2nd International Conference on Agricultural and Rural Development in Southeast Asia
Strengthening Resilience, Equity, and Integration in ASEAN Food and Agriculture Systems

CONFERENCE SUMMARY REPORT

12–13 November 2014 | Makati Shangri-La, Manila, Philippines
2nd International Conference on Agricultural and Rural Development in Southeast Asia
Conference Summary Report

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“Thank you so much for the effort. The partnership with SEARCA has always been fantastic and I look forward to joining and supporting your events.”
—Dr. Siang Hee Tan, CropLife Asia

“Many thanks for your warm hospitality. I also want to congratulate you and the SEARCA staff for the highly successful conference.”
—Dr. Nipon Poapongsakorn, Thailand Development Research Institute

“It was a pleasure moderating the policy and institutional reforms session and participating in the other sessions. Thank you also for inviting me, because I am proud to have been part of a very successful ARD2014 Conference. Renewing friendship with long-time colleagues, such as Randy Barker, Jim Roumasset, Pons Intal, Rolly Dy, Sjarifuddin Baharsjah, and others was a great bonus of my participation!”
—Dr. Gerry Collado

“Congratulations...Your hard work paid off!”
—Ms. Erlinda Dolatre, GIZ Philippines

“Congratulations for the successful 2014 ARD conference. I heard from my colleagues that it was indeed a good opportunity for all our participants.”
—Lany Rebagay, Asian Farmers’ Association for Sustainable Rural Development

“Thanks for the invitation. There were a lot of good conversations.”
—Mr. Jack Bobo, US State Department

“Your mega event created a mega memory in our professional experiences. This unforgettable experience made us learn interesting topics, link with relevant organizations, and learn how to organize a big event properly and how to make the participants happy. Thanks for all who helped and supported a very successful event. Hope to attend the third one too.”
—Dr. Hossein Shahbaz, CIRDAP

“Congratulations for a job well done!”
—Dr. William Padolina, DOST-NAST

“Our congratulations to you and your team for the well organized and successful conduct of the 2nd ARD Conference. You are fortunate to have a very capable team that you can depend on. Please extend my congratulations to Dr. Saguiguit for a job well done! We have been privileged to have taken part in the conference.”
—Ms. Cecilia Honrado, ACIAR
“Allow me to congratulate you and your team for ably and successfully coordinating the implementation of ARD2014. I know it was not an easy job but you did it!”
—Dr. Percy Sajise, Bioversity International

“I’d also like to thank you for inviting us; it was truly an excellently organized event that attracted a lot of participants and interest! My role was very tiny, but I enjoyed having been part of it. I also made some good follow-up contacts and have been exchanging emails with Raul Fabella already.”
—Dr. Bas Bouman, IRRI

“Many thanks also and congrats for the successful Conference. The feedback from the Deputy FAO Regional Representative was very positive in terms of both the quality of the presentations and discussions as well as the organization of the event itself.”
—Mr. Aristeo Portugal, FAO Phil

“This conference is far more superior than the one I attended in the USA!”
—Dr. Bhaskaran Chenthuran

“It was our privilege and pleasure to have had the chance to convene the special session on Plant Health and Agricultural Extension. On behalf of my colleagues, Drs. KL Heong, Sivapragasam and Qiaoqiao Zhang, I would like to express our deep appreciation to SEARCA for the opportunity to contribute to the interesting programme of a highly successful international conference on ARD. We look forward to further collaborations in the near future and to the third ARD Conference in 2016.”
—Dr. Wai-Hong Loke, CABI Regional Director, South East Asia

“I would like to congratulate SEARCA for the successful international conference on Agriculture and Rural Developments in Southeast Asia.”
—Mr. Vili Fuavao, FAO Regional Representative for Asia and the Pacific

“I am always ready and available for SEARCA. It was a indeed a great honor to be part of the team again.”
—Dr. Francisco Fellizar, Ritsumeikan Asia Pacific University

“Profuse congratulations for reaping such heartwarming words of appreciation like these! God has truly been great and generous. I will miss working with great achievers like yourselves.”
—Dr. Cielito Habito, Conference Technical Adviser and Coordinator
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EXECUTIVE SUMMARY

In a globalized era driven by booming economies and technological advancements, poverty, inequality, and unemployment ironically persist and remain as critical challenges faced by many societies today, particularly in Southeast Asia. These issues link closely with the state of the agriculture sector. Key agricultural development concepts such as inclusive and sustainable growth, rural development, sustainable agricultural growth, and effective natural resource management are seen as important pillars in addressing poverty especially in the rural areas.

However, even in these identified areas of development, gaps, difficulties, and challenges still exist. This sparked a great need to establish an avenue which would foster in-depth and fruitful discussion of these issues and gather experts from different fields, disciplines, and areas of expertise to engage in an exchange of knowledge and solutions toward developing holistic and systematic ways of addressing the challenges concerning the agriculture sector. This was the goal of the 2nd International Conference on Agricultural and Rural Development in Southeast Asia (ARD2014).

This year’s conference focused on the theme Strengthening Resilience, Equity, and Integration in ASEAN Food and Agriculture Systems. The two-day meeting included plenary presentations, parallel sessions, and a partners’ forum including renowned speakers and experts in the agriculture sector and representatives from the different ASEAN countries. Each discussion comprehensively elaborated the three main themes of the conference, namely, resilience, equity, and integration. Discussions throughout the conference associated resilience with the concept of sustainability, particularly the resilience of food and agricultural systems, which currently bear the brunt of rapid urbanization and social transformation, resource and environmental degradation, and heightened competition with regional and global integration of markets. On the second theme, participants linked equity closely with “inclusive growth” or “inclusive development” that provides for extensive and equal access to opportunities to all stakeholders, particularly the marginalized, in agricultural and rural development. On the other hand, integration widens the perspective of agricultural development by calling for private companies, governments, and other countries in the ASEAN region to support and participate toward stronger regional political and economic coordination and cooperation.

The conference served as a prolific platform for sharing and discussing innovative ideas, best practices, and lessons learned along these main themes and its subthemes on food security and safety; institutions and governance; and regional cooperation and integration. It contributed toward healthy academic discourse for conceiving policies, programs, and initiatives addressing important and emerging issues impinging on sustainability and poverty reduction.
CONFERENCE BACKGROUND

Rationale

The agricultural economy and the rural sector continue to loom large in the development agenda of Southeast Asian economies. For almost all of them except Singapore, agriculture remains a dominant economic sector in terms of contribution to total output, and for some, the most prominent based on contribution to overall employment. But for all that importance of the agriculture sector and rural economy, it is also the sector wherein poverty tends to be most prevalent, persistent, and most vulnerable to the damage caused by natural disasters, environmental degradation, and climate change.

The challenge of promoting agricultural and rural development (ARD) and reducing the incidence of poverty in the agriculture and rural sector is a complex one. An effective pursuit of ARD would thus require a systems perspective of a multidisciplinary nature. There is great value in deepening the knowledge base within and among the various disciplines and fields of study involved in ARD through constant research and innovation, and periodic expert gatherings. It is for this reason that SEARCA has set out to provide a regular forum for such a discussion of ARD challenges in Southeast Asia under a holistic, systems-oriented, multidisciplinary, and multistakeholder perspective, starting with the 2nd International Conference on Agricultural and Rural Development in Southeast Asia (ARD2014).

The first such gathering spearheaded by SEARCA in 2005 addressed the subject primarily from the economic perspective and was participated in mostly by scholars in the fields of agricultural economics and development economics. Even so, it proved to be a most valuable forum that yielded the most authoritative compendium to date on the state of knowledge on ARD in Southeast Asia. With ARD2014, SEARCA seeks to build on the 2005 conference with a more inclusive knowledge exchange benefiting from the participation of representatives from various disciplines and various stakeholder groups. In so doing, it is envisaged that apart from gaining expanded knowledge from attending the forum, participants would benefit from a broadened perspective from which they perceive and analyze the challenges of the ARD sector, and conceive the approaches to addressing them.

Objectives

ARD2014 provides a venue for sharing the wide and diverse knowledge pool on ARD that exists within and beyond the Southeast Asian region. Through the conference, SEARCA aims to accomplish three objectives. First, the forum aims to highlight creative and innovative technological and practical approaches in the various processes of agricultural systems spanning the entire agricultural value chain from production through to postharvest, processing, marketing, transport, and logistics. Second, the conference seeks to showcase and derive useful lessons from institutional successes (as well as failures) in the management of agricultural systems and rural communities, including governance and value chain relationships. Third, it is expected that participants would be able to draw evidence-based policy implications from the knowledge exchange that could in turn help guide regional, national, and sub-national policies and initiatives for ARD in the context of intensified regional cooperation and integration.
WELCOME REMARKS

DR. GIL C. SAGUIGUIT, JR.
Director, Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)

Excellencies, colleagues in development, ladies and gentlemen:

It is a great pleasure to welcome you to this Second International Conference on Agricultural and Rural Development in Southeast Asia (ARD2014). To our overseas participants and guests, a special warm welcome to the Philippines. Allow me to first of all acknowledge the presence of the Honorable Virgilio de los Reyes, Secretary of Agrarian Reform, representing His Excellency the President of the Philippines, Benigno S. Aquino III.

We consider this a rare opportunity to convene an international meeting of this magnitude, with 20 countries in attendance from various parts of the globe, all in sync with the goal of promoting agricultural and rural development in our respective fields.

ARD2014 builds on the gains of the first Conference held in 2005, which drew policy lessons from the major ideas and paradigms that have influenced academic and policy thinking in ARD the past 30 years.

That you are all here, underscores the importance of this subject in Southeast Asia, as we participate in the dawn of the ASEAN Economic Community in 2015. With the changing regional landscape, ARD remains a vital cog in the efforts of each individual country and the region as a whole to work together towards food security and poverty alleviation. The fact that it is against a backdrop of increasing population, dwindling natural resources, climate change, and pressures due to multiple and conflicting land uses, among others, makes it most challenging.

It is in consideration of these circumstances that SEARCA has laid out its Tenth Five Year Plan focusing on inclusive and sustainable agricultural and rural development (ISARD). Fittingly, this conference echoes the defining elements of ISARD, namely: inclusiveness, sustainability, and regional cooperation and integration.

We will highlight new knowledge, technologies, and approaches in ARD as these relate to food and agricultural systems in the region. From this conference, we hope to take stock of and address contemporary and emerging issues and gaps toward informing policy and investment options, as well as good practices that will redound to improved development outcomes and concrete reforms for food security and inclusive growth.

We hope this conference will become the premier regular gathering in the region for sharing diverse knowledge and experiences on important and contemporary issues in agricultural and rural development.

Finally, allow me to thank our international and national partners in the public, civil society, and private sectors for helping us stage this international conference. It is an honor to join forces with you in pursuing our vision. Thank you and we look forward to a fruitful interaction in the next two days.

And as we say in the Philippines, mabuhay!
To the Southeast Asian Regional Center for Graduate Study and Research in Agriculture led by Director Dr. Gil Saguiguit, Jr., representatives of various development organizations based here and abroad, past and present officials of the Philippine government, colleagues and partners in development, distinguished guests, ladies and gentlemen, good morning.

I am honored to speak on behalf of President Aquino today. Allow me to share with you his message for this occasion:

When we started treading the straight path, we identified agriculture as one of the top sectors that required the attention of government. For many decades, this key industry was left in the margins; farming communities lacked roads and processing facilities, which in turn burdened the common farmer even more. Government support back then lacked the sincere commitment to improve the industry, which in turn left the farmer and his family trapped in a vicious cycle of neglect, underdevelopment, and missed opportunities.

We knew that, if we were to lay the foundations for our country’s resurgence, agriculture was a sector that needed a boost up. Rightly so, because agriculture is a stomach industry; increasing our capacity to produce and supply our own food redounded not only to the improvement of the farmers’ condition, but also to expanding our ability to address the basic needs of our people.

Thus we rolled up our sleeves, and pursued interventions aimed at revitalizing this sector. This was part of a comprehensive strategy to empower sectors that have the greatest impact in spurring inclusive growth at the community level.

I am told that, to date, agriculture provides 32 percent of livelihood and employment across the country, contributing to nearly 10 percent of our GDP. We also found that in the first semester of 2014, despite the challenges posed by recent disasters, our agricultural sector grew by 2.2 percent, valuing at PHP 347.1 billion. Subsectors related to crops, livestock, and poultry have seen an increase in production from the previous year.

We have likewise seen more farmlands connected to hubs of industry and growth, brought about by our continuous construction of farm-to-market roads. Our government is also constructing the necessary
infrastructure to facilitate the growth of agriculture in the country. Among the flagship rural development programs is the Mindanao Rural Development Program (MRDP), now on its second phase, and the appraisal activities for the proposed Philippine Rural Development Program (PRDP), which have been implemented by the Department of Agriculture (DA) in partnership with the World Bank. PRDP will be an upscaling of MRDP, adapted to carry forward DA's refocus on value chain improvement, enterprise and cluster development, and vertical integration from production to processing and even to marketing. Through these interventions, we intend to provide an impetus for the growth of the rural economy. This, on top of the ports, airports, and other transport hubs we're currently constructing and upgrading to improve transport and travel across the archipelago.

Our Department of Trade and Industry has likewise initiated the Shared Services Facilities (SSF) project, to give the micro, small, and medium enterprises—the first consumers of agricultural produce and raw materials—better access to technology and equipment. This redounds to enabling such industries to go up the value chain. Complementary to this, we have been working to enable more of our countrymen to move from low productivity areas in agriculture, to high productivity areas in manufacturing and services, encouraging modernization in these vital industries. By improving agricultural linkages to areas of commerce, and innovating the way we produce, we have expanded the services and products the Philippines has to offer. This in turn has spurred greater confidence in our capacities, and has opened doors of opportunity for the many Filipinos involved in these areas.

Aside from accelerating infrastructure development and providing our people with the wherewithal to improve their production capacity, we have also invested in human development through the expansion of healthcare, education, and social protection services to break the cycle of poverty among families, especially for those in the agricultural areas. This follows our belief that a healthy and educated citizenry is better able to contribute to the sustained growth of our economy.

All our efforts would not be possible without your help and support, and, rest assured, we will continue to be hard at work in igniting a virtuous cycle of empowerment, stability, and opportunity in our country and within our region, a region which we envision to be a wellspring of growth and opportunity.

Indeed, I, together with my cabinet, look forward to working with you, as we tread the path to mutual advancement. As President, it is my hope that through this conference, we will forge our synergies even more, enhance our capacities to address the needs of our sectors and of our respective peoples, and thus ultimately strengthen the foundations of equitable prosperity, which will redound to the benefit of our societies and of the many generations to come. It is by working together that we build a Southeast Asia where no one is left behind.

Thank you, and good day.
PLENARY SESSION 1

RESILIENCE, EQUITY, AND REGIONAL INTEGRATION IN SOUTHEAST ASIAN AGRICULTURE

Moderator: Dr. Maria Celeste H. Cadiz, SEARCA
Strengthening Resilience, Equity, and Integration in ASEAN Food and Agriculture Systems

DR. CIELITO F. HABITO
Professor of Economics, Ateneo de Manila University
Former Secretary of Socioeconomic Planning of the Philippines
and Director-General of the Philippine National Economic and Development Authority (NEDA)
SEARCA Senior Fellow and Conference Technical Adviser and Coordinator
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Dr. Habito presented the background, overview, and structure of the conference. He began by describing the agricultural and rural sector as a continuously prominent industry, if not most prominent, in Southeast Asian economies in terms of contribution to GDP and employment. This sector is also where poverty tends to be most prevalent and persistent, as well as most vulnerable to calamities, environmental degradation, and climate change. Dr. Habito expressed the challenge in achieving agricultural and rural development (ARD). Specifically, he highlighted the contribution of certain technological, institutional, political, and socio-economic forces which put the sector at a relative disadvantage and gives more weight to the challenge.

With no single discipline or sector to answer this quest, ARD recognizes the complexity of the challenge which calls for a holistic systems perspective or approach in addressing these issues. Dr. Habito recognized that in solving the problems related to ARD, it demands the involvement of a wide range of disciplines and fields of study. It also requires understanding among its various stakeholders: farmers, landless farm workers, families, the academe, civil society, business, government, and international development partners.
Objectives

In his presentation, Dr. Habito acquainted the participants with the specific objectives of ARD2014. These were to:

1. Highlight creative and innovative technological and practical approaches in the various processes comprising the agricultural system;
2. Showcase and draw lessons from institutional successes and failures in the management of the agricultural system and rural communities; and
3. Draw evidence-based policy implications from the knowledge exchange, to guide regional, national, and subnational policies and initiatives especially under the ASEAN Economic Community (AEC).

Themes and Subthemes

ARD2014 conference themes focused on resilience, equity, and integration. Resilience and sustainability of agricultural systems are currently being tested against the challenges of rapid urbanization and social transformations, resource and environmental degradation, and heightened regional and global competition. Equity considerations, now commonly articulated in the term “inclusive growth,” is a goal that must be pursued within countries and across other countries in the region. Integration captures the ASEAN thrust toward closer regional, political, and economic coordination and cooperation, most prominently seen in the impending culmination of the AEC in 2015.

In this conference, six thematic areas (sub-themes) which capture the problems of ARD were tackled, namely: productivity improvement; inclusive value chains; sustainability and poverty reduction; food security and food safety; institutions and governance; and regional cooperation and integration. Dr. Habito walked through the substance of each subtheme, how each theme was distributed to the diverse parallel sessions and further explained the structure and flow of the conference.

ARD2014 Questions to Address

As a guide, the conference set three questions that needed to be addressed and highlighted in each session. These were:

1. How can the findings of the papers/presentations help promote resilience, equity, and integration in Southeast Asian agriculture?
2. What important new knowledge have been gained? What knowledge gaps remain?
3. What policy implications/recommendations may be drawn from the papers/presentations?
Toward Sustainability and Resilience in ASEAN Agriculture

NEW VISION IN AGRICULTURE

Mr. Tin Aung Moe highlighted the need to adopt a new agricultural vision and strategy rather than ‘business-as-usual’ approach in order to achieve a holistic ASEAN agricultural production system. These new approaches or efforts are as follows:

1. Provision of safe and adequate food and nutritional requirements;
2. Provision of sufficient income and welfare for farmers to sustain a comfortable standard of living;
3. Protection of the ecosystems, including climate change mitigation and adaptation; and
4. Strengthening global competitiveness by promoting good agricultural practices (GAP) and food safety measures and agricultural trade.

The key concepts of this new agricultural vision are: soil characterization and plant nutrient management, varietal development with the application of biotechnology, land and water management, transfer of knowledge and technology, post-harvest management, agricultural mechanization and value addition, and supply chain development. It requires substantial increase in agricultural investment through public and private sector harmonization to enhance the business sector productivity and development.
To achieve a sustainable and resilient development in agriculture, Mr. Moe presented the following table comparing the *High Yielding* and *Income and Welfare* approaches. The high yielding approach prevalent during the first Green Revolution, transitions subsistence to commercial farming. On the other hand, the new agriculture vision, which uses the income and welfare approach, develops the supply chain.

**New agriculture vision for sustainability and resiliency: high yielding approach versus income and welfare approach**

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Mr. Moe concluded that ASEAN agriculture is highly vulnerable to climate change and that it requires a paradigm shift from traditional growth patterns to promoting greener economies and addressing economic disparities. To be able to promote a climate-resilient agriculture, it further requires the reform of agriculture development policies both for the public and private sectors.

Investing in ASEAN agriculture requires substantial increase in agricultural investment. This can be achieved through harmonized private and public partnerships to enhance business development and resource mobilization. This partnership in agricultural institutions and infrastructure development may move toward building farm-to-market roads; irrigation and land development; ICT, financing, insurance; and wholesale markets.

He added the significance of tapping smallholder farmers as they are considered large contributors to and important players in green agriculture. Mr. Moe also pointed out how contract farming can be an effective institutional mechanism to increase the participation of small farmers in modernizing agricultural food systems. In this way, globalization and regional integration will work better for the rural poor and smallholder farmers. Farmers will now have a closer link to demanding markets. Contract farming will overcome high market demands which serve as drivers to exclude poor farmers from the modernizing supply chain.

As an ASEAN strategy for innovative agriculture, he recommended using the Food and Agriculture Organization’s (FAO) ‘save and grow’ and ‘produce more with less’ innovation strategies.
Achieving Inclusiveness and Equity in the Farm Economy

DR. HERMANTO SIREGAR
Vice Rector, Bogor Agricultural University (IPB)
Member, Executive Council of the Indonesian Association of Agricultural Economics
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Dr. Siregar introduced his topic by showing statistics on the development of economic growth among ASEAN countries. Statistics have shown that countries with lower income have grown faster in 2004–2013, which indicates GDP convergence in the long run. The countries also have a very wide gap in terms of GDP per capita while the share of agriculture in GDP among the countries has generally shown a declining trend.

In recent years, the productivity of the workforce in the agriculture sector tends to decrease at a relatively slow pace. The result of the declining share of agriculture in GDP and the relatively high and stable percentage of the workforce in the agriculture sector have caused many agricultural workers to share parts of the relatively small GDP pie.

Dr. Siregar emphasized that overcoming poverty entails the improvement of the process of agricultural transformation, which starts when agricultural productivity per worker rises. In other words, agrarian transformation occurs when the share of agricultural sector in GDP declines, followed by the decrease in employment share of agriculture.

Structural Transformation in an ASEAN Country: The Indonesian Context

For the past 10 years, the productivity of employees in the agriculture sector has constantly ranked the lowest compared to other sectors. This results in higher percentage of poor people in the rural areas than in urban areas.

The urban bias, on the other hand, does not support the agricultural sector or when it does, the value-added benefits to the farming sector are not substantial. As a result, only certain types of industries such as electronics, has gained advantages since the globalization era. Consequently, the agriculture downstream industries are relatively not growing. This was particularly seen through the import values of agriculture products of Indonesia which has consistently exceeded its export values over the last four years. On the contrary, exports of other goods such as manufacture and mining products were well above their imports over the same period.
The credit allocated to agriculture has been relatively low based on the amount of credit per worker. It is also clear that the agriculture sector has received the lowest proportion as opposed to other sectors.

The tendency of Urban Bias is to have an income disparity manifested through the high number of workers in the agriculture sector but with very low income per capita, which is even far below the average national level.

**Review of Current Agricultural Policy in Indonesia: Agricultural Policy Itself Is Not Enough**

The agricultural policy became less effective after the decentralization/regional autonomy. As a recommendation, Dr. Siregar said that the Indonesian government must set up a comprehensive policy for agriculture. This includes efforts to:

1. Require a policy to shield farmland from other uses;
2. Improve farmers’ access to credit from financial institutions;
3. Enhance agricultural infrastructure: development and maintenance of the district level infrastructure have been relatively poor after the implementation of the regional autonomy;
4. Require policies for agriculture which includes the policies for credit, infrastructure, manufacturing industry, and domestic and international trade.

