comparison with supply and demand projections. Based on historical trends as shown in Table 2, the FSSP targets (for area and yield growth) are unlikely to be met, however, the DA has continued to believe that with enough financial support for its programs and projects the targets can be attained. The same is observed from the supply-demand analysis. The FSSP yield targets are unlikely to be attained. In addition, the assumption of fixed consumption per capita is flawed. It is more likely that the per capita consumption will increase as price falls due to rising supply particularly because of the proposed FSSP interventions. In pursuit of rice self-sufficiency, several other factors must be taken into account such as the affordability aspect of rice, as well as the nutritional norms for rice consumption.

Meanwhile for the country's agribusiness policy, certain issues need to be addressed to further improve the investment climate for agribusiness. These include distortions on the land and labor markets, improving financial services delivery to small and medium enterprises (SMEs), among others.

**Table 2. Projected and historical growth rates for palay yield, area harvested, and production**

	Projected under FSSP 2011-2016	Historical 1994- 2010
All palay		
Yield	3.8	1.5
Area	2.4	1.4
Production	6.3	3.2
Irrigated palay		
Yield	3.6	1.1
Area	4.1	2.1
Production	7.9	3.4
Rainfed palay		
Yield	2.3	2.1
Area	-2.1	0.8
Production	0.2	3.4

Source: Department of Agriculture

### *Impacts of Climate Change in Food Production*

In tackling food security, one important issue that needs immediate action is climate change. Climate variability directly affects food production. Climate variability manifests not just in the fluctuations in the amount of rainfall but also in the level of temperature, and wind speed and direction<sup>20</sup>. As evident in recent years, there is an apparent increase in the frequency of high intensity typhoons and in anomalous paths (e.g. typhoons Pablo and Sendong).

Extreme weather disturbances due to rising temperature hamper crop growth and development if not causing total damage to crops planted. The severity of damage that climate variability depends on the stage of crop development and the variety of the crop. Crops differ in heat tolerance; some are vulnerable to sudden temperature shifts. Rice yield, for example, would be lower if the plant would be exposed to high temperature during the flowering stage.<sup>21</sup> A study by PhilRice and BAS (1994) quantifies crop losses brought about by typhoons and flooding in the country for the year 1991, which amounted to US\$ 11 million.<sup>22</sup> Sudden flooding or drought causes water stress to crops. Particularly for rice, water stress affects its “tiller number, leaf area index, apparent canopy photosynthetic rate, leaf nitrogen, shoot and root biomass, and root length density” (Cruz et al., 1986)<sup>23</sup>.

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20 Lansigan 2000

21 Lansigan 2000

22 Lansigan 2000

23 As cited in Lansigan et al 2000

Climate variability also cause stress on the biodiversity of the affected areas. Some species that are predators of certain pests may not be able to adapt to warmer environment. This increases the risk of crops to pest infestation and diseases<sup>24</sup>.

Aside from production yield, other factors affected by climate variability are sowing date, crop duration, and crop systems. Cropping season may have to be adjusted to catch the period in which the soil moisture is adequate for plant growth. For El Niño periods, where the frequency of rainfall occurrence is less, the sowing date is usually delayed. Longer period is needed to achieve the necessary level of cumulative rainfall. In addition, the period to sustain plant growth is narrower for dry season. To reduce the impact of climatic variability, farmers may opt to adjust their cropping sequence and crop rotation.<sup>25</sup>

Global warming and climate change has worsened which has potential and adverse effects on the state of aquatic ecosystems and fisheries production. Furthermore, in general, the effects of changes in ocean temperature on fish stock will have subsequent impacts on fish supply and food security. An important food security related issue in this regard is the degradation of the marine resources and environment which can potentially decrease in production in both municipal and commercial fisheries of global warming. Another issue is sea level rise which could potentially inundate large coastal areas used for aquaculture.

To counter the adverse effects of climate change in the country's food production, some of the strategies that the Philippine Government has adopted as stated in its PDP 2011-2016 are:

- Adopt ecosystem-based approaches, conservation efforts, and sustainable environment and natural resources-based economic activities (e.g. agri-ecotourism)
- Invest in the development of technologies that are climate change-sensitive, of infrastructures and food production systems that are climate-resilient.
- Strengthen the insurance system
- Include natural hazards and climate risk in agricultural land use plans.
- Empower the communities to build the capacity to respond to climate risks and natural hazards.
- Continue assessing the vulnerability and adaptation of food-producing areas.

## **Options for the Philippine position for food security in APEC 2015**

### *Biotechnology*

Although the country was among the first to develop its biotechnology regulatory framework in Asia, the civil society is not yet ready to embrace science-based improvements in the agriculture sector, especially those that employ genetic engineering. Various groups have actively voiced out their opposition to GMOs because of several health and environmental issues, which have been answered by GMO advocates.