**Policies for Achieving Inclusiveness and Equity**

1. **Credit and infrastructure.** He recommended that the government must create a policy that will enable rural SMEs including small farmers to obtain better access to credit from banking institutions. Also, the Indonesian government must build new roads and rehabilitate existing roads, irrigation canals, and other rural infrastructure in order to increase the productivity of farmers.

2. **Development of downstream agro-industries.** The Indonesian government must also support the development of industries which are in line with agriculture, particularly down-stream agro-industry. The Indonesia government must promote and encourage industries to utilize agriculture products such as crude palm oil as an alternative source of energy (renewable energy) without jeopardizing the availability of land that are used to produce food.

3. **Trade and investment.** To improve the wealth of farmers and attract more investment to come into the agriculture sector, the government must continuously improve the agricultural supply chain (development of regional agribusiness terminals, ports, and agricultural logistics system, and public and private community partnerships).

4. **Affirmative action for the poorest farmers**
   - Direct cash transfer (BLT=Bantuan Langsung Tunai) should be given by the government to the poor farmers in times of crisis. The problem in this system is the failure to identify the farmers who are most in need of assistance.
   - Institution of Social Security (BPJS) and health insurance for the poor including farmers
   - “Bidikmisi,” university scholarship for the poor especially farmers’ children

Dr. Siregar ended his presentation with the following points:

The current state of divergence or gap among the ASEAN members appears to be greatly apparent to this day. The gap (e.g., in GDP per capita) needs be narrowed down by supporting the development of lower income members.

The agenda on the ASEAN Economic Community should be followed and realized accordingly with much attention put on reducing intercountry disparities. Closer cooperation is needed for strengthening agricultural and rural development in each member country.
Agriculture in the ASEAN Economic Community (AEC): Is Win-win Possible?

Dr. Suthad Setboonsarng’s presentation revolved around the topic of food policy and the agricultural sector, integration of rice market under the ASEAN Economic Community (AEC), future scenarios for the international rice market, and the way toward an ASEAN agricultural community.

Food Policy and the Agricultural Sector

The trade of agricultural products in ASEAN is subject to many constraints and will not achieve the single market objective under the AEC. Protecting and subsidizing the agricultural sector are common policies in member countries to increase production and improve the income of farmers. Indirectly, the lower price of food reduces the cost of living for the urban population who has more political say, and keeps down the wage in the manufacturing sector. However, the increase in the supply of food keeps down the price of food and makes farming less profitable, which calls for further subsidies. Since agricultural subsidy is a common practice in most countries, it systematically reduces the price of food in the international market.

In the future, the food market in Asia will grow rapidly especially when farmers in major countries, such as China and India, migrate into urban areas and agricultural land will be less available. Agricultural subsidies will be reduced because they are a drain on government budget and many measures are restricted under the World Trade Organization (WTO). Agricultural trade will become less restricted. The agricultural sector in ASEAN will become integrated to take advantage of the larger Asian market.
PLENARY SESSION 2

IN QUEST OF A FOOD SECURE ASEAN

Panel Discussion with Recipients of the D.L. Umali Achievement Award in Agricultural Development

Dr. Vo Tong Xuan, Vietnam
Dr. Ramon C. Barba, Philippines
Prof. Dr. Ir. Sjarifudin Baharsjah, Indonesia

Panel Chair: Dr. Paul S. Teng, Principal Officer, NIE, Singapore
The panel discussion was opened with the introduction of the panelists: Prof. Dr. Ir. Sjarifudin Baharsjah from Indonesia, Dr. Ramon C. Barba from the Philippines, Dr. Vo. Tong Xuan from Vietnam, and Dr. Paul S. Teng as the panel chair and moderator.

The discussion formally began with Dr. Teng’s presentation on the seven background points on some of the challenges in the quest for a food secure ASEAN.
In two food security indices, ASEAN countries generally fail to get a high ranking.

This was exemplified through Dr. Teng's presentation which detailed how ASEAN countries ranked globally in terms of food security. Specifically, he referred to the Global Security Index, which measured the vulnerability of countries to food insecurity, and the Rice Bowl Index, which ranked countries based on food security robustness.¹

The “demand side” of the food security equation will grow substantially from 2014–2025, thus, increasing the demand for key food items which is connected to the rise in per capita GDP.

Dr. Teng discussed the need for additional 16 million tons of rice per day to supply 766 million people in ASEAN by 2050. Along with this is the increase in the demand for a diverse diet which will generally result in the region’s tremendous growth as per World Bank statistics.

Though the ASEAN has done a remarkable job in reducing poverty and increasing the middle-class, still 1 out of 10 ASEAN citizens are still known to be affected by hunger.

Using data from PovcalNet, Dr. Teng showed the decline in ASEAN’s poverty rate from 45 percent in 1990 to about 14 percent in 2010.² However, as per FAO’s State of Food Insecurity in the World in 2013, one out of 10 Southeast Asians are still hungry.

ASEAN countries are considered to be major producers of many food items despite the declining contribution of agriculture to GDP. Ironically, ASEAN countries still tend to import large amounts of maize, soybean, and wheat from outside the region.

ASEAN countries continue to be top producers of major agricultural commodities such as rice, vegetables, and fruits. But figures from the US Department of Agriculture have shown that Southeast Asia is likewise a major importer of four key food commodities—wheat, rice, corn, and soybean. He further discussed the continuous decline of the agriculture sector’s contribution to the GDP of ASEAN countries.

The trade of food products among ASEAN countries appear to be relatively low compared to food exported outside the region, yet ASEAN is known to be a home to many large agri-food companies.

Based on the data taken from the ASEAN Secretariat and a publication from Dr. Rolando Dy, Dr. Teng presented the current condition of weak intra-ASEAN agriculture trade despite the many existing large agri-food companies in the region.

Many ASEAN countries have articulated self-sufficiency policies for selected food items (such as rice), yet in the short term, the same countries continue to be the region’s major net food importers.

Dr. Teng further discussed the concepts of food self-sufficiency and self-reliance. Food self-sufficiency refers to “meeting food needs, as far as possible, from domestic supplies and minimizing dependence on international trade; advocates diets that are simple and natural that can be produced domestically” (Konandreas 2006). On the other hand, food self-reliance is defined as the ability to “advocate reliance on the international market for the availability of food in the domestic market; maintain some level of domestic food production plus generate the capacity to import from the world market as needed. International trade is an essential component” (Konandreas 2006).

¹ A country’s ability to withstand any perturbations to its food security system by having a balanced capacity to make food available; ensure that production is sustainable; and provide the necessary infrastructure and policies to support domestic production, promote trade, and manage food demand and affordability.
² PovCalNet 2014 (http://iresearch.worldbank.org/PovcalNet/index.htm?0)
Recognizing that food security can only be achieved when all its dimensions (availability, physical and economic access, utilization, stability) are met, it then demands the greater need for countries to involve as many stakeholders and disciplines as possible to tackle this issue.

Using the definition of FAO, Dr. Teng discussed that food security “exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” He also added that food security is multi-dimensional and is increasingly becoming an urban problem that now requires multisector interventions.

From the above points, Dr. Teng articulated some recommendations as a response to these challenges. Recommendations include the use of available technologies, improvement of knowledge sharing, partnerships, and entrepreneurial skills to increase and stabilize food availability. Supply chains, food safety, and nutrition security should likewise be improved along with an enabling policy environment.

**Q&A**

**What are the most urgent issues that need to be tackled for ASEAN to become food secure by 2025?**

**Dr. Sjarifudin:** To achieve food security, there is a need to redefine and re-emphasize our policies on food production. There should also be a shift from constant development of rice to other types of food such as corn, cassava, coconut, coffee, etc. What we like to see is that the culture of emphasizing ‘rice only’ should shift to a food culture which includes the even consumption of crops, animals, and fish. The urban population is growing very fast and they prefer different types of produce, including premium rice, processed rice, organic rice etc. Now we have to review our policies in order to respond to this fast-developing market.

**Dr. Barba:** Food security has a local, regional, and national dimension. But ultimately the challenge lies in the perspective of the household. In the Philippines, food insecurity is most severe for farmers and fisherfolk. Urban folks are in many ways better off. But among the farmers and fisherfolk, there are the so-called commercial producers and marginal producers. Commercial farmers and fishers are better capitalized, and have better access to inputs, food and technologies, and more importantly, to markets. They are not food insecure. It is the latter, the ground, uncaped, marginalized, subsistent producers who should be targeted for public and private support.

The problem of food insecurity is complex and multidimensional. There are many ways to address food insecurity but, as a scientist and a not-too-successful part-time farmer, everything comes down to managing risks that small farmers and fisherfolk face all the time.

**Dr. Vo:** Up to this time, the total production of food in ASEAN countries is more than enough. The problem is how to make those products more accessible to small farmers. Let’s go back to one of the background points in the presentation on the question of why we produce more food but then continue to be one of the major importers of rice, corn, soybean, and wheat. My answer is very simple—it is cheaper to import than to produce. We cannot compete with a hundred thousand hectares of corn and wheat in other countries. They have very good varieties and have very cheap production cost. My idea to achieve food security by 2025 is to make small farmers go for crops that are suitable to their fields and not just to make money. Also, it’s time for the government to see that food insecurity is a very big problem. There was a time when there are varieties of crops that are grown in the field but then the government signaled farmers that they can choose whichever crops they think would give them more profit, which consequently lowered the production of other crops. We should not force farmers to grow plants that are not suitable to their land. There is also a need to use the inclusive value chain approach in agricultural production. Inclusive value chain approach includes the importance of coming up with uniquely competitive products of the region, which goes back to the production process of farmers. Farmers, initially, do not have the tested technologies that international organizations and universities generally acquire. But along with good agricultural practices and training and education of farmers, food and raw materials can be produced with cheaper production cost but of high quality, and from which enterprises can produce high-quality products.

**What is the role of government, industry, civil society, and multilateral organizations? (Lead off: Drs. Vo, Sjarifudin)**

**Dr. Vo:** The government should provide good support for farming technologies and policies that will facilitate businesses and enterprises to bring products to the market. The civil society organizations could focus on teaching farmers how to use appropriate technologies.

**Dr. Sjarifudin:** In many cases, farmers have difficulties in marketing, not only at the farmers’ end but also at the
consumers’ end. Farmers are working to produce good quality products. To support their livelihood better, there should be a program that addresses marketing, production, transportation, and processing facilities. Processing cost of products (e.g., corn to animal feed) is too high that this option leaves farmers with no incentive to continue production. With this, there should be policy instruments that will encourage processing of products from available crops and discourage the importation of those which are commercially available. There is much to be done on the part of the government in order to really increase the capability of farmers and at the same time increase their profit. ■

Among the Green (crops), Brown (animals), and Blue (fish) Revolutions in farming, which will have the most near-term impact on food security? (Lead off: Dr. Barba)

Dr. Barba: Blue agricultural farming needs some measures to improve and increase the catch of small fishermen. Large bodies of water are where commercial fishers are most abundant. One of the ways by which their catch can be improved is through establishing marine protected areas (MPAs) which will facilitate the increase in fish population. Establishing MPAs require cooperation among marine scientists and fishery experts to identify ideal sites for the MPAs; local governments to officially mark the protected zone; and, NGOs to organize communities to provide protective guard to MPAs. ■

How can we move together as a region to achieve food security?

Dr. Vo: The problem of food security is not in the production, but in the distribution. We need collaboration among the ASEAN countries especially the wealthy ASEAN countries. Enterprises play a major role in the supply chain. Farmers and enterprises should work together. Incentives should likewise be available for farmer cooperatives, machineries, and processing facilities. Farmers should always be involved and integrated in the whole system. Multilateral councils should continue to come up with technological solutions in food production that are suitable to specific farmlands.

Dr. Sjarifudin: We cannot achieve food security if we always put the emphasis on the production of rice. We have to look at other food products as well such as cassava and maize. We have to improve the production and processing of cassava to substitute for imports of flour. We also have to improve the production and processing of corn and de-emphasize the production of monocultured rice. We should start food culture, including livestock. With that we can contribute to ASEAN food security. Lastly, we have to protect our marine resources as well.

Dr. Barba: Some ways we can cooperate is the exchange of technology or offer of technology from research institutes (e.g., banana tissue culture and rattan tissue culture). ■

Strengthening Resilience, Equity and Integration in ASEAN

12-14 NOVEMBER 2014 | MAKATI SHANGRI-LA, MANILA, PHILIPPINES

In Quest of a Food Secure ASEAN

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Increased productivity has traditionally been paralleled to various technological improvements. This has been observed at various components of the farm production system spanning seeds, soil and sustenance interventions, and improved farm practices and organization.

Research in traditional plant and animal breeding, as well as in more modern, albeit sometimes, controversial biotechnology techniques, have pushed the inherent fundamental productivity of agricultural production, whether in crops, livestock, or aquaculture fisheries. More efficient and effective application of other inputs, such as mechanization, crop protection interventions, irrigation, and other farm management practices have similarly been the subject of beneficial research and innovation over the years. Productivity improvement achieved through these means leads to lower cost per unit of product, which then results in greater competitiveness and resilience in the economic dimension. It also leads to higher returns on the factors of production including labor, which influences raising incomes. In turn, farmers and their families are able to improve their capacity and capability to address their human development and social welfare needs, which then results in the overall bolstering of social resilience.

The impacts of interventions toward productivity improvement to address the environmental dimension of resilience have been a continuous debate in the agriculture sector. Some express their support to and agreement with the efforts, while others strongly forward their appeal to disagree. An example of this is the continuing debate on the safety of the outcomes of biotechnology research and development, particularly in genetic engineering. This topic has raised the prospect of a tradeoff between higher productivity on one hand and resilience or sustainability on the other. A healthy and informed debate on these issues is a necessary part of moving toward achieving the theme, which is resilience and sustainability. This is why ARD2014 is designed to provide opportunity for such debate and consensus seeking on the more controversial issues relating to productivity improvement in food and agriculture systems.

Meanwhile, equity relates to productivity improvement that enables equal access to knowledge on improved technology and farm management practices that can be shared across the region. With this, mechanisms for intraregional knowledge exchange and technology transfer should be deliberately pursued. For instance, SEARCA conducts its university consortium and regular knowledge forums on relevant topics and issues common to the region, which serves as an avenue for such knowledge sharing and knowledge transfer. On the theme of integration, closer partnership across countries and across educational and research institutions in the region are imperative toward achieving wider access to knowledge for productivity improvement. At the same time, economic integration through liberalized movement of factors and products across countries of the region would provide the very impetus for the countries lagging in terms of productivity and cost competitiveness to “shape up” and undertake deliberate measures to catch up.
Plant Breeding for a Productive, Sustainable, and Resilient Agri-Biosystem

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Plant breeding in the past aimed to develop varieties with limited regard for crop integration in a complex agri-biosystem. This paper argues that this approach fails to exploit the full potential of the crop as well as that of the other components of the natural or synthetic system.

Achievements in the direction of crop variety integration to its environment so far gave the world the series of agricultural revolutions in recent years. Among these are breeding for adaptation to biotic and abiotic stresses, and breeding for adaptation to photoperiod and temperature. These achievements consider the environment as a challenge to be surmounted or a problem to be solved. The breeding objectives do not consider positive interactions between the crop and other biological components of the crop environment, primarily because of the dominant monoculture orientation of crop production.

With the realization that natural resources are limited, the monoculture orientation is no longer tenable. Carefully designed plant and animal mixes, in harmony with other components of the biological environment, can produce more from the same land and water resource than any single crop.

Plant breeding in the future must look at the environment in a more positive light. Indeed, a great majority of the components of the biological environment are beneficial but relatively little work has been done in enhancing their beneficial interaction with the crop by way of breeding crops that are better suited for this interaction. Dr. Rasco argued that plant breeding in the direction of enhancing variety interaction with other creatures in a given agri-biosystem is possible for increased productivity not only of the subject crop. It is also beneficial to the overall productivity, sustainability, and resilience of the agri-biosystem where the crop is grown.

Improvement of Local Breeds of Smallholder Stock Farmers in Southeast Asia

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Animal production in intensive or conventional systems is often associated with high-energy concentrate feeding; regular, prophylactic veterinary treatments; and the use of exotic livestock breeds. Such livestock,
however, may not be optimally adapted to the low-input farming system of poor smallholder farmers who dominate ownership of the domestic animal inventory in the Philippines and other agricultural countries in Southeast Asia. Preference is therefore given to local (indigenous) breeds that are more resilient to climatic stress and are more resistant to local parasites and diseases, thus ensuring healthy and stress-free animals.

Local breeds are important sources of genetic variation especially those associated with unique product quality or other special characteristics. They may be used in generating heterosis effects in commercial crossbreeding programs and are the focus of environmental conservation programs as local livestock biodiversity represents our natural and cultural heritage. More importantly, local breeds are the basis of livelihoods and therefore contribute to food security in marginal areas.

Breeding strategies for local breeds of buffalo, cattle, goat, pig, chicken, and duck should be able to ensure farm profitability, safeguard animal health and welfare, focus on conserving genetic diversity, and promote human health. A farm-specific breeding program for local breeds operated by a community-based organization for the genetic improvement of livestock is recommended to reduce farmers’ dependence on major breeding companies. Unlike the limited number of traits in intensive or conventional livestock production, the breeding objectives for the local breeds may consider a broader range of attributes that can further the development of adaptive traits through purposive selection. Local breeds should thus be continuously exposed to local conditions to maintain their unique adaptive traits. The local breeds in Southeast Asia should also be linked with local and/or regional marketing strategies to account for special quality of livestock products and the protection of their geographical indications and designations of origin.

Sustainable Use of Animal Genetic Resources in Developing Countries

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The choice of genetics for livestock production is dependent on the context and type of production system: smallholders typically employ a “household model” of production and marketing and the large producers use an “enterprise model.” The first is characterized by working to achieve multiple objectives besides income, including risk reduction, diversification, insurance, and social capital; maximum use of low cost resources; and farm synergies. In contrast, the latter is oriented to produce for profit and is often managed with intensive capital, mechanization, and economies of scale. The contrasting production conditions and objectives in both models are interlinked with their diverse requirements for animal genetic resources, and lead to different issues and challenges for the long-term development and utilization of animal genetic resources (AnGR).

Smallholder farmers, like others, select the genotype of their livestock largely due to need for greater productivity and for private benefits. On the other hand, society wants to maintain AnGR for long-term public benefit. The main issue now is, “Is it then fair to ask farmers to maintain the public goods embedded in AnGR and to forego productivity gains and income?” To reconcile these two seemingly contradictory objectives is a challenge for AnGR management. Animal genetic requirements for the industrial system, which are shaped by their ability to manage the environment means less demand for breeds adapted to local environments or disease resistance, more demand for production efficiency to maximize benefit, and more demand for quality traits due to consumer demand and technical requirements. Support to sustainable conservation includes increasing profitability by enhancing market and non-market values, derived both from private and public sources; employing a multi-faceted range of
technological alternatives and opportunities by exploiting new technology through research; facilitating policies and services including animal health; and co-evolving livestock production systems and animal genetic resources. Important tools for this sort of co-evolution are now available through genomic editing. Increased and coordinated investment in identifying and making use of the underlying genetic variation in tropics livestock is also important.

Q&A

Q: How can the findings of the presentations help promote resilience, equity, and integration in Southeast Asian agriculture?

A: The six agro-ecological systems for rice production—conservation agriculture, holistic heritage of agriculture, integrated farming systems, integrated pest management, organic agriculture, and system of rice intensification—contribute to 13 ecosystem services: diet diversity; carbon sequestration; cultural services; energy provision; genetic diversity; mitigation of greenhouse gases; pest control; resilience to climate disturbance; soil structure, fertility, erosion control; water quality; weed control; wildlife biodiversity; and habitat provisioning. Moreover, these agro-ecological systems empower farmers as scientists, researchers, and innovators.

The rural youth comprise a large part of the population, but they are not included in decision-making. Moreover, most are not interested in agriculture. If we are able to attract a sufficient number of the youth to go into agriculture, then production of our food can be secured in the next generations. If we include them as key stakeholders in agriculture, then we promote equity.

Q: What important new knowledge has been gained? What knowledge gaps remain?

A: While we can say that these agro-ecological systems are not new, it is good that there is renewed interest in these both at global and regional levels. During this International Year of Family Farming, many regional and international family farming organizations have called for investments in sustainable agro-ecological approaches to agriculture with, by, and for family farming.

Knowledge gaps include: other practices on agro-ecological systems, especially those done by indigenous peoples and their “more scientific analysis” of the ecosystem services they render (e.g., fish in rice-fish systems can provide a good source of protein for poor families, more explanations on how these relate to biodiversity). Also, it will be good to know the limitations of these systems or where best to apply these systems.

Also as we call for more investments in agriculture, a knowledge gap on the remittances of OFWs and how it can be channeled to agriculture remains.

Q: What policy implications/recommendations may be drawn from the presentations?

A: If we can summarize in one sentence, it will be: there should be dramatic increase in investments by governments on agriculture. The bigger the investment, the bigger can be the gain. The investments are support in making agro-ecological family farming viable, resilient, and productive; and make key stakeholders, particularly family farmers including the youth, to be significantly involved in agriculture research, extension, production, and marketing. A favorable policy environment to support the growth and uptake of these holistic agro-ecological farming systems is very necessary.

Investments should also be done in the arena of:

- Capacity building (e.g., produce quality rice through SRI, scholarship programs for young farmers);
- Research (e.g., local indigenous systems, good practices of young farmers, monitoring mechanisms for agro-ecological farming systems);
- Extension (farmer-focused extension services such as farmer field schools);
- Technical support (such as value addition techniques for young farmers, quality control of input services for rice farming, facilitation for trade and market links);
- Finance and capital (e.g., soft loan for young farmers, how to tap remittances);
- Organizational development (regional exchange programs for young farmers);
- Curriculum development such that agriculture can have a more “positive face” and be attractive to the young.
The Strategic Framework for AAS in the Philippines

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Dr. Perez presented the strategic framework for the CGIAR Aquatic Agricultural Systems’ (AAS) program implementation in the country. The framework follows the general shape of a Filipino house. It consists of a roof indicating the goals of the program, the pillars indicating the initiatives and the targeted outcomes, the floor indicating community engagement as the mode of work, and the “silong” that indicates the elements of AAS Research in Development. The house carries a cultural value. It represents the family-centered type of development that stakeholders and local actors emphasized in discussions.

With the challenges of poverty in the Philippines, AAS has shown potential to reduce if not eliminate poverty. The program hopes to support the capacities of communities dependent on aquatic agricultural systems to optimize and sustain the innovative use of natural resources and by enhancing their participation and access in market-driven and diversified livelihood initiatives, contribute to inclusive growth, enhanced resilience, and improved well-being of the poor and marginalized.

AAS is founded on commitment to people and places, participatory action research, gender transformative approach, learning and networking, effective partnerships, and strengthened capacities.

A Rising Tide Does Not Lift All Boats: Transformative Approaches for Strengthening Resilience and Equity in Aquatic Agri-Food Systems

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“A rising tide lifts all boats… if you happen to own a boat.”

Dr. Puskur started her presentation by quoting a common macroeconomic philosophy that general improvements in the economy will benefit all participants. During her presentation she shared some evidence from Southeast Asia that refutes this belief. She highlighted that the region has experienced growth rates higher than average for all emerging economies in the last couple of decades and poverty levels reduced significantly, though at different paces and magnitudes in different countries. The region
is facing significant challenges in the form of vulnerability to climate change and associated impacts on food production and poverty. Hidden hunger is also pervasive. Growing inequalities in the rapidly growing and large economies is a major cause for concern. This has the potential to undermine social cohesion, increase social and political tensions, instability, and conflict. She highlighted that to shift to more inclusive growth patterns we need to address cultural norms that reproduce inequality and strengthen agency of the disadvantaged groups.

Gender is an important marker of societal stratification and an important case of inequality. Evidence has established that economic growth does not necessarily lead to gender equality, unless structural causes are addressed. Deeply entrenched gender norms influence women’s and men’s roles and division of labor in agriculture and in the household; their access to and control over resources (e.g., land, inputs, services, technologies, income); intra-household decision-making; division of commercial and subsistence enterprises; mobility; and participation in community activities/leadership. As a result, women in agriculture continue to experience significant gaps, with consequences on productivity and well-being of rural households and communities.

The CGIAR Research Program on Aquatic Agricultural Systems (AAS) is trying to tackle this challenge by addressing a range of economic, social, political, and cultural issues. Its transformative approach seeks to influence social and gender related values, attitudes, behaviors, and practices which give rise to and perpetuate inequalities. Its strategy aims to improve capabilities, opportunities, and income of groups on the social and economic margins. Dr. Puskur stressed that such approaches need to become a part of normal research and development practice to have an impact. This demands leadership at all levels and a breakthrough in paradigms and behaviors in our own organizational cultures and skill sets.

**Fish and Food Security: Securing Blue Growth of Aquaculture**

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Among the major drivers of our food system are wealth and population growth, which impact animal source food consumption, of which fish are critically important for food and nutrition security. Dr. Phillips noted that Asia has one of the highest demands for fish consumption. Fish is a traditional food in Asia, and a significant component of a nutritionally valuable diet. Undoubtedly, it is proportionally important in inland countries and is essential for proper nutrition of children and lactating women. The demand for fish is growing, and keen focus is shed on the Southeast Asian region. However, with the rapid increase in demand of fish and seafood, the natural capacity of the oceans and seas to meet the demands of the people has become limited, thus the need to seek additional ways of growing and producing fish.

Aquaculture has grown to meet the increased demand for fish. There is a need for the present production of aquaculture to double by 2050 to be able to meet the increasing demands. In turn, this could yield additional income and jobs for people. Dr. Phillips stated that focus must be given to growth activities in managing aquatic agricultural systems since aquaculture poses fewer environmental threats compared with other food production methods. Its ecological efficiency makes it a good alternative to open ocean and sea fishing, and livestock production. However, small-scale and wild fisheries will still be significant as a source of food and nutrients for the poor. Fortunately, farmed fish efficiently converts to food, providing a viable percentage of the edible output per unit of feed input.
However, aquaculture does have constraints on land use, water, energy, feed, and fish diseases and fish escapes that need to be addressed for sustainable growth. Moreover, it has been seen to create environmental impacts that could negatively affect its overall viability by posing threats to biodiversity, such as eutrophication, ecotoxicity, and biotic depletion. Business as usual will double environmental impacts by 2050, therefore more environmentally-efficient species and farming systems should be a priority for growth. Dr. Phillips discussed ways in which environmental constraints can be reduced, if not avoided. Innovations on aquaculture productivity, partnerships, and properly managing supply and demand, will allow aquaculture to grow and become efficient and sustainable to meet the needs of the growing world.

Q&A

Q: The demand for food is expected to grow in the next 20 to 30 years, are there analyses in the changing preferences in food?
A: Not much with the future fish supply but consumers’ preferences drive more demand.

Q: What are the challenges of pushing these at the regional level?
A: There are a number of initiatives. Perhaps a commitment toward a sustainable and inclusive perspective.

Q: How do we translate insights into mechanisms?
A: We need to develop and test practical ways of addressing the challenges and learn systematically what works and what does not in various contexts. It is important to recognise that one size does not fit all, especially when the issues are embedded in cultures and societal values and beliefs. We need to think and act differently (paradigm shifts). Also, there must be integration of the different sectors, skills, and socio-institutional practices as well as producing evidence from applications on the ground.

Q: Are there success stories that we can refer to?
A: There are several pockets of success and experiences from which we can learn. However, a major lesson is that there are no magic bullets. The solutions need to be adapted meaningfully to suit the context. We should look out for biodiversity and indigenous knowledge in long-term research; working with development practitioners and asking them to use their expertise in the agricultural sector. There is a call to think differently, everybody has a role.
Mechanization in Rice Farming: Lessons Learned from Selected Countries and IRRI Case Studies

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To start his presentation, Engr. Gummert provided a brief background on farming mechanization, including its complexities, benefits, and challenges. His presentation focused on the experiences of other countries in mechanizing their farming systems, as well as some lessons that can be derived from case studies conducted by the International Rice Research Institute (IRRI). From the experiences of Japan, Korea, China, India, and Thailand, government intervention is the common contributor to their success. Their governments developed enabling policies and support programs for the procurement of equipment, establishment of joint ventures for production, capacity building for local manufacturers, and exportation.

The studies of IRRI focused on the introduction and adoption of technologies such as axial flow thresher, stripper harvester, combine harvesting, laser leveling, hydrotiller, and mechanical dryers. The case studies found that the private sector is the key to adaptive development and sustainable manufacturing and distribution of technologies. Moreover, the emerging researchers, technology champions, and multistakeholder platforms were seen as equally important in achieving sustainable development. On the other hand, standardization and certification can be counterproductive, if these are limiting innovations done by local industries and if these are used to exclude certain machinery from government machinery distribution programs.

Engr. Gummert wrapped up his discussion with recommendations for better mechanization and postharvest. Based on the factors that contribute to the success or failure of mechanization projects, he recommended the following:

- On the national level, both public and private stakeholders should be engaged through multistakeholder platforms;
- The government should focus on creating an enabling environment rather than implementing machinery manufacturing and distribution programs;
- End-users should be involved in selecting technology;
- Programs should focus on quality delivery, strengthening of farmer entrepreneurship, and promotion of technology in the business context; and
- Holistic approach in R&D should be employed.

In connection to the conference themes, farm mechanization makes it possible for the sustainable and resilient production of rice to feed and support the growing population. It also provides equitable opportunities to resource poor actors and young people in agriculture. Finally, farm mechanization could play a vital role in ASEAN integration since rice, machines, and services move across borders.
The Never-ending Challenge of Managing Water Resources: Focus on a Half Century of Experience in Asia

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Dr. Barker's presentation focused on the importance of water resource management in agriculture. He started the discussion with the evolution of irrigation systems in Asia in three stages: (1) the Green Revolution and surface irrigation (1960s to 1990s); (2) the groundwater revolution and low lift pumps (1980s to present); and (3) the growing demand for water for non-agriculture (2000 onwards).

During the Green Revolution, surface irrigation is allotted with typically 40 percent of the agricultural budget. Despite this allocation, irrigation systems were problematic. There was a growing gap between irrigation designs and the actual irrigated area. There was also a lack of coordination with farmers, which resulted in irrigation systems constructed at unsuitable locations. Dr. Barker cited integrated water resource management, irrigation management transfer, and participatory irrigation management as possible solutions in response to these challenges. He further discussed the existence of head-tail problems in water resource management through his experiences in 1974-1975 in Central Luzon, Philippines.

Following the Green Revolution was the revolution of low lift irrigation pumps. As groundwater irrigation is more flexible and reliable compared to the earlier canal system, adoption of the technology was widely acceptable as shown in the data from Bangladesh and Vietnam. Irrigation pumps in agriculture increased over the years from 1975-1999. Groundwater irrigation also allowed two rice croppings each year that eventually lead Vietnam to become the world’s second largest rice exporter.

From the late 1980s to early 1990s, the demand for water for non-agriculture purposes increased. Using data from the Philippines and China, water from dams/reservoirs was diverted from irrigation to other uses, and the trend continued from 2000 onward. In China, water supply for irrigation continued to decrease along with the increasing demand of rice production.

Another challenge for water supply is the emerging competition among users as observed in the Mekong River. The river caters to six countries—China, Myanmar, Thailand, Laos, Cambodia, and Vietnam—and supplies water needs for hydropower, flood control, urban-industry activities, agriculture, fisheries, and the environment.

With all the challenges presented, Dr. Barker concluded that specific locations should be taken into consideration when coming up with mechanisms to effectively manage water resources and to achieve higher productivity in agricultural operations. Key players and stakeholders should likewise develop and strengthen their capacity in water resource management.
Q (to Engr. Gummert): In Malaysia, combine harvesters started in the 1980s and no work has been done to understand the driving forces that enable the success of the machines. I think there is a very important lesson that we can learn from them.

A: I think the important lessons and driving forces we can get are the reasons and solutions to underlying problems in adopting combine harvesters. I also think that combine harvesting is successful because it is hugely driven by labor shortage and high cost for manual operations. Malaysia has adopted combine harvesting a long time ago. Since countries are now on very similar development trajectories and undergo similar stages and they learn from each other. So it is safe to assume that these other countries will adopt combine harvesting too.

Q: Labor use may drop when transforming structures in agriculture. The labor force is totally different now. I wonder if you were able to look at that.

A: In the Philippines, we did not specifically look at the labor force. But we have reports that in some provinces, labor has been displaced. The same laborers are used for transplanting and harvesting and might reject doing the transplanting when farmers use combine harvesting services. In Vietnam and Cambodia, labor displacement is not a problem.

Q (to Dr. Barker): Have you looked at the capability of storage facilities? Because security is very important. And we are looking to expand that capability in ASEAN. I would also like to ask your experience in innovation with three major rivers which feed the world, in terms of rice population—Mekong River, Yellow River, and Ganges River. Based on country research done by IRRI, the usage of water is only less than 20 percent. Is there any way that we can improve the utilization of these waters?

A (by Engr. Gummert): In connection to the storage facilities, we have looked at storage because that is IRRI's mandate. We have conducted an assessment of problems in large-scale storage systems in Vietnam, including bulk storage in silos—indoor and outdoor. And it turned out that in most cases there are no concerns on the technical aspects but problems are caused by poor management (e.g., by insufficient aeration or too high moisture content).

A (by Dr. Barker): I am not sure of the question, but I would like to comment anyway. If the question is about too much water or too little water, there is a technology being developed by IRRI on drought resistance. I'm not sure if that's the question you're asking me.

Q: I think the issue here is there's only 30 percent usage of irrigation waters.

A: That is the typical efficiency figure for research irrigation schemes, only 30 percent of it is used. So this 30 percent irrigation use efficiency that needs to be revised preventively started about 10 to 15 years ago with the concepts of water counting and tracking.

If you want to do water counting, you have to do it at the system level or at the watershed level to find out what really happens with water.

Comment: Your observation is great. But regarding mechanization in rice harvesting, we do not have the industry to manufacture rice harvesters. But what we do is to buy a second-hand Chinese harvester or a Kubota. It is a cheap but effective way to replace manual harvesting. The government just gives money but they do not come up with something that would be very useful to the farmers. Some machines are expensive and use mechanisms that contribute to climate change. Other than that, the produce is really good. Another factor that may be considered is the type of rice. In Vietnam, they used the axial flow thresher giving them the highest yield since the end of the war. But in the remote east of Thailand, they expanded because of white rice.
2015 and Beyond: Helping Farmers Grow Plant 
Biotech Industry Products in the Pipeline

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Dr. Tan’s talk focused on the adoption of agri-biotechnology and its products in the pipeline. To start the discussion, he gave a brief introduction of CropLife being a regional network representing the plant science industry. CropLife is working in a global federation of regional and national associations in 91 countries covering Africa, the Middle East, America, Asia, Europe, and Latin America. In Asia, CropLife is composed of eight member companies, three associate companies, and 15 national associations, including Australia and New Zealand. He further cited that CropLife Asia envisions “a region where productive food and agricultural systems—enabled through innovative crop science and technologies—contribute to improving food security and the living standards of all in an economically, socially, and environmentally sustainable manner.”

With regards to food security, Dr. Tan showed an infographic summarizing the challenges and constraints that spelled the need to increase global food production to meet future demands. The challenges and constraints include the increase in urban population, gap between global water demand and supply, and the uneven distribution of agricultural land. He also presented the ongoing initiatives on food and nutrition security at the global and regional levels and the complexities of achieving that goal including the different technologies and the role of other key players to increase crop yield.

On the role of technology, Dr. Tan stressed the multiple challenges that farmers face today such as the shift in planting zones, extreme weather conditions, expansion of insect range, changes in weed pressure, increase in crop diseases, and impacts on water availability. As a response, there is a need to engage a holistic approach in combining technologies in plant breeding, biotechnology, crop protection, and farm management in order to deliver solutions and increase efficiency.

Using data from the US Department of Agriculture (USDA), International Rice Research Institute (IRRI), and Food and Agriculture Organization (FAO), Dr. Tan showed the maize yield in North America and Western Europe compared to that of Asia, Eastern Europe, and Africa on the average. The data also showed that the use of technology such as genetic engineering played a crucial role in the increase of production in corn, rice, and soybean in the US, China, and India. He also cited Brazil doubling its grain production from 60 million tons to more than 140 million tons from 1990 to 2011.

In a publication of the International Food Policy Research Institute (IFPRI), entitled “Food Security in a World of Natural Resource Scarcity,” IFPRI highlighted the role of agricultural technologies. The study showed that through technology, Asia has obtained a number of benefits. In crop protection, South Asia increased its yield by 30–40 percent across all crops and in East Asia and the Pacific by 20 percent. Nitrogen use efficiency increased staple crop yields by 20–40 percent and drought tolerance likewise demonstrated significant impacts on South Asia row crops.

With the growing demand for food, there is a need to increase food production. Plant science technologies have helped farmers to meet the present demand for food and it is still seen to be an effective way to
increase production by 70 percent to meet the demand by 2050. Future food production needs a greater adoption of innovative solutions such as plant biotechnology.

To explain the status of global adoption of biotech crops in 2013, Dr. Tan used data from ISAAA (2014). The four major biotech crops that are grown in countries are soybean (79% or 84.5 million ha in 11 countries), cotton (70% or 23.9 million ha in 15 countries), maize (32% or 57.4 million ha in 17 countries), and canola (24% or 8.2 million ha in 4 countries). Other developments considered are Asia becoming the major exporter of grains as feeds; and cultivation of Bt eggplant in Bangladesh, drought tolerant sugarcane in Indonesia, and the issuance of environmental release and food and feed safety to some biotech corn events in Vietnam.

Continuing his discussion on plant biotechnology, Dr. Tan discussed the benefits of GM crops, specifically on socio-economic considerations on food security, biodiversity conservation, alleviation of poverty and hunger, reduction of environmental footprint, and climate change mitigation. He then presented the biotech products in the pipeline which are already in advanced stages of development such as crops with traits to increase yield, enhance nutritional content, and improve resistance to pests and diseases. He also showed the life cycle of a biotech plant product, going through rigorous and extensive assessments and compliance to regulations to ensure that it is safe and of high quality before it goes to the market.

In conclusion, there is a growing global demand for biotech crops, especially in developing countries, and a need for functional and science-based regulatory system and government support in order to benefit from this tremendous opportunity to improve crop production.

The Micro and Macro Impacts of Agricultural Biotechnology in the Philippines: Implications of ASEAN Economic Integration

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Using policy research on micro and macro impacts of agricultural biotechnology, Dr. Gonzales started his presentation with findings of his research, followed by ASEAN economic integration and agribiotechnology, and concluded with his recommendations.

The research on micro and macro impacts of agribiotech aimed to assess whether the introduction of Bt corn in the Philippines led to sustained economic yield beyond the farmer’s field or whether there is transcendence of benefits in the corn farming communities.

Data was acquired using a socio-economic survey in nine major corn producing provinces in the Philippines, which covered eight cropping seasons, including farm level physical input-output quantities and prices, household poverty levels and income sources, and household food consumption and nutritional status. Using the same survey, the study looked at the following indicators:

1. Microeconomic: farm yield, farm cost, net farm income, subsistence economic carrying capacities, global cost competitiveness, and return on investment
2. Environmental impacts: land use efficiency, fertilizer use efficiency, labor use efficiency, and pesticide use efficiency.
3. Macroeconomic impacts: incremental difference between GM corn and ordinary hybrid (OH) corn (aggregate farm income; pre-harvest labor savings; incremental income from seed and fertilizer sales; postharvest labor income multiplier)
Using the period 2003–2011, the key findings were as follows:

1. Microeconomic farm level impacts
   - Average yield advantage of Bt corn over OH corn was 19 percent
   - Bt corn has a cost advantage of 10 percent relative to OH corn
   - A real peso per kilogram income advantage of Bt corn over OH corn was 8 percent per annum
   - In terms of economic carrying capacity, Bt corn consistently outperformed OH corn by 29 percent, in meeting the food and poverty thresholds
   - Bt corn users had 42 percent higher return on investment than OH corn users

2. Environmental impacts
   - **Land use efficiency:** Bt corn seed users required 15 percent less land than OH corn seed users in generating one metric ton of corn grain
   - **Fertilizer use efficiency:** Bt corn adopters, on the average, were 9 percent more efficient in the use of fertilizer than OH corn seed users
   - **Labor use efficiency:** Bt corn seed users were 26 percent more efficient than OH corn seed users in terms of labor usage
   - **Pesticide use efficiency:** Bt corn required 54 percent less pesticides than OH corn in order to produce the same amount of corn grain

3. Macroeconomic impact
   - The total macroeconomic effects of GM corn (combined Bt, HT, and Bt/HT) was PHP 17,178 million or USD 399.5 million in 2011.
   - The effects of Bt corn was only PHP 221 million or USD 5.1 million, equivalent to only 1 percent of total. This was primarily due to low area planted to Bt corn (2% of total GM) in 2011.

The study concluded that Bt corn adoption in the Philippines indicated positive microeconomic farm level impacts, environmental impacts, and macroeconomic effects. GM corn seed users were superior to OH corn seed users in terms of yield, farm production cost, farm income, economic carrying capacity, global cost competitiveness, and return of investment, during the last 10 years on a national scale and during the last two cropping seasons on a provincial scale.

With regard to the ASEAN economic integration in 2015, Dr. Gonzales cited a number of studies showing that ASEAN economic community in 2015 is a soft target and a milestone date since the basic elements for integration are not operationally in place; ASEAN is far behind other trade blocks like EU and Closer Economic Relations (CER); and, there is low regional development, and therefore, low integration.

Since the ASEAN region is composed of agriculture-based economies and agribiotech is the fastest adopted crop technology in recent history, agribiotech can be a strategic complementary entry scheme for regional technology development among ASEAN countries. And based on the findings of the research on the micro and macro impacts of agribiotech in the Philippines, GM corn adoption resulted in positive outcomes in terms of productivity, cost efficiency, net farm income, capacity to attain food security, and global competitiveness. Dr. Leo also said that commercial adoption of GM technologies through AEC can boost the competitiveness of the region in the trading of feedgrain, livestock, and poultry products outside of ASEAN.

Finally, Dr. Gonzales ended his talk with his recommendations specifically on the harmonization of biosafety protocols among ASEAN countries and to fast track the commercialization of GM crops through capacity-building activities.

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1 Results are attributed to the corn borer resistance trait of Bt corn that increases yield and lowers the production cost since there is no need for insecticide and labor requirement for spraying.
Delivering Biotech Seeds to Farmers Requires a Functional Regulatory System

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To start her presentation, Dr. Halos discussed biotech seeds and its benefits. Biotech seeds are seeds of plant varieties developed by intentional modification of the plant DNA or its genetic material. Biotech seeds or crops may also refer to genetically modified organisms (GMOs), living modified organisms (LMOs), transgenics, recombinant organisms, and genetically engineered organisms.

Dr. Halos defined genetic engineering as a breeding technique that transfers essential DNA segments with desirable genes from other species to the crop of interest. She cited Bt corn as an example, with a desirable gene from *Bacillus thuringiensis* (Bt) that confers resistance to the Asian corn borer, which is the most damaging corn pest in the Philippines.

In the Philippines, more than 400,000 Filipinos are farming GM corn in more than 700,000 hectares. Based on the study by Torres et al. (2013), the reasons that were given were higher yield and income, available financial assistance, pest resistance, good product quality, lesser expenses, availability of seeds, inspired by other farmers, drought tolerance, and peace of mind. All these concerns are in relation to the Asian corn borer. In the same study, it found that there is an increase of USD 200 million in income per annum that led farmers to move out of poverty and subsequently fuel rural economy.

Continuing the discussion, Dr. Halos explained why modern biotechnology or genetic engineering is regulated. Among the reasons are: (1) genetic engineering can be used for unethical and nefarious purposes; (2) the Cartagena Protocol on Biosafety binds member countries to regulate the products of modern biotechnology; (3) to ensure that safety issues are addressed; and (4) in other countries, they use it as a non-tariff barrier to international trade.

As mentioned by Dr. Gonzales, most of the Southeast Asian countries are signatory to the Cartagena Protocol on Biosafety which requires them to have a biosafety regulatory system in place. To be functional means to be transparent, science-based, predictable, manageable, responsive, and backed up by public support.

In order to achieve transparency, there should be a clear regulatory policy statement, clear requirement for regulatory compliance, written procedures, well-defined function of agencies, and information access. A science-based regulatory system uses science and evidence to determine and assess risk. It should be predictable that it uses appropriate timelines and specific requirements for each step in the process.

A regulatory system should also be manageable in terms of having key players that understand their functions; it has reasonable deadlines; and available support resources. It should also build confidence in potential applicants and regulators through trainings and have regular funding for the system.

In response to unexpected issues such as low-level presence, different requirements of different countries, and new breeding techniques, the biosafety regulatory system should be made responsive by conducting a policy review, formulation, and adoption.

Finally, the system should obtain public support by involving the public in the decision-making process, considering their concerns and informing them of the final decisions, and educating them on genetic engineering and the biosafety regulatory system.

Concluding her discussion, Dr. Halos supported the recommendation of Dr. Gonzales to harmonize biosafety regulations as an entry scheme for ASEAN economic integration.
Q (to Dr. Gonzales): We do produce more corn now, but we know that very few people will eat the corn because it is used as feed. Is there a way that we can calculate the effect of this increase in corn production for livestock? What means should we be pursuing to quantify effects on further start-ups?

A: There is an ongoing activity at the Department of Agriculture to develop a yellow corn industry roadmap which encourages interactions between corn growers and poultry producers. My suggestion there is that they should expand the planted area of GM as a policy. Honestly, the success of corn sufficiency is due to the GMOs. And then the entry point is the harmonization of biosafety protocols of ASEAN countries that are members of the Cartagena Protocol on Biosafety. On the issue that GM corn is not used as food, it now undergoes processing on a limited scale in the production of corn chips.