If the country is to promote biotechnology initiatives, this would entail huge public investments, which has been the problem of the agriculture research and development sector. Research efforts, such as these, are not very well supported by the government as observed in

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<sup>24</sup> Cabrido, 2009

<sup>25</sup> Lansigan 2000

the low research intensity ratio of the country (0.46) compared to other countries (e.g. Malaysia 1.92).

In addition, standards and regulations in relation to product safety and quality of the country are adequate but the implementation of these is quite problematic because of the overlapping functions of some government agencies.

These are the very reasons why the country is not yet ready to position itself as a promoter of biotechnology advancement in the agriculture sector. There is still a need to educate the public of the significant contributions of these science-based initiatives to address agriculture-related problems, including food security. Moreover, greater public investment is needed for R&D in agriculture.

### *Facilitating trade*

The Philippine government has implemented trade facilitation reforms such as customs modernization, simplified export procedures through the One-Stop Shop Export Documentation Center (OSED), National Single Window, automation in economic zones, among others<sup>26</sup>.

Despite these reforms, the government continues to adopt trade-restricting and investment-restricting policies in pursuit of food self-sufficiency based on protectionism. Among the products under the sensitive list are rice and sugar. In terms of investment and land ownership, as discussed earlier, foreign investors are not allowed to venture into some “sensitive” services industries and can only lease land following a set of conditions. The Department of Agriculture views the international market in these sensitive products to be an uneven playing field due to producer support in both developing and developed countries.

### *Sustainable Food Supply Chains*

The promotion of food supply chains is well-supported by key government agencies. Furthermore, this has been a priority strategy for inclusive growth of the country. A key aspect that must be considered is sustainability of these food supply chains. A sustainable food supply chain must have a steady resource base, must be financially viable, and must be resilient to shocks or threats (e.g. climate change, growing population, and others).

The elements of this agenda cut across the components of the APEC’s Road Map for Food Security by 2020, which include the following:

- developing sustainable agricultural and fishery sector
- facilitating investment and infrastructure development
- enhancing trade and market

The first element of this agenda is a rich resource base both in agriculture and fisheries sector. The role of farmers and farmer organizations are significant at this stage as they are the food producers. These farmers are closely linked with business enterprises through contract

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26 <http://dirp4.pids.gov.ph/DPRM/dprm11/wp-content/uploads/2013/09/PIDS-Medalla-Achieving-AEC-2015-Trade-Liberalization-and-Facilitation.pdf>

agreements. The second element of this agenda is investment. The investments, which would mainly come from the private sector, would facilitate the creation of value-adding activities such as post-harvest and processing, as well as research, development and extension activities. The third element of this agenda is market and trade. The agricultural products created by the first two elements are sold to a certain market, which may either be domestic or foreign. The assumption is that the market is closely linked with the business enterprises, so that the demands of the market, i.e. quality and quantity, will be met.

A major application of a sustainable food supply chain is in the fishery sector. This coincides with the Blue Economy Agenda. The Philippines can aggressively champion the Blue Economy approach as an innovative way of managing the national and APEC-wide fisheries resources and coastal and oceanic waters.

The Blue Economy stands for a way of designing business by using the resources available in cascading systems, where the waste of one product becomes the input to create a new cash flow. It aims at creating jobs, building up social capital and rising income while saving the environment. The Blue Economy can be considered as a further development of the Green Economy. At the Rio+20 Summit in 2012, the Green Economy in the context of sustainable development is viewed as the type of economy that “should contribute to eradicating poverty, as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating new opportunities for employment and decent work for all, while maintaining the healthy functioning of the earth’s ecosystems.”

In fisheries, Blue Economy is a term used to emphasize the sustainable utilization of marine resources, spanning fisheries, energy and international trade, among other aspects. It is also seen as showing how the Green Economy approach to sustainable development is to be applied in the marine environment and the ocean sector.

The 1<sup>st</sup> APEC Blue Economy Forum was held on November 5, 2011, Xiamen, P. R. China, with 9 economies participating, which resulted in some key consensus on policies and procedures in developing the Blue Economy. Meanwhile the 2<sup>nd</sup> APEC Blue Economy Forum was convened on December 6-7, 2012, in Tianjin, China and aimed to advance regional understanding of Blue Economy, facilitate mainstreaming Blue Economy, and develop consensus on next steps in establishing regional cooperation.

### **Concluding remarks**

To summarize: this paper recommends that the Philippine position on food security adopt agribusiness development based on sustainable food supply chains as its priority advocacy, while continuing to promote elements of food security as expressed in the APEC Road Map. This "branding" integrates a strong position on Blue Economy with the agribusiness development and road map thrusts of DTI and DA. The Philippines can continue to highlight the looming threat of climate change, the need to initiate and sustain growth of incomes of smallholders within resilient value chains, ensure farm to fork integrity of supply chains to ensure food security for the consumer.