Q: Did you examine the effect on global competitiveness, especially Thailand, which is very protective in adapting technology over the 10-year period. Based on your papers before when I was just a student, I think Thailand, especially on corn, is more competitive than the Philippines. So with all of these global trends on global technology, especially on productivity, and Thailand is really not adopting, what can you say on the level of competitiveness?

A: We are now globally competitive, our corn is cost-competitive and also price-competitive. I encourage the Department of Agriculture to export corn not only to South Korea but other countries outside of the ASEAN.

Q: I am almost convinced to be a corn farmer rather than a rice farmer. My question is, they say that GM corn is more expensive than ordinary corn and hybrids. You have more production, but the cost of corn will be very high, unlike rice that is stable. How would you address that?

A: That depends on season and crop rotation.

Q: How about GM technology on white corn? We have more producers, but no technology.

A (by Dr. Halos): Actually, it was introduced. But the adoption was not that very high. In yellow corn, there was a presence of financiers from private companies. If there is a private financier in white corn, I tell you that will be successful. There is already seed available, what you need is interest and the market for white corn. DA had contemplated buying and licensing the technology to study white corn varieties by public research institutions. That was before when there are still no available biotech seeds for white corn in the private sector. The government is looking now on how to create the market. It should be noted that the success of GM adoption is hugely driven by the private sector. The government has to ensure that a functional regulatory system is in place.

Q: Isn’t it true that all Asian countries are now officially approving GM products on food, feed, and processing (FFP)?

A (by Dr. Tan): Actually, the approval of events would mean that Philippine corn can go to other countries for FFP use.

Q: As far as food security concerns, the Philippine Department of Agriculture provides subsidies to crops. But in the case of corn, there is hardly any subsidy. It’s the farmers who buy the seeds even when they are more expensive. There is very little subsidy for corn.

A (by Dr. Halos): We have always had a program on rice. If we study the increase in productivity in rice, it is consistent at about 0.3 percent per year whether you have rice subsidy or not. So what does it imply? It does not work.

Q: And corn had no subsidy.

A (by Dr. Halos): Exactly. Bt corn had no subsidy, only the regulation. And in the regulation, the proponents pay for the expenses. Well, it’s not really about subsidy. We are doing it the wrong way. What we should do is to provide credit and access to market for the farmers. Maybe we can promote that the private sector does that for the government. We have to get the private sector active in white corn and rice. And it would be less expensive for the government.

To wrap up the discussion, the group agreed that the presented opportunities are all important to improve resiliency and equity for regional collaboration.
In the past, there has been great focus on production systems and productivity improvement in terms of policy research, discussions, and operational frameworks of agriculture-focused institutions, including and especially agriculture ministries.

There was a tendency to consider activities beyond the farm (or fisheries) toward end consumers to be within the purview of industry ministries and industry analysts, and beyond the scope of the agricultural system.

This perspective has led to a systems approach that recognizes the importance of looking at the entire agricultural value chain spanning the range from farm finance and provision of farm inputs, through logistics and value adding/processing activities, on to getting the products to the final consumers.

The shift in focus from the production system to the value chain perspective has helped research and policy making to be more responsive to actual and long-standing needs of people in the rural areas. This also serves as an impetus for governments to develop strong inter-agency coordination mechanisms (especially between agriculture and industry ministries), or to redefine ministries’ scope of authority altogether. Vietnam, for example, has a Ministry of Agriculture and Rural Development, and Malaysia has a Ministry of Rural and Regional Development, an expanded and broader approach at enhancing the roles and functions of a ministry of agriculture. Agricultural development can then be addressed and managed more holistically through managing the rural economy, rather than addressing it as fragments (such as one of its components which is the production system alone).

This value chain system highlights the need for an adequate access to credit to small farmers, which has been a persistent challenge in the developing countries of the region.

The success of microfinance schemes and programs across Asia, which has originated and flourished primarily in the non-agricultural sectors and industries, has inspired efforts to adapt the approach to the financing requirements of small farmers. Although using this approach also has a lot of challenges especially during its earlier developments, some Southeast Asian countries have been more successful than others in small farm finance programs and may have important lessons to share with those where small farm credit access remains an obstacle to uplifting the lives of farming communities.

Transport and logistics is another significant factor in agricultural value chains, and is a particular challenge in archipelagic economies of the region such as Indonesia and the Philippines. The expansion of trade among other ASEAN countries in agricultural products will also be greatly influenced by efficient logistics systems. Following the success of the national roll on-roll off (RO-RO) nautical highway, the Philippines has been at the forefront of championing the establishment of an ASEAN RO-RO system especially across the Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) subregion.
One of the significant challenges in equitable distribution of benefits to small farmers is the single-buyer system in the agriculture value chain. More often than not, the farmers are unable to receive the proper amount of their share in the labor production process.

In the Philippines, for example, processing of major farm products such as rice, sugar, or coconut is typically done by a single large processing firm (rice mill, sugar central, or coconut oil mill) in a particular area. This gives them the market power to dictate lower buying prices for the product, which translates to lower farm gate prices than could have prevailed had there been more competition in the processing/value-adding sector. On the other hand, when small farmers are more involved in the processing value chain, it leads to a more “inclusive” approach. A more inclusive value chain would thus have more, smaller processors who could be alternative buyers of any particular farmer’s produce and lead to more competitive market prices, producing the most equitable compensation small farmers can possibly receive.

Even less inclusive is a structure wherein a large food manufacturer or service company vertically integrates and goes into large-scale farming of its primary raw materials, thereby taking control of its entire value chain. Instead, companies like Nestle and Jollibee have opted to procure their raw materials (coffee beans and onions, respectively) from small farmers, which then provides small farmers a firm role in a more inclusive value chain.

Efficient value chains foster resilience, especially in the economic dimension; inclusive value chains foster equity. When value chains transcend national boundaries, as has become common in certain manufacturing industries (e.g., electronics, motor vehicles) in ASEAN, these regional value chains or production networks foster stronger regional integration as well. Currently, wider opportunities for regional value chains for agricultural products are being explored to further strengthen agriculture resiliency and sustainability.
Cambodia’s Agriculture Sector and Its Readiness for ASEAN Integration through the Microfinance Sector

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The agriculture sector of Cambodia benefits from the Mekong River flowing through the flat lowland plains in the middle of the country and Tonle Sap Lake, the largest lake in Southeast Asia. Around 85 percent of the population live in rural areas where the majority are engaged in agriculture, mainly growing paddy on small family farms. The contribution of agriculture to GDP is 31.6 percent and the number of agriculture holdings is 1,875,712 with total area of agriculture holdings at 3,071,384 ha. The average area per holding is 1.637 ha.

There are foreign direct investments in the agricultural sector in Cambodia for crops, livestock, forestry, fishery, and food processing. Major crops are rice and rubber. Other crops are corn, cassava, sweet potato, vegetables, mung bean, chili, peanut, cashew, soy bean, black and white sesame, sugar cane, and tobacco. Major crop buyers are Vietnam, Thailand, China, Europe, and the US.

There are 42 microfinance institutions (MFIs) in Cambodia with SAMIC as the 14th in terms of size. Total MFI loan portfolio is USD 1.51 billion with 1,610,278 borrowers and 17,128 staff. The loans to the agricultural sector are increasing for both banks and MFIs though market share of MFIs in the agricultural sector is decreasing while that of banks is increasing. Thus, MFIs have diversified to other products.

SAMIC, as one of the bigger MFIs in Cambodia, operates in eight provinces and one city. It aims to contribute to poverty reduction and improve the living conditions of poor Cambodians. Its mission is to provide financial services and products to rural and urban poor at the most affordable prices while ensuring its long-term sustainability.

SAMIC has 19,006 clients with a loan portfolio of USD 10.6 million. It offers four loan types: micro, small business, SME, and emergency loans. Majority of the loans are used in agricultural projects and businesses. From June 2013 to June 2014, the share of loans for agriculture is maintained at 41–44 percent. In agriculture, its loan portfolio is USD 4,598,070.

Microfinance institutions play a vital role in improving the living standard of households through:

1. Credit  
2. Savings/deposits  
3. Micro-insurance/other financial products  
4. SPM/social work and other projects
To support the farmers for the ASEAN integration, a few more products have recently been introduced and launched:

1. Financial products (loan and leasing for agriculture equipment and vehicles)
2. Non-financial products such as training in agriculture-related activities, network for marketing, and technology sharing.

**Challenges for 2015**

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**Lao PDR’s Agriculture and Microfinance Sectors: Challenges and Opportunities in the ASEAN Integration**

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Mr. Chantha Mingboupa discussed Ekpatthana Microfinance Institution (EMI), a private Lao company with a start-up capital of USD 100,000 from 10 shareholders. EMI disbursed its first loan in April 2006.

EMI envisions to be the leading microfinance provider of innovative, valuable, and stable financial and non-financial services to empower clients and other stakeholders throughout Lao PDR.

EMI aims for its clients to provide and deliver high-value products and services that lead to their economic empowerment. For the shareholders, they provide long-term, sustainable returns for their investment. For the employees, they increase efficiency and professionalism of the staff. For the community, they develop awareness on saving and responsible borrowing.

As of August 2014, EMI has 90 employees able to serve the eight branches and two units in 14 districts in Vientiane City. It offers both savings and loan products to its clients. As of August 2014, EMI has 7,650 active borrowers and a total loan portfolio of LAK 29.6 billion (USD 3.7 million). The number of savers significantly increased to 49,736 in August 2014.
Role of MFIs in Agriculture

Activities of EMI in agriculture are few. The other 63 MFIs in Lao PDR also have low percentage of loans in agriculture.

Formal microfinance providers in Lao PDR play a vital role in the agriculture sector because of high percentage of those with access to informal money lenders and because Lao PDR is highly agricultural. Although EMI has low percentage of borrowers who are directly using loans for agriculture, borrowers are into micro-agricultural activities such as vegetable planting and chicken and duck raising.

However, like other formal providers in Lao PDR, there are challenges for EMI in providing agricultural loan such as frequent flooding. Competition is also very high between Lao farmers and farmers from other countries such as China and Vietnam who can produce big volumes at low cost. Another challenge is the flexibility of the agricultural loan products of EMI since existing loan products are paid back in monthly payment modes. Linkage with agriculture extension support is also lacking in Lao and its MFIs.

EMI’s Future Plans for Agriculture

1. To create a more flexible type of loan to fit the agricultural financial needs of the clients.
   Partnering with CARD MRI, which has the experience in the Philippines, EMI’s leaders are positive that they will be able to adopt CARD MRI’s technology in terms of providing agri-microfinance loans
2. To support micro-agriculture activities of its clients and the community by using agriculture extension support
3. To test an agriculture insurance option that will be beneficial both for clients and for EMI to make the program more sustainable

Role of MFIs in Strengthening the Agricultural Sector in Preparation for the 2015 ASEAN Integration

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The microfinance industry is estimated at USD 60–100 billion worldwide. It has experienced rapid growth, with leading microfinance institutions growing by 20 percent per annum in the past five years. Yet the sector still reaches less than 20 percent of its potential market among the world’s three billion low-income people.

In the Philippines, about 27 percent of the population is covered by microfinance and 48 percent of them are covered by CARD MRI. CARD MRI has been recognized as a financial inclusion champion. Its mission is to eradicate poverty in the Philippines and in Asia through its 13 institutions using a business model based on the philosophy of ownership. People are poor because of non-ownership. CARD is in the business of poverty eradication.

The CARD MRI Agri-Microfinance Holistic Approach Framework

The use of a holistic approach in projects has likewise been found beneficial. CARD MRI through its CARD-Business Development Foundation Inc. links clients to individual and institutional buyers in order to provide them with continuous market.
1. **Provision of microcredit.** CARD MRI agriloan program endeavors to finance agricultural production and related activities such as acquisition of farm equipment and machinery, establishment and operation of livestock production; fishery products; crops, fruits, and vegetables production; and seedlings and ornamental plants production. Agri-loan programs start with only PHP 3,000 to PHP 5,000 initial loan which can be paid in flexible payment modes (weekly or monthly). In the long run, the discipline to pay is developed.

2. **Provision of crop insurance.** It provides valuable safety nets to clients whose agricultural business has been damaged by natural calamities. The claims are paid within 1-3-5 day-targets. They also offer crop assurance, life insurance, or loan insurance. The concept of business interruption insurance is also included and can be further discussed under the terms of the crop insurance system.

3. **Education and training programs** which involve agriculture or non-agriculturist trainings for account officers, unit managers, and area managers.

4. **Market for produce.** In this system, individual clients are better linked to institutional buyers.

The roles of MFI in the agriculture sector in the ASEAN integration are: agri-loan product enhancements; training, education, and extension; product development and marketing; and reaching the unbanked in the countryside to address inclusive finance issues.

Product development and banking involves direct market linkage, which requires the existence of a company that will help the clients to market their produce, with a definite structure where clients are part owners. Reaching the unbanked in the countryside to address inclusive finance is also a goal. There is powerful potential in the countryside.

**Key challenges and opportunities for MFIs in ASEAN Integration**

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<thead>
<tr>
<th>Challenge</th>
<th>Opportunities</th>
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<tr>
<td>Big financial players (foreign commercial banks) are coming in and entering the microfinance market</td>
<td>Ensure better service and client relationship</td>
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<td>Credit pollution</td>
<td>Provide competitive products and services</td>
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<td>Staff/client poaching</td>
<td>Ensure program implementation efficiency</td>
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<td>Credit bureau (done in Cambodia and Philippines)</td>
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<td>Entry of big agricultural companies</td>
<td>Product development and marketing</td>
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<td>- direct market linkage</td>
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<td>- product development (global products)</td>
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<td>Act as consolidator</td>
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<td>Linkage with institutions offering technical training for farmers for them to stay competitive</td>
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<td>MFIs should reinvent themselves</td>
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In the context of resilience, equity, and participation, it was clear from all the three papers presented that indeed the integration of the economies, particularly in agriculture, poses both threats and opportunities for the local agriculture economies in Southeast Asia. For example, there will be easier entries of microfinance players from other countries, as well as more agriculture-related companies, which can result in credit pollution among the farmers/producers. There's also the danger of local farmers/producers not being able to compete in terms of market prices.

There's no doubt that MFIs will play a really important role. All three institutions are steadfast in creating and/or improving their current loan facilities for farmers and other agriculture-related businesses. For instance, EMI mentioned that it will be asking for technical assistance from CARD to improve their agri-loan facility. SAMIC, on the other hand, will complement their financial products with other allied services such as savings/deposits, microinsurance, and other social services and projects. Meanwhile, CARD will even strengthen and continue to improve its holistic approach by providing vital value-added services and products such as education specific to farmers and producers, micro-insurance, business development, and direct market linkages.
Accordingly, there is also a need to link farmers to institutions which provide agricultural information and technology. These are the roles wherein MFIs can contribute significantly for local economies to be more resilient to the ASEAN integration, at the same time, ensuring that the local agricultural economies can equitably participate by 2015.

Q&A

Q: In the 1-3-5 day insurance pay out scheme of CARD, how many days has the highest pay out? Is this also true even during the Yolanda typhoon?
A: The highest is within 1 day (1 day – 92%; 3 days – 5%; 5 days – 3%)
Yes, this is also true for Yolanda survivors. This is because our staff are there at the branches. The secret is also our MBA coordinators who are from the community themselves, elected by members and who do the validation of claims. Validations are done within 24 hours. We were one of the first institutions who came to the affected areas and started operations.

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Q: Are the savings of members automatically converted to stocks?
A: For EMI, we have different kinds of savings: 10 percent of the loan amount automatically saved, from the public, and from students. However, EMI cannot convert savings to stocks but there are credit unions in Lao PDR that can do this.
For SAMIC, it’s the same with EMI.
For CARD Bank, which is the first MFI bank in the Philippines, if after three years the member is able to pay 100 percent of the loan consistently and attend center meetings 90 percent of the time, then the client/member is eligible to buy shares of CARD Bank.

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Q: In your loan portfolios, what percentage is for rice?
A: The loan portfolio is not only for rice but for all agricultural products.

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Q: Do you think crop insurance will increase uptake of your agri portfolio?
A: SAMIC and EMI do not have crop insurance yet. In Myanmar, the participant said that majority of the portfolio of the credit granting institutions in Myanmar will be on agriculture.

Q: Between fast claims pay out and data accuracy, what would be more important?
A: (by CARD) It should be both. It should be fast and accurate to prevent problems on claims payment. It can be done by doing intensive training of staff and MBA coordinators.

Q: What is CARD’s thought on Value Chain Financing?
A: MFIs can definitely finance the other aspects of the value chain, not only production. It can be a collaboration with other private institutions such as Jollibee Foundation.

Q: If MFIs are into poverty reduction, what should be the government’s role? Why does the Bureau of Internal Revenue (BIR) want MFIs to pay huge taxes? What should be the approach of MFIs to protect itself?
A: (by CARD) Poverty eradication should be a joint public and private effort. It’s the business of the government (poverty reduction) but we cannot wait for them anymore. We asked for the help of the Senate and Congress to pass a bill on the appropriate taxes for MFIs. There is a pending bill and hopefully it will be approved.

1. Mr. King Kap Kalyan; 2. Mr. Somphone Sisenglath; 3. Dr. Jaime Aristotle B. Alip
Winning with a Value Chain Approach in Coffee

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**MS. MARIA ODESSA LAÑAS-EUSTAQUIO**  
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**DR. JOSE F. REAÑO**  
Research Scientist  
Nestlé Philippines

Embedded in the Nestlé’s core strategies is creating shared value (CSV), which espouses the belief that for Nestlé to be truly successful in the long term and create value for its shareholders and the communities wherein it operates, it must also create value for society. CSV allows Nestlé to creatively craft strategies that not only make a profit for the business, but also create a meaningful and lasting social impact. It entails a constant lookout for opportunities in the value chain where Nestlé can create shared value—from agriculture and sourcing, through the manufacturing and the distribution of its products, all the way to communications with consumers.

The NESCAFÉ Plan is one of Nestlé’s biggest CSV platforms, aimed at rural development through coffee. It has three pillars: responsible agriculture, responsible production and responsible consumption. With the focus on responsible agriculture, Nestlé hopes to make coffee farming a more profitable and sustainable livelihood for many coffee-dependent communities.

In the Philippines, the NESCAFÉ Plan aims to accelerate the adoption of coffee farming and increase local self-sufficiency in coffee. This also goes back to Nestlé as the plan aims to ensure that by 2020, 75 percent of NESCAFÉ’s green coffee requirements will be sourced locally, enabling the company to mitigate the risk of supply shortage from import markets and to extract more coffee from local green coffee which is seen to be more superior in quality.

**Improved Resilience**

The NESCAFÉ Plan’s mission is to help improve not just the farmers’ incomes but their lives in the long run. As such, Nestlé works toward empowering farmers by sharing best farming practices that abide by sustainability standards and the best available technologies and techniques with lower environmental
impact, that will help increase the quantity and quality of their farm’s yield.

Nestlé advocates the cultivation of high-yield coffee trees, and the planting materials for these are available at cost at Nestlé’s strategically located centers around the country. The centers also function as a one-stop shop, serving as a Robusta seedling production nursery, a local R&D center for new coffee selections, training and techno-demo center, a buying station and a composting facility for organic fertilizer. Nestlé’s team of expert agronomists is also deployed in various coffee growing areas all over the country to implement this program.

**Improved Equity**

The NESCAFÉ Plan is open to everyone from single farmers to plantations. The program is transparent so that the model is the same whether it’s for a small farmer or a big plantation, and the profit story is the same as long as the farmers follow the programs and techniques that the trainings under the NESCAFÉ Plan have imparted. The NESCAFÉ Plan integrates a direct buying program which allows small-scale farmers to sell their produce at a price aligned with the world market price by selling directly to Nestlé through its satellite buying stations; Nestlé has the widest network of buying stations and integrated coffee centers. The farmers are also able to benefit more quickly from their produce since they get paid within eight banking hours upon the sale of their green coffee beans.

Nestlé also supports responsible sourcing by encouraging farmers and trade partners to engage in sustainable farming practices via 4C (common code for the coffee community). Farmers and trade partners who get verified under 4C get an additional PHP 1.50 premium on top of the Nestlé green coffee price for every kilo of green coffee sold.

In terms of financing, while Nestlé itself does not provide this, what the company does is to link farmers with institutions that will be able to give loans or grants. Nestlé’s experience is that if these institutions know that the farmers are partners of Nestlé, the facilitation of loans become faster.

**Integration**

Competitiveness is one of the major components of ASEAN integration, and for Nestlé, one key to achieving competitiveness is by producing quality products. This is why we focus on capacity building—training and imparting knowledge to our farmers—to help them yield quality produce. This makes coffee farming sustainable because they are able to get the best value for their crops.

Nestlé recognizes that reviving the coffee industry—and helping improve the income of coffee farmers—is a gargantuan task that requires the support, not only of Nestlé, but of other key stakeholders who can help bridge the gaps in the value chain. Nestlé believes in public private partnership and thus has cultivated partnerships with national and local government, key government agencies, and other institutions to achieve its goals.

These partnerships include signing the memorandum of agreement (MOA) with the National Convergence Initiative (NCI), a cross collaboration of various agencies of government which supports the inclusive growth and the national greening program agendas, with the Department of Agriculture (DA) for the Small-farmer Program, the Philippine Coconut Authority (PCA) for the COCOBED Project, the Department of Environment and Natural Resources (DENR) for the NGP and the Department of National Defense (DND) for the AFP-Modernization Program, as well as engaging local government units to jumpstart coffee development programs in key potential areas such as what we are doing in the province of Quirino.

Nestlé is also focused not on the size or area of farms but on their efficiency. There are many farms that are unproductive and underutilized, but the potential is there, the land is fertile. So the Nestlé road map is focused on empowering farmers with the knowledge they need to utilize their land, and encourage
more young farmers to be part of the coffee farming community.

**Policy Implications/Recommendations**

1. Sustaining programs such as this entails communicating with government and letting them know how companies can help in making programs more attractive not just to partners but also to the younger generation so as to entice the latter to become involved in agriculture and/or agri-business.
2. There should be continuity for programs such as the National Greening Program and agroforestry.
3. Financing is important, and it is our wish for more banks to trust our farmers.
4. The key coffee players, especially on plantlet production, should adhere to government standards.

1. Ms. Ruth P. Novales; 2. Ms. Maria Odessa Lañas-Eustaquio; 3. Dr. Jose F. Reaño
and regulations, especially on accreditation and registration of plant varieties and nurseries.
5. There should be more companies who have the same commitment to helping our farmers.

SESSION 2C | LOGISTICS SYSTEM

Convened by UAP Center for Food and Agri Business and SEARCA
Moderated by Dr. Mercedita A. Sombilla | Director, Agriculture, Natural Resources, and Environment Staff, Philippine National Economic Development Authority

The Indonesian Experience on Logistics Systems in the Supply Chain of Agricultural Products: Opportunities and Challenges

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Dr. Daryanto presented the key driving forces in food and logistics system, in the Indonesian context, highlighting the demand and supply shifters. From the presentation, the following points were concluded:
1. There is a need for greater investment in agricultural research.
2. Agriculture and food commodities differ from non-food commodities in terms of opportunities and challenges—shelf life, changes in quality level, and product recycling; limited to timing and information.
3. Improve information sharing and dissemination in the logistics sector.

Certain constraints were also identified which should be given due attention in order to organize the food and logistics system:
1. The quality of products are influenced by the inefficient logistics system
2. The structure of the overall process of logistic management system is monopolistic in nature, giving very little avenue for inclusive growth
3. Failure to address other key demands due to too much focus on a few high yielding products for profit purposes. For instance, there is a strong demand for scaling up milk farms to produce not just fresh milk but also yogurt, and other products.
Most of the food and livestock products in Manila come from Luzon and Mindanao combined. However, the gravity model estimation revealed that Mindanao has a lot more potential to expand its trade of agricultural products more effectively. The study showed that most of the crop growers in Mindanao choose to bring their products personally to the traders since they can sell them at a higher price. In addition, some of their products are bought from them personally by the traders. Moreover, it is seen that sellers who have access to the market themselves have higher chances of selling their products than those who just sell their products to the traders. However, many sellers would rather sell their products to the traders because of poor road quality. They are also confident that the traders will be able to sell their produce.

Dr. Llanto emphasized that the chain suppliers such as traders, truckers, and wholesalers in Mindanao area also experience difficulty in selling the products at the highest possible price since most of them already spend much on the transportation of the products alone. Quoting Dr. Daryanto’s paper, Dr. Llanto stated that the Philippines and Indonesia have very similar logistics issues. The economic size and the level of market are two of the markers that affect the possible optimal cost of the produce being sold. Thus, most of the produce is sold to Manila, Cebu, Iloilo and other highly urbanized areas through ports. However, only chain suppliers are able to market the produce in this manner since primary producers are not capable of supplying the huge number of products to meet the needs of port cargo.

To end, Dr. Llanto proposed several policy recommendations such as investment in road, port, and shipping services; providing public goods information most especially to small producers; improvement of the monitoring, coordination, and regulation of markets; and ensuring efficient transportation and port regulations.
Enhancing ASEAN Connectivity: The ASEAN RO-RO Initiative

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The transformation of ASEAN into a single market is one of the aims of the ASEAN economic blueprint. Dr. Basilio highlighted the importance of connectivity in ASEAN to increase trade, social, and cultural relations. The efforts of this single ASEAN market are achievable through the nautical highways by the use of roll on-roll off or RO-RO. The Philippines has become a co-shepherd of the RO-RO initiatives of ASEAN.

Dr. Basilio stressed the advantages of using RO-RO. Compared to lift-on lift-off, RO-RO is proven to be more efficient since it reduces the use of cranes to lift baggage. Trucks and other wheeled storage transports can be loaded on the RO-RO. RO-RO is also seen to contribute to tourism growth since people and products can move at the same time. In addition, archipelagic countries can take advantage of using RO-RO in areas where bridge building cannot be cost effective. Being an archipelagic country, Indonesia is the top supporter of this ASEAN project. Thus, RO-RO is an effective tool to hasten ASEAN connectivity toward a single ASEAN market.

Dr. Basilio cited examples of the advantages of using RO-RO. According to him, Nestle had 34 distribution centers before using RO-RO in the 1990s. With the introduction of the new transport system they only needed three centers where trucks served as moving warehouses. RO-RO can also transport vehicles from one place to another, thus, Dr. Basilio noted that the use of this transportation can be a function of connectivity to other places. Furthermore, he noted how RO-RO are faster, cost efficient, and more environment friendly than other means of sea transport.

The Davao-General Santos-Bitung RO-RO link is the first Philippines to Indonesia RO-RO link established. This connection aims to have better trade of products between the two countries. Certain products from the Philippines have been exported to Indonesia such as crude coconut oils, copra, desiccated coconut oil, crude palm oil, coconut charcoal, and frozen fish.
Q: Can other places also have designated ports? Im still confused—there are many ports in the Philippines and Indonesia, how will the national single window be coordinated?

A: Initially, designated international ports are the first ones to participate. As more are proposed, even the domestic ports can be upgraded into international ports provided you put in control measures—customs, immigration, etc. The national single window concept is a one-stop shop processing everything so that there is no running around many agencies to process imports/exports. All the windows can be integrated so clearing can actually happen even before goods are shipped out of the country; along with accompanying documentation.

Q: We have a project that wants to transport food during disasters. The Philippines can supply food but port congestion is a concern. We have a wishlist, we have money. How can we best ship out goods without port congestion?

A: Ten years ago, government invested money in near Manila markets—Batangas, Subic; the government invested in highways; we have invested but we are not maximizing that. With port congestion and truck bans, cargos were shifted to Subic and Batangas—thus, Manila is less congested. We should develop Batangas and Subic, not Manila. But when you think about it, the real problem is not traffic at the ports but traffic in Manila.

A: Every stage in island trade is monopolized. Even if a farmer is well informed of prices in Manila or Mindoro, he has no choice but to accept the price offered by the dealer rather than cart off his produce back to his farm. How can we address this? Since farmers do not have information they can be exploited, traditionally. But we found that because of mobile telephony, farmers are equipped with the advantage to bargain and negotiate. Before, local farmers deal with local traders who deal with Manila buyers. Now, Manila traders send buying agents to farmers, but since farmers have cellular phones, they can have a better bargaining point.

Q: One big challenge in transport is the cold chain. How does RO-RO address this?

A: RO-RO can handle continuous cold chain since there is electricity on the ships and refrigerated vans can be plugged in while the vessel is at sea.

Q: How do you think will the new administration improve supply chains in Indonesia?

A: Well, the new president has a toll for sea program for northern and eastern Indonesia. In this case RO-RO is an ideal model. In terms of communication, the use of mobile phones in Indonesia is growing very fast. Farmers now use them to trace information but one problem is that charges are more expensive. As an addition, there is a need for repeater stations for communication; in some areas, farm roads are not practical but cable cars are better for very rough terrain.

Q: How can we help small farmers access the logistics system?

A: In the case of Jollibee and onion farmers in Nueva Ecija, the local government can really make a difference when working with small farmers. Maybe a supply chain management association of the Philippines, directly linking with farmers and cooperatives, can be organized.
Summary by Moderator

DR. MERCEDITA A. SOMBILLA
Director, Agriculture, Natural Resources, and Environment Staff
Philippine National Economic Development Authority

The session underscores the important role of logistics in promoting inclusive growth as producers, especially the small farmers, become more effectively and efficiently connected with the market and the consumers. Modernizing logistics facilities, which include the development of good transport and communication network, are keys to ensuring adequate and consistent supply of quality and safe agricultural products that respond to the segmented and changing demand requirements. These points are strongly stressed in both the Indonesian and Philippine studies.

Despite current efforts to further improve the logistics system, there are still huge gaps that hinder the further enhancement of the efficiency of supply chains. Key issues identified in the presentations include the continued lack of good/better transportation facilities such as roads, ports, railways, and airports. And because of these deficiencies, subsequent problems arise including port congestion, high transport/trucking cost, and longer travel periods that contribute to spoilage and quality deterioration of produce. Inconsistent government regulations on trucking operations, occurrence of bribery or “informal payments” at the local level, and lack of product quality standards at the wholesale and retail levels were also identified as key gaps. The need to improve communication/information dissemination as well as the development of new technologies that are proven more effective and efficient than conventional ones as exemplified by RO-RO, were identified as key areas for improvement.

To enhance the logistics system of the agriculture sector, the following recommendations were raised: (1) increase the investments in transport/communication/postharvest infrastructure facilities especially those that would strengthen connection of small farmers to markets; (2) improve the monitoring and coordination of markets to provide more timely and accurate market information, especially to farmers; (3) increase investment in R&D for continued development of new technologies or improvement of existing ones (e.g., RO-RO shipping services) and capacity building; and (d) strengthen regulatory institutions and ensure effective implementation of regulations on maintenance of quality and more concordant product standardization as well as regulations that enhance the efficiency of supply chains within countries and beyond. A recommendation that needs to be resounded is the need to strengthen public-private sector partnership in improving this area.

Indeed a good and effective logistics system can reduce risks and uncertainties in transferring inputs and outputs of agro-food products at the upstream and downstream levels. This will reduce transaction costs and increase competitiveness of agro-food products in markets and make available goods at more affordable prices.
SESSION 2D | INCLUSIVE VALUE CHAINS OF AGRICULTURAL CROPS

Convened by CIRDAP
Moderated by Dr. Hossein Shahbaz | Director, Pilot Projects and Director-in-Charge, Research Division, CIRDAP

Supply Chain and Value Chain Development of Shallot in Indonesia

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The rate of production of horticultural crops in Indonesia is increasing; however, future progress might be hampered due to the small land area available for horticultural crops. It is recommended that the land area be increased to 3.2 times or more. Additionally, the average farm scale size appears to be inefficient.

Indonesia is self-sufficient in chili and shallot, which is unique because of the need for fresh product. The main issue, however, is that prices are prone to unpredictable fluctuations due to the lack of postharvest handling and the involvement of many supply chain actors that destabilize the product cost.

Moreover, production is not year-round. Technology intervention has allowed the rate of production to increase in added value, reduce spoilage, and increase shelf life, where only 15 percent was recorded as losses compared to the previously incurred loss of 45 percent.

Marketing of Fruits and Vegetables in Sri Lanka through Competitive Supply Chain Management

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Sri Lanka is known to have a rich abundance of about 80 varieties of fruits and vegetables. However, the production of these crops is highly seasonal. During the peak season when production output is high, prices plummet. Still, if farming practices are not given importance, product is more likely to be of poor quality and high losses will be incurred during the season.
There are five chains in the Sri Lankan agriculture sector: private (traditional market and supermarket), government, export, direct selling, and agro-industries. The prices of most products are determined based on the supply of the fresh products, not by the market orientation of the product. Farmers sell their produce to collection centers that act as middlemen, who sell to wholesalers, then to retailers. Sometimes, retailers directly sell to agro processing industries via contract farming. Almost 96 percent of farmers use this system. To illustrate, the produce goes through the following stages: farmer – collection agent – commission agent – wholesaler – retailer – final consumer. There are six levels, which are more prone to price increases, which is not in favor of farmers.

Fresh produce, low pesticide usage, low fertilizer usage, and medium quality lead to successful fresh supply chain; it is shorter than the traditional supply chain and there is no middle man. The transport distance is also shorter, there is no excessive production, and the use of plastic crates has helped keep produce fresh.

**Q&A**

**Q:** You said supermarkets give highest return to farmers, are there downsides to this?

**A:** Cash payment takes time—up to a month after delivery—but in traditional markets, they deliver, they receive payments right away.

Yes, maybe it’s not really carry in your products and you get cash right away but they may get a better price in supermarkets than in the traditional market. In Indonesia, farmers prefer the wet market because of cash and carry and they are not conscious about quality. In the wet market, good or bad quality and the price may be the same. It’s a challenge for government to encourage quality and provide a price premium for that.

**Q:** Shallot can be fried and exported to other countries, that is a good example of value adding.

**A:** I agree that processing will increase value added but in the case of shallot, consumers prefer fresh. In the case of chili and shallot, it is only sold fresh.

**Q:** This is similar to onion farmers in the Philippines, in Nueva Ecija. If price is low, they put the harvest in cold storage and sell when the price is high. They earn additional cost for that but have to pay for storage fee.

**A:** Before there were no cold storage facilities in Indonesia. Now, one of them is managed in Central Java by groups of farmers with more than 200 members; they have a cooperative that manages that facility.

**Q:** What can we learn from Sri Lanka for Indonesia?

**A:** What we can learn is that in any country we have many different supply chains—private and government—we have to study that and then choose the best. The government of Sri Lanka is already shifting to the hadibaba system.

**Q:** How much is consumer influence needed to shift to the hadibaba system? Because if the government is initiating that, they are program based, not consumption based.

**A:** It is not owned by the government, they only initiate. But for this government-assisted project for the community, there are benefits gained that still go back to the community. If the private sector can resolve that, then they can take on the role that the government is doing.

**Q:** How do we account for the participation of the other players such as in the financial sector? Am I made to understand that the role of wholesaler is limited to buying; do they also offer financing?

**A:** Cold facility is still supported by government but cooperatives can access money from the bank; a group of farmers can be in a coop so they can get credit.
Resilience and equity are directly served by conscious efforts to ensure sustainability in agricultural production systems and to reduce rural poverty in its multiple dimensions.

Sustainable agricultural practices, including organic farming, sloping agricultural land technologies, systems of rice intensification, and others have been found to be slowly increasing but still limited in some countries in the region.

Practitioners attest that sustainability need not imply lower productivity. Questions are still continuously being posed particularly by certain scientists as to the potential contribution (or lack thereof) of these new agricultural mechanisms or systems to food security and sustainable agriculture.

Meanwhile, overcrowding in the lowlands have driven more and more agricultural activities to shift to the uplands, whether subsistence or commercial, leading to serious questions and debates on the tradeoffs between production and environmental integrity. Sustainable upland agriculture is now being seen as an important area of consideration, especially in places where the agricultural land frontier is closing up.

Poverty in its economic, social, environmental, cultural, and political dimensions is rooted in lack of endowments in five forms of assets: financial, human, natural, physical, and social capital. Interventions to reduce poverty fall under three modes: (1) those that expand the poor’s endowments of these various forms of capital, either by outright redistribution or by improving access to them, (2) those that increase the benefits (income or welfare) that they derive from these assets, and (3) those that enrich or protect these asset endowments.

Included under the first mode are asset reform programs that address the poor’s access to natural capital such as farmlands (e.g., agrarian reform), fishery resources, and ancestral domains. It also includes various initiatives to improve health and education (i.e., human capital); rural infrastructure such as energy, irrigation, farm to market roads, and communication facilities (physical capital); farm credit, microfinance, and microenterprise initiatives (financial capital); and participatory mechanisms such as cooperatives and local development councils (social capital).

Under the second mode of increasing the benefits derived from the above assets are efforts to improve productivity through improved technology via expanded research and development (R&D) and extension efforts. Measures to assist farmers with improved access to inputs such as hybrid seeds, chemical or organic fertilizers, better pesticides, and suitable farm machines likewise fulfill the same function.
This may also be pursued through institutional interventions and market reforms to improve farm prices. These include fostering small and medium-scale processing of farm products, and measures to strengthen the various commodity value chains that link production to final consumption. Also contributing to this goal are macroeconomic measures that stabilize prices (i.e., reduce inflation), foreign exchange rates, and interest rates.

Forward-looking measures characterize the third mode, of enriching and/or protecting endowments in the various forms of capital. Environmental protection measures such as forest and watershed protection and coastal resources management seek to enhance and preserve the natural capital. So do climate change adaptation measures, which are now a prominent concern at all levels of development planning in protecting both natural and physical capital.

Conditional cash transfer (CCT) programs induce the poor to invest in their human capital by rewarding them for keeping children in school and availing of health services, among others. Population management and disaster management efforts similarly pursue the same goal.
Ms. Minh emphasized at the beginning of her presentation that building resilience and food security is no longer a choice but a must. She discussed how 500 million family farms are producing most of the food that the world consumes and operate in extremely diverse groups. We produce more food than ever, but 805 million people across the globe are still hungry—two-thirds of which live in Asia, where there is surplus in rice. She also stated that 95 percent of rice is produced and consumed in Asia. Rice is considered as the staple food for 3.5 billion people. Rice production is also the source of income of a billion people, most of which are women. As such, rice is considered “life.” However, the production of rice increases the incidence of environmental stresses. Land conservation, salinization, and water scarcity come as a result, which influence the beginning of a cycle that ultimately affects rice yields.

The system of rice intensification (SRI) is presented as a climate-smart, agroecological methodology that has the potential to improve the performance of rice and other crops. The main principle of SRI is to change how plants, soil, water, and nutrients are managed. Soil conditions and nutrient availability are improved using inorganic matter while water application is reduced and controlled. As a result, farmers improve their productivity and reduce their dependence on inorganic inputs.

The five countries producing two-thirds of the world’s rice (India, Vietnam, China, Indonesia, and Cambodia) have started practicing SRI methods, increasing production values at an estimate of USD 862.5 million. The adoption of SRI has been found to increase incomes and lower production costs, improve resiliency and production of rural communities, and reduce negative environmental impacts.

Ms. Minh presented the cases of communities in Vietnam that have adopted the SRI in a 10-year program meant to reach a national scale. The highlights of the case study include:

- SRI has been acknowledged as a technological advancement by the Vietnam Ministry of Agriculture and Rural Development in 2007
- SRI has reached 18 percent (1.8 million) of rice farmers and covers 10 percent (367,000 ha) of paddy areas
- Farmers receive an additional USD 95–210 per hectare per crop in total income
- The health and well-being of the environment and the farmers show positive improvement
- Farmer field schools emphasize on empowering women, 70 percent of participants are women farmers.

Like any program, SRI promotion is faced with challenges. Since it is principle-based rather than prescriptive, it requires first to change the farmer mindset. Existing land fragmentations and water management can hamper the adoption of SRI at scale. Due to the use of inorganic materials, input suppliers are against its implementation. As such, the economic growth model will have to be reconsidered. Nonetheless, farmers are anxious about profit margins and paddy environment and there is a political
will to maintain a viable green rice sector. That explains the remarkable success of SRI in Vietnam. The other main points of the presentation include:

1. There is an uneven uptake of the adoption of SRI at the provincial and lower levels.
2. Evaluating efficiency of SRI adoption on a large scale is difficult.
3. Support in the provinces depend greatly on the private connections and lobby by provincial staff.
4. Buy in from local government units is essential to ensure leverage of public funds.
5. Farmer-led innovation is key to developing a sustainable food system, and should therefore be provided with and benefit from safe, low external-input, readily accessible, and viable solutions.
6. SRI adoption would require the implementation of effective policies, incentive mechanisms, accountability, and farmer outreach.
7. Stakeholder collaboration and alignment are fundamental to wide-scale impact.

The Multiple Goods and Services of Asian Rice Production Systems

The review assessed the multiple benefits of Asian rice ecosystems in a generation where the importance of rice is critical in the cultivation of global and local food economies. According to Mr. Ravanera, rice production faces multiple stressors such as climate change and the ASEAN integration in 2015. The use of inputs to increase rice production is a trend, but this practice depletes natural resources. Therefore, new and holistic approaches that will increase yields without producing negative ecological effects are needed.

The study identified six agro-ecosystem approaches in rice production (conservation agriculture, organic rice production, system of rice intensification, traditional agriculture, integrated pest management, and integrated farming systems) and assessed the observed effects of each in terms of yield and provision of ecosystem services. However, economic valuations were not considered. Fourteen ecosystem services were identified, including: (1) resilience to climate disturbances; (2) carbon sequestration; (3) cultural services; (4) diet diversity and nutrient provision; (5) energy provision; (6) genetic diversity; (7) mitigation of greenhouse gas (GHG) emissions; (8) yield and goods provision; (9) soil structure, fertility, and erosion control; (10) pest and disease regulation; (11) water quality and quantity; (12) weed control; and (13) wild biodiversity and biodiversity habitat.

The review concluded that, in the majority of cases, yields of rice production systems do not need to be sacrificed when the systems are managed to generate other ecosystem services. Overwhelmingly, in all systems, the predominant outcome has been “win-win”: higher yields as well as greater generation of ecosystem services. There is a need, however, for favorable policy environments to support the growth and uptake of these holistic farming systems.

As an example, the Integrated Farming System was elaborated by Mr. Ravanera as a significant system providing greater yields and creating synergy in the management of resources. Other main points cited
in the use of IFS as an agricultural approach are the following:

1. Asians mainly live in rice-fish societies; approximately 1.08 million ha is utilized for rice-fish farming, while another 10.2 million ha is potentially available for expansion.
2. IFS has the potential to increase food production and income, control pests (such as mollusks and insects) and weeds, and reduce the risk of crop failure resulting from the integration of rice and fish.
3. Fish culture can reduce nutrient loss, aerate and enhance soil viability, and increase nutrient content.
4. Fish production in IFS is relatively small due to limited space and pesticide contamination in water.
5. Rice-fish culture requires more water and is more labor intensive.
6. IFS is a product of the community’s best practices and hence can strengthen farmer and academe partnership.
7. There is a need for reinforcing policy environment in terms of improved livelihood, sustained production, and regenerative natural environment.

Policies to Attract the Youth to Agriculture

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Sixty percent of the world population belongs to the youth, majority of whom are either unemployed or engaged in informal labor. It has been observed that the youth of today are not interested in agriculture. There has been a decrease in enrollment (51 percent of total students in 1980 to 4.7 percent in 2012) in such courses in the University of the Philippines Los Baños. In Vietnam, the rural youth migrate to cities for better jobs. In Cambodia, the youth prefer a more modern lifestyle.

For the youth, engaging in agriculture is not attractive, as they perceive that farming will bring them no pride and dignity, and that farmers have low self-esteem. They believe that farming is unstable and provides low income. Rural life for them is boring. Moreover, the youth is excluded in agricultural policy formation and relevant decision-making processes. Organizations for the rural youth in agriculture is also lacking in the country.

Another challenge in keeping the youth in agriculture is that even youth farmers themselves have a negative perspective toward farming. They have no access to land and credit, and receive little or no support services such as research and extension, affordable seeds, and markets. Farm mechanization is also an issue. However, farmer’s children express their desire to stay in agriculture if the following conditions are available:

1. Agriculture will provide decent livelihood
2. Agriculture can provide a higher income
3. Capital investments and other forms of support are present

Several cases from three countries (Taiwan, Philippines, and Vietnam) were presented where the youth were encouraged and inspired to work in agriculture. In Taiwan, the New Farmer Program provides technical and financial support and low interest rates. In the Philippines, youth trainings were conducted; while a youth committee with a leadership structure is present in Vietnam through the Vietnam Farmers Union. The speaker proposed to develop programs and implement strategies to attract youth to agriculture. Exposure to education and training as well as the establishment of support groups are also proposed for capacity building and organization building.

As such, it can be concluded that the youth can still be encouraged in farming if they see meaning in what they do, feel a sense of pride, and have better income opportunities.
Q: Farming is not sustainable because the income of the farmers per month is approximately PHP 22,000. We cannot be sustainable if our farmers are not sustainable themselves. The government has no big investment in agriculture, thus very small gain. The funding of the Philippines in agriculture is not enough. Agricultural investment is not a priority. So the solution, government should invest more in agriculture. Now we are given one bag of seed and one bag of fertilizer, is this truly supportive of farmers? Planting rice is never fun.

A: Farmers need and benefit from safe and low input. Small investment, small gain, bigger investment, bigger gains; therefore we should have bigger investment for agriculture (i.e., government must invest more in agriculture). We are also inviting private investments in agriculture.

Comment: Know your vision for agriculture—then the government will not build infrastructure near the irrigation systems that leads to degradation/destruction of our farms/farming communities

A: Low public investment in agriculture, hence, the prevalence of private investments in agriculture as in the case in Asia.

Investments from large companies actually displace small scale farmers, which is contradictory to the goal of poverty alleviation.

Comment: There are many negative perceptions of farming. (Participants shared his farming experience—his father always discouraged his children from going into farming (a general scenario in the Philippines); A farmer’s child (who is abroad or who is already earning income) will stop their parents from farming, which decreases production.

A: Perspective building should be started at home by the parents themselves.

Comment: One of the limitations of upscaling SRI is the involvement of policy makers. SRI is more suitable to smallholders/small-scale farming

A: SRI’s goal is to improve farmers’ knowledge on resilience.

Comment: The first and second paper may be in conflict with one another.

A: SRI is a means to an end. Government involvement is very important because resources are there.

Q: Dr. Sajise pointed out that IFS and SRI may be missing the context of rice-based agricultural systems because despite the claims of resilience in SRI, it doesn’t show evidence.

A: SRI is a means to an end; it aims to improve farmers’ knowledge on resilience. It also helps preserve and improve the gene pool.

Proposals and programs may be developed to build farmers’ entrepreneurial attitude and to attract the youth back to agriculture using sustainable, agro-ecological approaches. Small-scale family farmers must be organized and strengthened to make them better prepared to access opportunities and benefit fully from integration and address adverse consequences because of integration. Moreover, perspective building should start at home by the parents themselves.

Q: What policy implications/recommendations may be drawn from the papers/presentations?

A: CBSUA expressed that SRI is uplifting the lives of farmers. We hope that institutions engaged in rice research will find time to know more about SRI. The Philippines will have a national consultative meeting on SRI this November. On resilience, after typhoons, SRI farmers were more empowered or found it easy to recover. We need less inputs to use in SRI and can manage without even seeking the help of government agencies.

Q: Rice institutions around the world should research and support SRIs more.

A: Media is very powerful in promoting SRI (morning and afternoon radio programs and involvement of arts and languages in promoting SRIs).

IFS has very high potential because fish can be a protein source as well.

Comment: (Dr. Percy Sajise) The Youth are not coming back to the rural areas or farming. He suggested that remittance can be a good source of funding/investment in the agriculture sector and the government needs to craft a program for it.

Comment: The academe should take advantage of promoting agriculture especially in the K-12 system. It should be initiated by state universities and national high schools; the curriculum in high schools can incorporate agricultural activities to increase awareness/interest in farming.

A: There are scholarships for agriculture but only a few are really interested. The academe (from preschool up to high school) has an important role in influencing the youth so that they can appreciate and choose agriculture careers.
There is low public investment in agriculture; hence, private agricultural investments prevail in the case of Asia, which places investment in large companies and displaces small-scale farmers as a result. This is contradictory to the goal of poverty alleviation.

New knowledge has been gained from research on the situations of young farmers and existing initiatives and proposals from young farmers and their organizations to make agriculture a more viable option for rural youth. The role of education (from preschool to high school) in influencing the youth should be exploited so they can appreciate and choose agricultural careers. Further research needs to be done on effective strategies to attract the youth to agriculture.

Comment: Ms. Pabalate thanked SEARCA for supporting her thesis during Dr. Sajise’s time. She suggested to educate the farmers through radio. She is now teaching agriculture over the radio but only in CALABARZON.

A: There are several scholarships available for students who will take up agriculture. DA-BAR is doing this.

To attract the youth back to agriculture, the following are recommended:
- Magna Carta of Young Farmers
- Access to land and natural resources and seeds
- Capacity building on sustainable, organic, agro-ecological approaches; farmer-owned and led enterprises; and value addition
- Entrepreneurship
- Support for finance needs of young farmers
- Organization development to give voice to young farmers, strengthen cooperation groups, develop knowledge networks, etc
- Policy advocacy especially focused on youth
- Partnership with various actors (government, business sector, banks, academe)
- Make more scholarships available for students who want to take up agriculture

Gaps in terms of resiliency and sustainability in agriculture—lack of discussion in biodiversity particularly in the loss of traditional rice varieties in Asia particularly in the Philippines. SEARCA should encourage R&D in use of indigenous rice farming systems.
“Perennialisation” of Upland Agriculture

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The Philippine forest has been rapidly declining in the past decades. Most of this loss is due to land conversion for agricultural use. Mr. Jamieson noted that 30 percent of the arable land in the country is planted with maize to be harvested as animal feed. Maize is one of the most common animal feeds in the world, but it can cause serious erosion in the uplands, and increases the risk of landslides. If a perennial alternative could be found, the roots would stabilize the soil and yields may even be higher too.

It is difficult to persuade humans to forego their staple diet, because eating habits are ingrained. Livestock, on the other hand, can change their diet in much shorter time frames. For hundreds of years, local farmers in Southeast Asia have been tapping palm trees for their sugary sap. The sap, which is high in calories, can be fed to pigs and ducks as an alternative to maize. Thus, Mr. Jamieson recommended that these “sugar palms” be further developed as animal feed since both history and scientific research has shown them to be cost effective and with potential for scaling up. This transition from maize to sugar palm feeds would free arable lands for vital food crops and reduce clearance pressure on forests. The integration of trees into farming practices has the potential to sustain land productivity in addition to providing useful tree products such as firewood and fodder. This practice is referred to as “agroforestry,” —growing trees on farms. This is a kind of “perennialisation” to provide food and nutrition security as well as additional sources of income and fodder for livestock. Perennialisation, as advocated by the World Agroforestry Centre, involves the substitution of annual crops with perennial plants and trees as they provide continuous ground cover and deep root systems for soil protection and stabilization, while increasing carbon stocks and reducing nutrients lost by leaching.

However, Mr. Jamieson has noted there are still lots of challenges and further research is needed to support the movement for perennialisation. Such research should be focused on technologies that help reduce labor cost of tapping the sap of sugar palms; ways to stabilize the sugar sap to avoid fermentation; develop the cultivation of Arenga pinnata, Nypa fruticans, and other palms for tapping, most especially in an agroforestry system; and the identification of a substitute protein source for co-feeding to the livestock. Mr. Jamieson showed a survey of the perception of the people of Wahid-Inabanga of the role of trees in agriculture. Many of the farmers did not identify any major benefit from introducing trees on their farms. Reaffirming the importance of forestry and introducing agroforestry poses challenges most especially if people do not see any significant value of trees in agriculture. Education is necessary to help farmers see the benefits of trees for their livelihood, food security, and adaptation to climate hazards.
Conservation Agriculture with Trees for Sustainable Crop Production Intensification in the Philippine Uplands

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Dr. Mercado started the presentation by introducing the three pillars of sustainable crop production intensification in the Philippines: (1) accessibility and use of appropriate technologies, (2) establishment of community institution development, and (3) a working disaster risk reduction management (DRRM) in the uplands. There are several challenges facing farmers and crops in the Philippine uplands, most of which came about because of bad farming practices. These bad farming practices coupled with the changing climate may pose threats to food security, family income, and people’s livelihood due to soil degradation leading to soil erosion, which may ultimately cause landslides. Consecutively, Mr. Mercado emphasized that these challenges may be avoided with the use of conservation agriculture with trees (CAT), which considers the management of trees and crops, water, and land/soil.

The use of CAT on sloping lands minimizes the disturbance in soil and provides continuous insulation or ground cover that protects the soil from drying out. To achieve this, farmers may plant diverse crop species employing the multiple level canopies or employ the crop rotation practice. Moreover, integrating agronomic management practices can also ensure a diverse crop output and better management of water, nutrients, and pests. Understanding the type of crops and plant combinations for the agronomic management practices poses great benefits for the farmers mostly due to its cost effectiveness. Dr. Mercado stated that integrating trees into conservation agriculture management hastens the recovery of the agricultural system from typhoons and other extreme events, thus, paving way for better food and income security during times of disaster.

CAT scales up using a multiprong landscape approach through participatory technology development and dissemination at the national level all the way to the household level. It employs good agricultural practices, namely:

1. Establishment of natural vegetative filter strips along contour lines to protect the soil from erosion
2. Rainwater harvesting, which makes water available to crops and livestock during prolonged dry spells due to climate change
3. Organic fertilizer such as vermicomposting, which addresses the needs of farmers for fertilizers and at the same time increases soil organic matter, which in turn improves soil moisture condition
4. Vegetable agroforestry increases vegetable yield with proper management

Further research on CAT can be valuable for the agricultural sector especially when it has been scaled up for use by many farmers. Thus, there really is a need to support further endeavors regarding CAT.
Strengthening Climate Change Resilience of Upland Agriculture: The Contribution of GIZ in the Philippines

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Climate change has worsened the already negative effects of unsustainable upland agricultural practices (e.g., monocropping, which worsens soil quality) employed by farmers. These cash crops, however, are the farmers’ main source of income. As the damage sounds grave, Dr. Schade stated that this can still be lessened by the adoption of agroforestry systems, which when used correctly, can be more resilient against extreme climate events. In addition, it also enhances biodiversity conservation and can serve as substitute habitat to depleting forests. There is also a high chance of carbon storage and sequestration in this agricultural system.

However, farmers in the Philippines are reluctant to employ agroforestry in practice. For one, they do not have security of tenure given that the uplands are mainly government land, hence, they are hesitant to invest money and effort on it since it is not their own land. Likewise, many farmers do not see any income-generating ventures in agroforestry and have very little to no knowledge as to market access, product processing, and value adding of their products. On the other hand, farmers who were part of the agroforestry project did not maintain the practice and had chosen to replace their high quality cacao crop with ordinary maize (since maize yields more than cacao) and returned to their traditional crop practices after the project was over. With such continuous practice, it can be seen that the upland farms are more likely to be affected by climate change.

Learning from the issues of the farmers, Dr. Schade suggested keys to successful upland agriculture: security of tenure, extension services, and access to market. With these three components, upland agriculture can now be embraced by the farmers. However, these three elements do not easily constitute successful upland agroforestry. Dr. Schade said that many things are still to be considered such as strong partnership with local and private organizations and provision of technical and financial support to the farmers.

Furthermore, Dr. Schade mentioned in his presentation that the GIZ supports the establishment of resilient agroforestry systems. Its approach in strengthening climate change resilience of upland agriculture requires public-private partnership for the provision of training, extension service, value adding and marketing, and integration of smallholder farmers into lucrative supply chains. Thus, a good partnership among the stakeholders must be solidified. Ideally, it would pave the way for establishing technical and financial support for farmers such as resource management planning, attracting the participation and cooperation of different stakeholders, especially LGUs and GOs, and creating more farm-to-market roads and other infrastructure.

Q&A

Q: The context varies, the dynamics changes, you have the technologies and call it sustainable because it protects the soils, and will give higher income but there is a social process, how do you merge the social part and the technology involved in a given context?

A: Our role is to do scientific research on agroforestry and we’re now looking at scientific pathways on how these technologies create impact on the lives of the farmers, what are the barriers to adoption, scaling up and scaling out, what works what doesn’t work. You’re right, we need not just look at the technical aspect. But we can consider the social aspect—adoption and policy.

There is a need for the participatory approach, getting ideas from the locals, and policy makers and converging these ideas to come up with a good upland design.
Q: Adoption of agroforestry technologies face a number of challenges in the Bicol region. Is the technology really sustainable or not because there are findings that there are certain species of trees that die. Secondly, how can we get accredited as supplier of abaca? How can I connect with the teabag suppliers since my community is also producing abaca?

A: Farmers cannot claim ownership of the land which they farm. They can only claim ownership of the trees and they know that they are being compensated for these trees that they plant.

Agroforestry encourages multicropping in order to address this concern; distribute cropping or plant a mixture of crops. Regarding accreditation as a supplier of abaca, we can connect you to the abaca project. On land tenure, it is important to know about land tenure rights.

Q: How do you address the physical limitations of farming in sloping areas?

A: The limitations of farming in sloping areas (e.g., biophysical constraints) can be addressed by combining different species and varieties of trees and crops as well as soil and crop management, taking into consideration the lack of phosphorous in these areas. These are challenges that we try to address.

Q: Are there guidelines for the Filipino farmer in utilizing technologies in upland farming?

A: (DA) There are no existing guidelines in the adoption of upland farming cultivation. The farmer has the option to choose which technology to use. At DA Region 10, there are technologies such as small irrigation projects, spring water development, or windmill irrigation project. Farmers are given the option to use which mature technology to adopt based on the existing farm conditions. There is no strict policy on what technology to use.

(DENR) DENR has specific guidelines on sloping agriculture. Farmers do not have the liberty to choose the crops to plant, given that there should be no claimant in the mountain area because it is state owned; still the government recognizes that it still has to work with communities.

One can practice agroforestry with appropriate soil and water management. It’s not only understanding the principles behind these technologies but also harmonizing these technologies and information sharing. It was reported that there are currently 2000 farmers practicing conservation agriculture, but what percentage is that over the total number of farmers? We need to realize that a peculiar relationship exists between tenants and farmers. We also need to understand the agreement of the tenants and farmers.

(Schade) Guidelines are ok but what is needed is a more personalized extension service to discuss the principles of these technologies and guidelines to the farmers.

Q: Do you have geohazard maps of the uplands?

A: The Bureau of Soils has a hazard map of the uplands. GIS maps are usually part of comprehensive land use plans (CLUPs).

Q: There are some pests in upland farming, how can we deal with these problems?

A: There are some multicropping approaches a farmer can use to prevent pests.
Determinants of Household Decisions on Adaptation to Extreme Climate Events in Southeast Asia

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The IPCC Framework, which looks at the climatic hazards, sensitivity, and adaptive capacity of an area, is used to map the vulnerability of Southeast Asian (SEA) countries to climate change. Initial mapping found that hazards dominate in Vietnam, while Indonesia has greater sensitivity. Cambodia, on the other hand, has low adaptive capacity. The study focused primarily on determining and enhancing the adaptive capacity of typhoon-stricken SEA countries (China, Philippines, Indonesia, Thailand, and Vietnam) at the local, community, and household levels. Several research methodologies were used.

Adaptive capacity is further divided into four adaptation strategies: behavioral, structural, technological, and financial. The Philippines show good behavioral adaptive capacity while Vietnam has a stronger structural and technological adaptive capacity. However, it was observed that all the countries being studied have very little interest in buying disaster insurance, which is an important financial adaptation strategy.

The CC adaptation decision model was analyzed under the general framework of profit maximization. In this model, utility is not directly observed, but the actions of economic agents are observed through the choices they make. It is assumed that households will implement a CC adaptation option only
when the perceived utility or net benefit from using such a strategy is significantly greater than the case without it.

The general characteristics were presented. Those who are least capable of adapting rely more on weak structural actions or tend to evacuate. On the other hand, those with higher adaptive capacity rely on early warning systems and on procuring disaster insurances. Adaptive capacity may be enhanced through trainings and providing greater access to information channels and support for purchase of more durable housing materials.

Economic Analysis of Public and Autonomous Adaptation against Climate Hazards in Coastal Areas: Lessons from a Cross-Country Study

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This study distills information from a cross country study on public and autonomous adaptation against climate hazards in coastal areas in Indonesia, Vietnam, and the Philippines. It analyzed both viable public strategies as well as determinants of autonomous adaptation of households in coastal communities. A participatory approach was used to engage communities in the study sites in the identification of potential public adaptation strategies. Cost Effectiveness Analysis (CEA) was then used to rank alternative public adaptation strategies A multivariate probit regression was used to analyze the determinants of autonomous adaptation of households. The focus was on the interrelated hazards of coastal erosion, flooding, and saltwater intrusion. The confluence of hazards is a situation that was found to define the uniqueness of climate change problem in coastal areas.

The bottom up approach used in identifying potential public adaptation strategies yielded more options which included infrastructure, environmental, and institutional options. CEA of these options showed that across sites, ecosystem based approaches (or natural barriers such as mangroves) are more cost effective than hard infrastructure investments. Regression results showed that households, obviously, adapt or respond autonomously to a combination of hazards. In fact, the econometric model of joint decision cannot be rejected by the data. There are also geographical differences in adaptation patterns reflecting households react rationally to the degree of threats from these hazards. Similar to some literature there is evidence that planned adaptation may crowd out private or autonomous adaptation. Likewise trust also increases the likelihood of self-insurance and self-protection, especially against extreme events that are either recurring or permanent. Finally, households’ adaptive capacity depends partly on the type of hazard and is related to a gender dimension. For recurrent extreme events, the abundance of male labor increases the likelihood of adaptation. On the other hand, for permanent and creeping hazards such as saltwater intrusion, the abundance of female labor increases the likelihood of adaptation.
Mediation Analysis of Factors that Influence Private Flood Mitigation Behavior in Developing Countries: Evidence from the Mekong Delta, Vietnam

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The study provides new insights into flood policy design by considering other aspects that have been rarely mentioned in developing countries. It was discovered that a household is motivated to take a mitigation measure if the flood is serious (threat appraisal) and the coping strategy is appraised as effective and feasible (coping appraisal). Three study sites were identified: Tan Hong (high risk), Thanh Binh, and Chau Phu (low risk).

Using household surveys, the significant factors influencing private flood mitigation include experience with flood mitigation, negative emotion, public flood information, cause of flooding, government protection, community’s mitigation, and flood-risk training. The flood risk communication experiment significantly increased risk perception, coping appraisal, and mitigation behavior (which seems to be male-dominated).

Since previous studies on flood mitigation focus only on direct effects of influential factors on mitigation behavior, conflicting results occur. It is recommended that further studies in developing countries employ the mediation analysis method to make a more compatible comparison.

Role of Networks in Climate Change Adaptation

DR. PUJA SAWHNEY
Asia Pacific Adaptation Network

Climate change, environmental changes, and the degradation of natural ecosystems are significant threats to human development and poverty alleviation efforts. Climate change adaptation (CCA) initiatives and efforts are growing in response to these threats; however, knowledge gaps still exist. There is a need to mobilize and synthesize existing knowledge, provide targeted technical support and advisory services, build capacity for the uptake of new knowledge, and link experts with demands for knowledge.

The Asia Pacific Adaptation Network (APAN) is a network of CCA practitioners whose goal is to assist countries in building climate change resilient and sustainable human systems, ecosystems, and economies. APAN’s core activities include knowledge management and synthesis, sub-regional and thematic conferences and targeted training workshops, and the Asia-Pacific Climate Change Adaptation Forum.
Comment: In the definition of decision making, this is usually dominated by men. There are other aspects to damage such as how you define decision making.

A: We look at the level of governance. What we presented here was more on the community side. Communicating the results to the higher governance level is very difficult. Working with LGUs in different EEPSEA projects, training them to conduct analysis on climate adaptation measures, training them to use a decision support system and running these for different adaptation policies, increasing capacity of local government to decide on the best adaptation strategy to adopt. One of our colleagues used the results of the research to help local gov’t to write research proposals for funding, seizing the opportunities for these funding windows.

Communicating results is a bottom-up approach. On the gender aspect, in our experimental groups set up, there was no significant difference in the results if you just involve the husband or both the husband and wife.

Q: (to Mr. Binh) In your presentation, the damage mitigation measure “diversify agricultural activities” received the second to the lowest rate of adaptation measure being undertaken. Can you please explain why?

A: It is low because in the flood hazard areas, they have limited choice of agricultural production.

Q: How are flood risks presented and communicated in your studies?

A (Binh): The flood risk communication experiment was conducted through trainings and FGD. For the conduct of training, resource persons were invited to discuss the effectiveness of the mitigation measure. The third part was to determine the attitude of the farmers; determine who were the most vulnerable. Lecture is done with 25–35 farmers for 30 minutes followed by 30 minutes of Q&A. For the flood hazards, questions on vulnerability, cost damage of flood hazards, property, family, and health were asked.

A (Predo): In the case of the crosscountry study, we collected the data on the risks on a particular hazard—typhoon for the Philippine study and flooding for Thailand. We asked them questions related to an event, their experiences.

Comment: On crop insurance, this is an important topic that we need to study further.
Integrated Ecosystem Management from Ridge to Reef

GIZ and Partners

Integrated Ecosystem Management (IEM) is a holistic and systems approach in the governance and management of land, water, and living resources in ecosystems for conservation, socio-cultural preservation, and economic development. It is a process by which political and resource management units in an ecosystem jointly recognize the benefits of collective efforts in planning and implementing individual programs to achieve society's common goals. It is also a guide to investments that enhance the ecosystem's resiliency and its comparative advantages in the production of competitive goods and services.

IEM covers ecosystems for management, such as river basins or large watersheds, sub-watersheds, key biodiversity areas, NIPAS protected areas, ancestral domains, islands or groups of islands, and mineral reservations. These ecosystems are chosen based on their economic importance, urgency for improved environment and natural resource management, vulnerability to natural disasters, need for improved environmental governance, and the willingness of local governments and the private sector to enter into long-term collaborative and co-financing arrangements for IEM planning and implementation. The key features of IEM include designated land and resource allocations whose intended uses and purposes cannot be compromised or modified (non-negotiable areas), creation of an ecosystem governance body, public or PPP investments, and establishing the IEM strategic plan for each ecosystem site as a rallying point.

GIZ Effort in IEM: Integrated Ecosystem Management Made “Simple” (Sustainable Integrated Management and Planning for Local Ecosystems)

GIZ and Partners

Sound territorial development may be achieved using long-term capacity building in developing comprehensive land use plans (CLUP) for coastal, lowland, upland, and forest areas. It employs IEM using the SIMPLE (sustainable integrated management and planning for local ecosystems) mechanism. SIMPLE has five phases: collating trainer pool information; linking provincial with municipal or city development strategies; comprehensive land use planning; linking plans and budgets; and management and implementation. A SIMPLE knowledge product has three elements that include trainers’ manual, facilitators’ guidebook, and trainers’ toolkit. Preliminary results and emerging impacts using SIMPLE are already observable.
CLUP guidebooks are created to recognize the natural link between the inland and coastal processes and the need to integrate these in land use planning processes to manage our resources better. It also includes different laws that cover the total landscape of cities and municipalities considered in the enhancement of the CLUP guidebooks.

The 2006 CLUP guidebook (volume 1), which integrated thematic areas (forest, marine, biodiversity, climate change adaptation, and disaster risk reduction, among others), and the 2013 CLUP guidebook (volume 2, with zoning ordinance) need to incorporate better planning methods to enable local government units to plan its total land area (including municipal waters within its jurisdiction) using the ridge-to-reef planning framework. This framework, as stipulated by the National Framework Strategy on Climate Change (NFSCC), covers forestlands, agricultural lands, and coastal or city/municipal waters.

The latest CLUP guidebook (volume 3) includes the model-zoning ordinance covering forest zones, NIPAS zones, water zones, overlay zones, and mineral zones. Performance standards for environmental protection, agricultural land conservation criteria, network of green and open spaces, and infrastructure capacities are set in place to ensure compatibility between the community and land use. As such, proposed developments are designed to comply with the applicable performance standards that shall form part of the requirements for locational clearance.

Opportunities for Up-Scaling Ecosystem-based Climate Change Adaptation Measures as Risk Management Strategy in Crop Production in Southeast Asia

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The Southeast Asian region is beset by several challenges that are further intensified by climate-related hazards such as temperature increase, erratic rainfall pattern, more extreme climatic events, rise in sea level, floods and droughts, and pests and diseases. Climate change affects not only ecosystems but livelihoods and human lives, among others, as well.

The ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD) created the Climate Resilience Network (CRN) to facilitate the identification and documentation of selected good practices (GPs) and address the institutional challenges and constraints concerning climate resiliency. They promote the use of the “rice plus second crop” practice in agriculture. However, the “second crop” may not be just any crop, but it should be a staple and/or feed crop that could contribute to agricultural production, has economic importance, is resilient to climate change and variability, and has available data and information. Rice and corn are priority crops in Indonesia, Lao PDR, Myanmar, the Philippines, Thailand, and Vietnam while rice and cassava are priority crops in Cambodia.
The use of GPs as CCA measures enhance the climate resilience of crop production systems (rice, corn, and cassava) and their agro-ecosystems, as well as that of farming communities, as their adaptive capacity increases and vulnerability decreases. The following are priority GPs as CCA options for regional cooperation and issues that affect their implementation:

1. Planting improved crop varieties that are resistant to temperature increase, drought-tolerant, and resistant to stresses (salinity, flood, pests, etc.); however, the availability and accessibility of seeds/planting materials is an issue.
2. Alternate wetting and drying (AWD) as a practice reduces water loss, but questions as to how much and how often poses problems to farmers.
3. Getting agri-insurance for climate hazards helps farmers in the event of a drought, flood, or typhoons; however, weather indices are yet to be finalized and there is very little institutional support for the promotion of agri-insurance.

Before CCA options can be implemented, CCA measures should be selected carefully considering their potential for enhancing climate resilience, easy adoption, and economic efficiency. Full documentation of field trials is necessary and should be made available to others. Technical assistance may be provided by CCA experts from the CRN team and financing should be explored. Monitoring and evaluation is important and must use cost-effective data acquisition covering farming communities and crop production systems. Data and information should be shared and exchanged among CRN and distributed via knowledge portals, research papers, seminars, or symposia.

CRN aims to upscale and outscale their plans further in order to achieve the following:

1. Regional collaboration among participating AMS
2. Partnership and collaboration of R&D institutions in the agricultural sector with local groups
3. Climate-proofing of other crop production systems
4. Implement R&D on CCA with technical assistance from experts in the SEA region
5. Establishment of a monitoring and evaluation system
6. Establishment of a 'regional center'

Identifying Agricultural Safeguard Areas: A Practical Example of a Climate Change Adaption Measure

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Current weather patterns have deviated from patterns observed in the past. More sophisticated climate models predict higher frequency and intensity of typhoons and increased rainfall for some parts of the world. Such changes would require us to change our way of life. Agriculture, which is highly dependent on natural influences and is deeply embedded in the culture of most countries, is greatly affected by the impacts of climate change. It is in observing, learning, and accepting such change that we would be able to adapt. Moreover, food safety and economic recovery is considered a government function and quick recovery is a strategy for both.

Mr. Niggel highlighted the following points in his presentation:

1. There is no clear roadmap to fasttrack agriculture recovery as basis for food security and economic recovery in Leyte after it was struck by Typhoon Yolanda.
2. Certified seeds are used by farmers in their rice production.
   • Very limited support was given to certified seed growers in Leyte.
   • Certified rice seeds distributed in the Philippines are imported.
3. Disaster recovery programs and development programs overlap.
   - Post-Yolanda rice programs primarily focused on smallholder farms.
   - Local markets stabilize and recover faster.

The presentation concludes that strategizing agricultural recovery before a high impact event strengthens local resilience and hastens recovery after it happens.

Q&A

**Q:** How can the findings of the papers/presentations help promote resilience, equity, and integration in Southeast Asian agriculture?

In 2012, there were 15–20 LGUs working on their CLUPs. HLURB gave them data, sectoral demography, and vision for jurisdiction. LGUs also exchanged best practices. Public hearings were conducted in the creation of CLUPs (making sure that the LGUs were the ones responsible for its crafting).

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**Q:** Farmers are living below poverty line, especially the smallscale farmers earning below PHP 60 a day. What can this conference do to help the farmers? How can we be sustainable if the farmers themselves are not sustainable?

We are hoping and the government is promoting food security but in the Philippines we are filling up the rural areas with malls. National law should prevail over the LGUs.

Small farmers should also change their ways and be guided so they could get funding and farm-to-market roads.

There should be vision for food and agricultural probing. That is the entry point and our link for 2025.

1. A slide from the presentation of GIZ and Partners; 2. Dr. Felino P. Lansigan; 3. Mr. Matthias Niggel
The goal of food security is a universally shared ideal within the Southeast Asian region and beyond, and is always identified as a key societal objective of agricultural development. In the definition of the Food and Agriculture Organization (FAO), food security “exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Thus, it comprises ensuring availability and accessibility of adequate and safe food to the entire population. It is also concerned with ensuring nutritious food, particularly to minimize incidence of deficiencies in key nutrients and minerals that leads to illness or poor health.

Threats to food security may be physical (lack of infrastructure to produce and distribute food at the right quantities and to the right places); natural (calamities and disasters that destroy food crops and curtail food supplies); political (misplaced priorities by political leaders that lead to inadequate food supplies, food embargos imposed by hostile nations); social/cultural (practices that lead to significant food losses and wastage, beliefs that limit the range of accessible food to the populace); and economic (high costs/prices that may be due to factors within or beyond control).

Approaches to food security may be undertaken at the local, national, and regional levels, and hinges on appropriate governance mechanisms that lead to efficient, effective, and timely provision of food to the populace. Resilience, whether in its social, economic, or environmental dimensions, is the direct outcome of or is closely associated with food security.

The equity ideal is fostered when food security measures do not unduly benefit some groups or put others at a disadvantage. For example, food subsidies need to be targeted to those in need. In the Philippine historical experience, there had been instances in the past when rice subsidies failed to discriminate between those who were truly in need and deserving and those who did not require food assistance.

Finally, regional integration (through regional food security and food reserve schemes) could very well be the means to avoid inappropriate national policies that confuse food security goals with attaining food self-sufficiency. Such policies have often resulted in substantial market distortions and institutional inefficiencies that ultimately undermined food security itself.
Assessing Sustainable Nutrition Security:
The Role of Food Systems

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Climate change presents a very clear threat to food systems and sustainable nutrition security as heat and moisture stresses increase and pests and diseases move into new eco-regions. The recent US Third National Climate Assessment emphasized that more innovation in agriculture is needed to address these challenges. Several factors were identified that lead to increased vulnerability of food systems, including:

1. Underinvestment in agricultural research
2. Increase in the range and productivity of weeds, insects, and diseases
3. Biological and physical degradation of soil health
4. Over-reliance on a small number of crops and varieties
5. Overconsumption of produce in higher-income countries
6. Unsustainable use of groundwater and fossil-based energy
7. Increasing demand for meat and other resource-intensive food

Rice, maize, and cassava are three of the major crops that need to sustainably increase yield by 2050. However, the productivity of these crops, as well as that of livestock, is threatened by existing and emerging pests and diseases. Increase in the frequency and intensity of extreme weather events (floods, droughts, heat waves, windstorms, severe tropical storms, tropical cyclones) have led not only to production losses but to increasing volatility in food prices. Climate change is increasing the possibility of large downward annual shortfalls in the production of multiple grain crops, including maize, rice, soybeans, and wheat. Such a scenario would lead to food price shocks. Africa is more vulnerable because of lower food production while Australia is more food secure since food there is inexpensive relative to income and they are able to export their produce. The Philippines is one of the countries in Asia considered as a climate induced food security hotspot, meaning that climate change is expected to have a relatively larger impact on the country’s ability to produce food.

Seven sustainable nutrition security (SNS) metrics were identified: dietary adequacy, environmental sustainability, affordability and accessibility, cultural appropriateness, resilience, food safety, and waste and loss reduction. These will be implemented on a temporal scale from year 2000 to 2015 (the forecast period is between 2015 and 2050), on a spatial scale (local to global), and on subpopulations (specific groups of interest) to determine where and how well these metrics describe food system outcomes. Highly credible scientific data is used, incorporating modeling improvements and consideration of previous food security assessment methodologies.
Harmonization of Standards for Food and Agriculture under ASEAN

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The Sixth ASEAN Summit in 1998 led to the conception of the ASEAN Vision 2020, which aims to create a stable and economically prosperous ASEAN region. The ASEAN Community blueprint guides the political, economic, and sociocultural sectors into the ASEAN Charter: “One vision, one identity, one caring and sharing community.” Agriculture falls under the economic blueprint.

The ASEAN has established nine task forces to ensure the harmonization of standards for every agricultural practice, namely: (1) ASEAN food safety network, (2) ASEAN good agriculture practices (GAP), (3) ASEAN maximum residue limits, (4) ASEAN horticultural produce, (5) ASEAN organic agriculture standards, (6) ASEAN good animal husbandry practices (GAHP), (7) ASEAN animal vaccine standards, (8) ASEAN livestock establishments and products accreditation, and (9) ASEAN good aquaculture practices (GAqP).

The harmonization of standards under the ASEAN faces major issues. For example, the set of standards may not be applicable due to the vast differences in each state. Various sensitivities and term usage, differences in national legislations, and the large variety of agricultural and fishery commodities are just some of the general issues. Specific challenges were identified in achieving harmonization of set standards at the regional level. These challenges include:

1. Overlaps and lack of coordination of the ASEAN bodies and with dialogue partners
2. Lack of mechanism or scheme to address crosscutting and emerging issues (sustainable management of natural resources, climate change adaptation and mitigation, bioenergy, and biosecurity) as it relates to food safety and quality standards
3. Funding in terms of processes of approval and implementation, and funding sources; and
4. Minimal private sector engagement in the development and implementation of ASEAN regional standards.

The harmonization of standards can facilitate trade within ASEAN through: (1) the adoption of internationally recognized standards such as International Office of Epizootics (OIE), International Plant Protection Convention (IPPC), and FAO/WHO Codex Alimentarius as national standards; (2) alignment of national standards with ASEAN standards, and (3) in the absence of national standards, the adoption of ASEAN standards.

1 Pongsapitch, P. 2014. “Mutual Recognition Agreements (MRAs) and Standard Harmonization in Support of Domestic Food Safety and International Trade: The Case of ASEAN Economic Community (AEC).” Presented during the ISO Regional Workshop on the Role of International Food Standards held in Bangkok, Thailand from 22 to 23 April 2014.

Q & A

Q: Why is the private sector not engaged in standards in agriculture? There are many big agricultural industries in the region.

A: We follow the ASEAN protocol which designates the ASEAN Secretariat to invite participants. We have to ask permission from the ASEAN Secretariat as to who could be involved in the meetings, even in the distribution of reports. This is one of the problems in organic agriculture. One of the standards we used is from the private sector. We wanted to invite a resource person from the private sector and we had to ask permission from the ASEAN Secretariat.

Q: I learned something from here. The question is whether ASEAN is already on the way to create an understanding of their policies. In some cases, it would be the question of markets. Unfortunately, agricultural commodities are not in demand in the region.

A: The ASEAN Center for Biodiversity (ACB) is one of the few organizations that work under ASEAN that has autonomy. Our Center is an international organization with its own sovereignty. We are more open in looking for alliance and information exchange. Food safety and food safety-oriented export markets are very promising approaches.

A: For non-agriculture, if an industry has an ASEAN organization, that’s what they involve. In the harmonization of standards, I don’t know if there is an ASEAN-wide organization, and therefore negotiators have to rely on national industries. For non-agriculture, the policy is always to align with international standards.
Q: On governance and in Asia, we found that most food provision is by informal actors, how do you incorporate this in your modelling? Most countries in Asia have street hawkers, how would the governance of food come in? In terms of sustainability, when you talk of food security and food safety, how do you include this? Informal provision of food is non-existent since they do not have a lease or something like that.

A: For the most part, most of the work has been based on economic modelling.

Q: Reaction to street foods: Is this part of the metrics so that it could be part of the study?

A: Marketing efficiencies is where government comes in. Street foods are governed by LGUs; and there are peculiarities when LGUs come in. For AEC 2015, the president of GAPMI came up with some ideas on how PPPs could come in and how MNCs could actually bring up the quality or guide smaller companies. If these were to come under CSR, we have to be creative in dealing with this to become a win-win situation.

Q: The use of nutrition security is welcome. Usually when people talk about food security, we know people think about staple and caloric adequacy and not those that need to be in the diet. Very few ASEAN countries have food consumption studies. Can you tell us more about the description of the seven metrics?

A: Nutrition security relates to several factors such as quality of water and quality of environment that relate to people’s nutritional status. Nutrition security is more than just having available and sufficient food.

Q: We find out in a number of fora and workshops that diffusion of information from the formal ASEAN bodies to the academe to industry to other sectors is sort of hampered. There is a need to encourage the facile distribution of these reports. Reports are tagged confidential.

A: In fact, Codex provides a very good model. When you look at the representation, the private sector is heavily involved. I don’t know why in the ASEAN mechanism, there has been no adoption of approaches being used in Codex. We had them participating in the preparation of positions. There is a real opportunity for the ASEAN side to interact with ILSI. Basically, ILSI convenes the academe, private, and public sectors.

Q: In the Philippines, most supermarkets are domestic but in other countries in ASEAN, these are multinational companies. The bias is that in the supermarket, there are already defined standards. In Malaysia, they export kangkong all over. How do we incorporate private sector standards into international standards?

A: For the agricultural sector, there are no really big coops or industry. National governments work with provincial bodies in terms of scope. Not quite sure if there is a national consolidator in vegetables. For the prepared food stuffs, there are bigger industries and they have stronger presence in the deliberations. These standards serve as guide for national regulators who carry with them the concerns/positions of their countries, which include stakeholders in the agricultural sector. We need to ensure that our positions are those also that come from the farmers as well.

Comment: The seven metrics working paper is available online. There are a number of people working on sustainable diets. People are beginning to quantify which particular diets meet their nutrition needs. It was calculated that if the entire world would follow nutritional guidelines of US, we need about five planets to produce the required food. We can’t do everything all at once but we can do enough for today.

A: The first paper talked about ILSI and how it was founded; how climate change affects food security. The speaker stated the needs—how crops are affected by weeds, insects, etc.; extreme weather conditions and how these affect food availability; increase in food prices. The Philippines is at risk because of climate change. ILSI intensifies tripartite mode of engagement and hopes to implement the seven metrics in the private sector.

The second paper discussed ASEAN harmonization of standards and explained the blueprint, which is an initiative of ASEAN working groups to consolidate current outputs on harmonization, particularly those implemented by the Philippines, and examine how we are subscribing to those standards. It was noted in the discussion, the need for ASEAN food consumption data to understand food security and nutrition securities. There are a lot of research gaps that need to be included in this discussion. In terms of policy recommendations, we saw the need to institutionalize a scheme on how the private sector will get involved in the harmonization of standards.
Prior to the 2007–2008 food price spikes, there was a decline in agricultural investments by many governments and development agencies around the world. The price spikes brought global attention to the issue of food security and resulted in food riots in many countries at that time. The U.S. Government defines food security as having, at all times, both physical and economic access to sufficient food to meet dietary needs for a productive and healthy life. Food insecurity is often rooted in poverty and has long-term impacts on the ability of families, communities, and countries to develop. For example, prolonged undernourishment stunts growth, slows cognitive development, and increases susceptibility to illness. U.S. government and multilateral agencies are working in partnership with other countries, civil society, research institutions, and the private sector.

Following the food price crisis of 2007–2008, the U.S. Government introduced the Feed the Future (FtF) program to highlight the importance of food and agriculture. The FtF focus countries were selected according to their level of need, opportunity for partnership and regional synergy, potential for agricultural growth, and availability of resources. The planning stage involved the focus countries and the U.S. Government, identifying specific outputs for development. FtF makes core investments aimed at agriculture sector growth and improved nutritional status in the following areas: women empowerment, diet quality and diversification, postharvest infrastructure, high quality inputs, and financial services. The first FtF progress report was published in 2012.

As part of the initiatives in creating a global food security research strategy, several approaches were established. The New Alliance for Food Security and Nutrition is a commitment by G8 members, African countries, and private sector partners to achieve sustained and inclusive agricultural growth to lift 50 million people out of poverty over the next 10 years. The FtF Innovation Labs aim to tackle some of the world’s greatest challenges in agriculture and food security and include lead and collaborating institutions across the U.S. Another initiative is the Global Research Alliance for Climate Smart Agriculture, a voluntary, farmer-led, multistakeholder, action-oriented coalition committed to the incorporation of climate smart approaches within the food and agriculture systems.

The speaker highlighted the need for continued action. The following are some of his main points:

- 40 percent of arable land on earth devoted to agriculture
- 70 percent of freshwater used goes to agriculture
- 25 percent GHG emissions from agriculture and deforestation
- 9 million people die of hunger and malnutrition every year; 1 person every 4 seconds
• 60 percent more food is needed by 2050 and must be produced using less land, less water, less fertilizer, and less pesticides
• Science is a big part of the solution: American farmers today are doing things better than they did before. For example farmers use 40 percent less land and 50 percent less water and cause 60 percent less erosion to produce corn today compared to 1980.
• The next 40 years are the most important years for agriculture; that’s why now matters.

Rice Bowl Index in Support of Food Security Governance

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Many people perceive traditional farming practices today as less sustainable. However, many believe that these farming practices will be able to supply the growing food demands of their country. In contrast, many still believe that more lands must be allocated for food supply, however, they believe that it is not necessary to clear habitat to produce more land for food production.

The Rice Bowl Index (RBI) looks at the robustness; collaboration; and the quantitative, qualitative, and advisory components of food security. Mr. McConville noted how it distills information from numerous public sources, all with the final goal of facilitating concrete action among governments and institutions and deliver solutions. As shown in the presentation, the government is expected by many to provide food security for its country. However, the private corporations and organizations are also expected to take part in helping the food sustenance of a country.

RBI follows the four rubrics of food security: farm-level, environment, policy and trade, and demand and price. Each rubric’s weight is 25 percent. In addition, Mr. McConville noted that the rubrics also stand for categories that determine the robustness of food security. The RBI shows that Japan is very food secure because of its capacity to trade. China, on the other hand, has a predominance of farm-level factors.

Based on data from 15 to 16 years, the most robust countries identified are able to withstand shocks in their systems. They are more resilient to disasters and other incidents that cause major disturbance in their society. Mr. McConville emphasized that the balance within the rubrics is very important for food security robustness given that inflation (particularly in the last 2 years) has had a heavy impact on the countries’ food security robustness. In general, the South and Southeast Asian regions continue to progress due to the large offset as gains in the farm-level factors and demand and price rubrics are gained due to declining unit-labor costs, moderating levels of inflation, and reductions in oil imports.
An Analysis of Food Security Policy and Governance in APEC Economies

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Governance refers to the activity or process of decision making and, more importantly, implementation. It also articulates how interests are accommodated and how power is exercised in a society. The principles of good governance include legitimacy and voice (participation and consensus orientation), direction (vision), performance, accountability, fairness, and trust. Good governance is essential to ensure food security.

Food security is a basic human right. There are four key dimensions that contribute to food security: availability in terms of production and food supplies; access to food or market supply chains; economic access; and the safety, quality, or nutritive value of food. As such, there needs to be a shift in how people think about food—more food does not ensure food security in its entirety—other dimensions will contribute. What food security governance needs to deliver is sufficient, safe, and nutritious food so that people can maintain a healthy and active life.

The process necessitates a policy and legal framework containing vision, goals, and priorities, as well as strategies, laws, and well-defined objectives. Coordination and coherence are important, especially since many different agencies are often involved; information, monitoring, and evaluation must consider progress and achievements as well as impacts. Intrinsically, good food security governance depends greatly on good governance at the national, regional, and global levels.

No APEC economy is food secure given that they experience food insecurity to some degree or another. APEC economies have responded to the various food security concerns either by reinforcing existing policy instruments or by introducing new ones. Common farmer-oriented policies have focused on reduced taxes, producer credit or financial support services, seed and fertilizer subsidies, and producer price subsidies or building reserves, all aimed at increasing productivity and total production. Economies have also introduced trade policy measures to curtail price increases and ensure adequate supplies in domestic markets. Responses have depended largely on whether the economies in question are net importers or exporters of food.

Some APEC economies have streamlined their frameworks for disaster assistance, climate change, and green growth. Other initiatives include:

1. Increasing the size of their grain reserves, thus raising concerns about tighter international grain markets
2. Increasing their pro-biofuel policies resulting in an expansion of their biofuel industries; but these policies are potentially in conflict with the region’s food security objectives
3. Adopting new food supply strategies such as farmland expansion and acquisition
4. Implementing food price controls, food price subsidies, imposition of safety nets, releasing stocks to stabilize prices, and food assistance and distribution to lessen the impact of rising prices on the more vulnerable members of society
5. Increasing government expenditure in agriculture
6. Recognizing nutrition as being closely associated to food security

Apart from food security governance, the following issues require additional attention: (1) contribution of the fisheries and aquaculture sector and (2) the role of reducing food losses. In summary, awareness of the issues in food security is high, but understanding of the complexities is low.
Q: We talked about what the private sector is doing on food security. How much involvement of the private sector in ASEAN do we have? Are they engaged in the conversation?

A: Private sector could profit more to talk with the government. There’s so much talk about rice but the banana and pineapple businesses are equally robust.

(by Mr. McConville) We tend to have better reach in some aspects. You’ll see private companies engaged in global discussions (Syngenta, Dupont, etc.). The environment is very competitive. We tend not to see some in the policy debate. Global companies have more macro view and in reality we probably have more money to invest.

Q: What are we not seeing is where is Europe going? Are they going on a global buying trend for self-sufficiency?

A: About choices and consequences—you put high value products in Europe, so Europe has exported its environmental footprint into the Amazon. Europe’s policy is to reduce its agricultural footprint in Europe, thus, there is use of fertilizers. Europe can afford to buy food at any price.

We need to ensure involvement in agriculture is equitable and that the stakeholders, especially the farmers, receive appropriate reward for it. In ARD, they are the major contributors to food security on the production side. Their contribution needs to be acknowledged and rewarded appropriately. Equitable development in the agricultural sector depends on solid food security governance systems. At a process level, food security systems require sound policy and legal frameworks that identify how, who, what, and when policies are implemented. There is also requirement for the coordination and coherent development of policies that affect the various stakeholders in food security governance. There needs to be institutional capacity, well-defined roles and responsibilities, effective delivery, accountability, and recourse mechanisms. A key component of any food security governance system is the collection, monitoring, and evaluation of all relevant data. Without these components, food security governance systems could be manipulated to only benefit vested commercial interests. Without effective food security governance systems, resilience cannot be ensured. While effective food security governance is essential at the national level, it was recognized that countries do not exist alone and that governance systems must take into account the commitments made to multi-lateral agreements.

Comment: RBI on nature and reliability of data differs across countries.

A: We moved away from any country comparison. In the four rubrics, we don’t include any data if we can’t get the same for other countries across 15 years. RBI is a relative index, not absolute. What we are looking for is improvement across the rubrics.

Q: I did not understand much about the RBI. Can we use this as indicator of food security? If not, what are the other indicators we can use at the national level?

A: We have done workshops with NEDA. The index doesn’t say that a country is food secure but looks at what we can do to improve performance. The RBI looks at why countries are at different points across the food security chain. There are a lot of indexes out there. But we do think that RBI is neat given its tie to food security robustness.

Q: With so many indexes we see, it’s like a beauty contest. It helps you understand why you are not winning the contest. RBI has 33 indicators and allows us to go through and look at the factors like food security governance.

A: The robustness concept is a push in the dialogue of food security. If you look at the four dimensions, there’s a fifth dimension: stability. What do you need to do to maintain this? RBI looks into this.

Ask the question: is your country able to buffer any distractions or potential threat to your food security? Some indicators lend themselves to immediate action, others don’t and it is very important to have dialogues.

Q: With different rubrics, there is bound to be some interactions. Demand and price can be actually dependent on policies. How were you able to delineate when you input the rates?

A: Putting weights on the parts—you are right—there is an element of interaction across rubrics. We can’t avoid this. But what we tried to do is make sure each indicator in each rubric is not duplicated in the others. We did some regression analysis on the integration and it has stood up reasonably well.

RBI is far from perfect. What it purely aims to do is to focus debate on the fact that there are different elements that go into food security and food security robustness is what we should focus on. We try and be thematic for each year. It’s far from perfect but it is doing exactly what it was supposed to do. It’s not the world’s best index but it does the work.

Q: As you have said, there has been lots of discussions and decisions on the four rubrics having equal parts. If you have a 100 as a perfect score, Australia seems to be the highest. If you look at the farm level, it is almost equal to that in Australia.

A: Very hard to actually depict small parts on graphs. Australia is not the lead in farm level, some of the other countries are more robust in this rubric.

What was highlighted is that the challenges that exist pre-2050 are major but these will evolve post-2050. Discussions on the Rice Bowl Index further highlighted the
need to look at all dimensions of food security particularly looking beyond simple yield.

Policies need to be developed that target all dimensions of food security. Effective governance cannot be achieved with policies targeting only one aspect of food security.

The complexity of food security must be highlighted to senior government officials and they must be encouraged to develop governance systems that address this complexity. Because of its multi-dimensional and cross-sectoral nature, good governance of food security is not possible without interdisciplinary collaboration across sectors, institutions, and actors—both public and private—potentially affecting availability, accessibility, utilization, and stability of food.

Maintaining and coordinating broad and integrated understanding and commitment to identified food security goals across all institutions and actors involved is essential. Without this, we will fail to serve the basic human rights of their population.
Helping Farm Households Cope with Climate Change and Adverse Events

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This presentation provides an initial framework of priorities for government programs to reduce the natural disaster vulnerability of farm households in the Philippines. We begin with the likelihood that climate change will increase the probability of flooding in the Philippines, since rainfall is expected to both increase and be more concentrated (more storms). Initial assessments also suggest that, despite greater mean rainfall, the dry season is likely to become drier.

One implication of these climatic changes is that the experience that farmers have gained about the frequency, duration, strength, and timing of rainfall is less reliable than before. This implies that the subjective probability distributions inherent in farmer decision making are becoming more dispersed and that risk is increased. In particular, it is expected that the frequency of damaging storms is increasing. There has also been some evidence that the frequency of droughts will be greater, albeit this has been disputed. What this scientific uncertainty means for the farmer is that climate change increases the dispersion of subjective probabilities regarding drought.

We provide an initial framework regarding priorities for government programs to reduce the natural-disaster vulnerability of farm households in the Philippines. We provide a conceptual framework for understanding resilience at the household level and evidence from the Philippine Center for Economic Development Social Protection Survey about coping strategies of farm households. The numerical example helps to clarify what coping really means and how coping strategies are affected by an increased probability of shocks/disasters. As the preference for smoothing (risk aversion) and/or the probability of disaster increases, high endowment households will put less into on-farm capital in order to increase current consumption and a greater proportion of savings into off-farm capital and risk-reducing investments in order to smooth consumption between the good and bad states. The ability to undertake off-farm investments also lowers the need to employ risk-reducing measures on the farm.

The results of the numerical exercise were complemented with the data from the PCED Social Protection Survey. Empirical evidence shows that farm households employ various coping strategies to cope with shocks/disasters and smooth consumption in the process. Examples of these coping strategies include borrowing, drawing on savings, selling household assets, harvesting early, selling harvest that they might have otherwise consumed, asking assistance from the government, individual or group, and from nongovernment organizations. Among these strategies, spending cash savings, reducing consumption, and borrowing from others, are considered as the most important and frequently employed coping strategies by the household experiencing shocks. To lower the risk of loss, empirical data also shows that farm households that have experienced shocks have taken risk-reducing measures at the start of the planting season. Adjusting planting time and choosing crop variety are the most important and common form of these measures. However, just like any public good, households seldom invest in cleaning streams and canals or building dikes as benefits of these activities confer to the whole community.
Mainstreaming Climate Risk Management and Disaster Preparedness in Local Governance for Food Security

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Agriculture provides employment to 40.7 percent of the labor force and about 40 percent of all families receive their income from the sector as it answers for 70 percent of commodities in the Philippines. However, rural and coastal areas depending on agriculture and fisheries have a high poverty incidence. In addition, the agriculture sector is highly vulnerable to hydro-meteorological hazards such as droughts, typhoons, strong winds, and floods, among others.

Natural hazards may be biological, geophysical, climatological, hydrological, or meteorological. In the upland agro-ecosystems, the major hazards are strong winds, typhoons, continuous rains, flash floods, and drought. Stagnant/flash-floods, typhoons, saline intrusion, siltation, and drought are major hazards in the lowland while flash floods, typhoons, storm surge, drought, and fish kill are major hazards in coastal areas. Albay, Catanduanes, and Masbate are the three provinces in Bicol that experience these agro-ecological conditions.

The FAO-supported projects for recovery after Typhoon Reming, which cost PHP 2.7 billion losses in agriculture alone include FAO’s Technical Cooperation Programme (TCP) and Office for Special Relief Operations (OSRO) projects with Central Bicol State University of Agriculture, Bicol University, the Department of Agriculture Regional Field Unit-V, the Philippine Atmospheric, Geophysical and Astronomical Services Administration, and local government units as partners. They aim to enhance the livelihood resilience of small-scale farmers and fisherfolk in disaster-prone areas in the Bicol and CARAGA regions. The projects’ key results areas promoted the institutionalization of DRRM/CCA in agriculture and use of participatory approach in the planning process, which integrate the gender perspective. Good practices were replicated and the projects have already reached the following milestones:

1. TCP focused on developing institutional capacities; tested some good practice options for farming in the lowland, upland and coastal areas; developed early warning systems through seasonal outlook and post-disaster damage and needs assessment protocol for rice and corn
2. OSRO provided more emphasis on replication; damage and needs assessment tool for abaca and coconut was included
3. GCP focused more on community based approaches to adaptation; developed climate smart module
4. Developed a total of 37 barangays and 15 municipal plans of action for DRR in agriculture

The presenters discussed several good practices in DRR and CCA in local governance such as tapping trained barangay officials and farmer leaders in pilot barangays to replicate the DRRM process; DRRM plans should include agriculture concerns such as promotion of good practice options; and immediate reporting of post-disaster information for easy identification of farmers needing assistance and easy estimation of insurance cover. Community plans should include community seed banking, evacuation of animals, evacuation kit with seeds for immediate planting, and development of hazard calendar. The farmers’ awareness increased such that they can now interpret emergency signals and mobilize community actions found to be effective in reducing disaster risk. Future endeavors could try looking into improving capacities and coping mechanisms of the local government unit and farming communities, localization of farm weather bulletins, and providing more focus on R&D of possible adaptation options.
When Typhoon Haiyan hit the Philippines, it left extensive damage not only in Region 8 but particularly in the agriculture sector. FAO immediately responded, considering its strategic objective 5 (increase the resilience of livelihoods to threats and crises) and the 3Rs approach, namely: relief intervention, rehabilitation, and development of interventions for resilience. The Race for Rice program was implemented.

Under the program, high quality rice seeds were distributed to more than 44,000 farmers. It produced the rice requirement equivalent to one year’s consumption of 740,000 people and vital income was generated. The seeds for the next planting season were saved. FAO’s rehabilitation and recovery work commenced with the provision of tools, fertilizers, small-scale irrigation pumps, postharvest inputs, and trainings on sustainable crop production practices to rice and corn farming families.

Around 32,500 smallscale coconut farmers were helped to build alternative livelihoods through intercropping, livestock integration, value-added processing, and crop diversification. Another 20,100 fishing households were given maintenance trainings and a new hybrid model boat made of fiberglass. Fishing capacity was restored and productive assets and smallscale infrastructure were rehabilitated. The value chain management of products from key crops (white copra, coconut water, coir, coco peat, and activated carbon, among others) was reinforced. Likewise, the recovery, protection, and natural regeneration of coastal and mangrove forests was promoted.

To build resilience, mutually-reinforcing actions in terms of risk and crisis governance, early warning and information management, risk and vulnerability reduction measures, preparedness and emergency response were implemented. Existing laws and policies of DRRM and CCA contribute to the creation of an enabling risk and crisis governance. Early warning systems for food and nutrition security allows for a timely response to impending food crises and for prioritizing interventions and resource allocation for beneficiaries. Risk and vulnerability reduction measures are established to address the impact of climate change on agriculture and encourage adaptation to improve food security and livelihood approaches.

Mr. Portugal recognized that network building with departments and units relevant to FAO’s work contributed to success in the organization’s efforts. There is a continuous need for advocacy with donors on the rehabilitation requirements toward increased resilience. The participation, accountability, and involvement of the affected communities in identifying their felt needs is a key component needed to reduce their vulnerability. As an ending to his presentation, Mr. Portugal emphasized policy issues, pointing out that it is important for communities to be capacitated and be prepared anytime for disasters.

QA

Comment: Two things, for all speakers, particularly on research: (1) include human-induced disasters and conflict, particularly in rural or upland areas in Mindanao since these disasters are not seasonal; (2) economics of disasters affecting agriculture, I don’t know if there are studies here. Maybe it is good to have studies looking into deeper resilience of farming. In terms of resiliency, maybe more crop combinations that really prepare a farming household in terms of disasters.

A: The social protection survey covers a whole spectrum of shocks. Civil war is part of the shock, economic shock includes inflation. Right now, the focus is on natural disasters because of Typhoon Yolanda. Hopefully, more studies will come from this.

As for the plan for Zamboanga, we are going back and we are not forgetting it. We are looking for durable solutions, addressing a larger issue. One thing is to develop sustainable livelihoods in the farming communities where MILF has its bases. We link these isolated communities with the markets to provide bridge financing for the farmers.

We have a Sustainable Food for Sustainable Peace program. In the bamboo sector, we are using bamboo for food security. This is one sector that you can go into. Gawad Kalinga is doing work across areas affected by Typhoon Yolanda. Bamboo could be the answer to the housing backlogs.
Comment: In the sustainable agriculture session, Dr. Sajise wanted to relate system of rice intensification to resiliency. In this situation, a farmer would need 10 kg of seeds as part of his survival/evacuation kit because seeds should be ready for the next planting season.

(by Dr. Ravago) Savings should not only be money but also seeds.

(by Dr. Purwanto) High quality seeds can also be raised by farmers who should be capacitated to do that. The key words, therefore, are empowerment and capacitating of farmers.

Comment: I’m a backyard farmer together with my wife. I never hear anything about vegetable growing. Backyard farming could be quite interesting in terms of resiliency. It should not be “how will we feed the world?” It should be “how will the world feed itself?” If we have a little piece of backyard, we can diversify crops in it. In the Philippines, not too many vegetables are eaten. In vegetable gardening, vegetables also act as cash crops and farmers can have money at once. In the plenary session, the guy from Vietnam said to give the farmers chance to earn money so they can buy what they want. We should reach as many people as possible. We can do a reality TV show based on what is going on in our farm; people are very interested to know that.

We therefore recommend:
- a coherent economic framework to understand coping mechanisms of rural households to disasters
- using qualitative assessment tools to understand resiliency at the household level and develop a model to reduce household vulnerability to disasters
- a governance framework aimed at enhancing livelihood resilience of small farmers (integrating agriculture and fisheries in the barangay disaster risk reduction management plan) (post-disaster needs assessment)
- Relief intervention, rehabilitation, and development of intervention for resiliency by changing mindsets relative to the DRRM continuum where agriculture and fisheries concerns become a priority issue.

Q: For FAO how did you mainstream the idea of gender when most farmers and fisherfolk are male. How did you address this? For Ms. Ravago, within the household, how did you address this? For Ms. Binoya, you mentioned that gender was mainstreamed, can you give examples?

A: Accountability to affected people—ensuring that beneficiaries know what they are receiving and why and what to do with it. When we deliver seeds, a lot of the beneficiaries are women. Gender is a main issue.

We can do analysis on a per individual basis but have not yet gotten into that. In the analysis, we have category that the household head is female. We have seen in an Indian study that when the household head is female, there is higher chance of recovery.

Part of the tools is the gender analysis tool. We identified roles of men and women before and after disasters. We made sure that part of our recipients are women. Gender analysis showed that women are more resilient than men especially in times of disasters. When livelihood is down, men sort of get lost.

Q: (for Dr. Ravago) When was your study conducted? Were the results of your findings ever part of the OPAR?

A: May to June 2014, Secretaries Balisacan and Soliman knew about the Yolanda paper.

What policy implications/recommendations may be drawn from the papers/presentations?
- Combine vegetables with fish. Water from fish could be used in watering the vegetable gardens. Intercrop in coconut areas, vegetables are included.
- Vegetable gardening is the fastest way to provide assistance in disaster-hit areas. Maybe FAO could also provide vegetable seeds. It’s a faster way of intervention.
- Knowledge gaps: backyard gardening and vegetable gardening vis-a-vis the major staples as part of the commodity-based DRRM; role of women still a key issue in building resiliency; role of other household members in building resiliency.
- Policy implications: protocols in immediate deployment of seeds and other farm inputs in times of disasters; coordination mechanisms in ground zero (heavily devastated areas).

Q: For FAO, during Yolanda, all seeds with PhilRice were reserved by FAO. Do you have a protocol for importing rice seeds?

A: In the case of Typhoon Yolanda, the government had a different protocol for aiding immediately. Even the farmers’ reserved seeds were destroyed. We are introducing flood resistant containers.

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EU-Southeast Asia S&T Collaboration for Food Security: The CIRAD Experience

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The Asia-Pacific region is home to 57 percent of the world population. The region exports large quantities of staple food products, such as rice, cereal, meat, vegetables, and aquaculture to Europe. As such, a clear benefit arises from providing high quality and affordable food along the whole agrifood chain for both Southeast Asia and the European Union; collaboration in research and innovation on food and agriculture is needed to create competitiveness, jobs, sustainable growth, and social progress.

Food safety is a key regional issue. The high population density and the presence of 642 million people living below the poverty line translates to increasing food and nutrition insecurity and land pressure on available land. A 10 percent increase in food prices led 64 million more people into poverty, evidence of the strong impact of the global economic crisis and market instability of food security. In 2050, it is projected that 63 percent of the Asian population will live in urban areas: affluence among the middle classes will rise, and food consumption patterns will change. The geographical location of Southeast Asia makes it vulnerable to typhoons and the El Niño phenomenon, which brings about increased flooding, salinity, and long droughts.

CIRAD, the French Agricultural Research Centre for International Development, is a public research institution working with developing countries in the aim of tackling international agricultural and development issues. CIRAD’s research focus is on the life sciences, social sciences, and engineering sciences as applied to agricultural, food, and rural territories.

In Southeast Asia CIRAD is involved in four partnership platforms for research and training. The partnership between CIRAD and the Vietnam Academy of Agricultural Sciences and the National University of Laos founded the Market and Agriculture Linkages for Cities in Asia (MALICA) platform in 2002, which aims to build and reinforce the capacity of students, academics, public bodies, and private stakeholders. MALICA’s priority research fields are to increase quality in the food sector, and identify the comparative advantages of periurban and rural flows. It also identifies applications to vegetable, pork, and maize supply chains as well as the impact of different types of distribution on poverty alleviation.

Another regional network is GREASE, a research and training platform implemented by CIRAD and partners in Thailand, Cambodia, Vietnam, Laos, and the Philippines aimed at supporting research
activities for a better management of epidemiological emerging risks in Southeast Asia. It deals with emerging transboundary animal infections and zoonotic diseases. The main functions of GREASE are:

1. Analyzing and assessing health surveillance systems under a multidisciplinary and cross-sectoral framework
2. Identifying interactions between biodiversity and health through analysis and perception of health risks at the animal/human/environment interface
3. Assessment of the surveillance, control, and impact of animal diseases and zoonoses
4. Participatory approaches and modeling tools to address health risks within a One Health approach such as vocational training and higher education

The Conservation for Agriculture Network for Southeast Asia (CANSEA) is a platform founded in 2009 by CIRAD and seven institutional partners. The aim of this platform is to restore degraded environments, provide a smart and sustainable alternative to slash and burn practices, and train staff and technicians. These partnership platforms are all different but they also share many common traits, particularly in tackling key agricultural issues in Southeast Asia.

Collaboration for Food Security and Food Safety (The Importance of Multi-Stakeholder Collaboration)

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The agricultural disconnect is evident in Southeast Asian countries. Agricultural disconnect is characterized by the discrepancy between the responsibility perception of farmers and their perception of the use of technology. It is a question of whether increased productivity also increases sustainability and if the latest technologies can be used to meet the growing demand for food.

The type of farming that should be prioritized was also discussed. It is believed that large scale farming has the greatest potential to meet increasing demand and priority should be given to organic, local, and urban farming practices. Better solutions and resource efficiency can be achieved through effective management of the private sector with land, people, and technology.

Mr. McConville presented the Grow Asia model guided by a set of core principles. The principles are focused on supporting country-led and locally driven partnerships as well as identifying and addressing key enablers to develop agriculture in the region.

These principles are delivered through a range of activities which include:

1. Communicating about partnership efforts and impacts
2. Setting targets and measuring impacts in working with country partnerships
3. Developing and sharing best practice on partnerships and farm level activities
4. Conducting research and analysis on food security, crop value chains, stakeholders, and initiatives.
Greater Phnom Penh is composed of Phnom Penh City and six surrounding provinces. In this area, population increases rapidly and the majority of the population is engaged in agriculture and other related sectors. Before the food, agriculture, and environment education program was implemented, most of the farmers applied agricultural chemicals to achieve high yields. Plant residues were burned, and water resources were eutrophicated with chemical fertilizers. Chemical pesticides were inappropriately applied and prohibited chemical pesticides, such as methyl parathion, methamidophos, and methomyl were still sold in the market.

To address these bad practices, a research and extension group was formed. The Consortium for promoting Food, Agriculture, and Environment Education was created with the collaboration of several higher education institutions in Cambodia, Thailand, and Japan.

From April 2006 to March 2010, organic gardens were introduced in schools simultaneously with series of seminars. From April 2011 to March 2016, a project supported by the Japan International Cooperative Agency (JICA) is ongoing to promote sustainable agriculture based on natural resource circulation. The activities include:

1. Forming farmers' groups and promoting sustainable agriculture based on natural resource circulation;
2. Establishing and managing a pellet compost center;
3. Promoting distribution and sales of products with low chemical inputs;
4. Promoting food, agriculture, and environment education for agricultural successors; and
5. Strengthening the network for promoting sustainable agriculture based on natural resource circulation.

The collaboration for S&T led to the design and implementation of projects such as pellet compost making, eliminating E. coli, and education for sustainable development.

The activities in these programs led to the conclusion that scientific and technical collaboration is indispensable for appropriate extension and that education is the key.
Q&A

Q: Among all the collaborations that your organizations went into, what were the biggest challenges?

A: (by Mr. McConville) (1) Building trust – being open and transparent, break down barriers and create trust, sit together and share/agree on an objective/s; 2) Having a robust policy environment; put in place an agreement to agree (MOU), find ways to work together. In community involvement, we must keep sight of the end beneficiaries which are the farmers, and NGOs are very effective in that area because of their farmer-trust nature; 3) Execution through the value chain, get parties to work together, it’s perfectly okay for the farmers to profit. Everybody must understand that.

A: (by Dr. Rival) Bringing in traditional partners from bilateral partnership to a network. It takes some time to build-up a network and make a general platform. Since researchers and academics are not very good in bringing results to the community, NGOs who can do a much better job must be partnered with.

A: (By Mr. Mihara) (1) Looking for possible agency partners; (2) Increasing participation. It takes time before making proposals, which could take up to two years; we conduct meetings first, to get people’s ideas; local people will see that their ideas were heard, they will participate more.

Q: What are the equivalent of SEA networks in the EU?

A: There are traditional European networks wherein organizations are welcome to join. Connectivity is feasible but is very difficult to manage. Small is beautiful in terms of networking.

Q: Will GrowAsia look into application of chemicals in the field as well as on expanding labels of chemicals?

A: Not GrowAsia, but CropLife, which is focused on application techniques and chemical labelling; trains three million farmers per year on safe use; more than an individual company is included. It’s very important to work with distributors for storage monitoring, which should also be focused on Southeast Asia.

Q: What is Cambodia’s biggest problem in terms of food quality?

A: (Mihara) Rice yield in Cambodia increased from 1 million metric tons to 3 million metric tons in 15 years. Rice, cassava, and maize are now being exported. However, vegetable is being imported from Thailand and Vietnam.

The first step to achieving food security is to get the right people inside one room. Regulatory agencies are inefficient. This has to be looked at to ensure that farmers are using the correct methods. Stakeholders differ in the way they manage risks. Farmers always use sprayers to manage pests, but that is not supposed to be the case all the time. Understanding horticulture and pests is important.
THEME 5
INSTITUTIONS
AND GOVERNANCE

Agricultural production, productivity, and incomes are as much the result of the nature of the policy, regulatory, and institutional environment as that of the physical and natural environment. An inappropriate policy, regulatory, and institutional environment that is not responsive to actual needs will fail to achieve desired outcomes. For example, overcentralized planning and management of the agricultural sector could lead government into pursuing one-size-fits-all strategies and interventions that fail to recognize peculiar circumstances in various areas and localities. Hence, solutions that may work in some areas may actually be counterproductive in others. Budgetary allocations must also be responsive to actual requirements. In the Philippines, it has been a traditional lament that the agriculture budget has been inordinately focused (60–70%) on rice even as it only accounts for less than one-fifth of total agricultural value-added. The segments of agriculture with the highest incidence of poverty (i.e., coconut and fisheries) are also the ones that receive the smallest budgetary allocations. It is likely that the same perverse budgetary allocations are observed in other countries in the region.

In a predominantly smallholder-based agricultural system, especially where prior land reform efforts had deliberately moved the sector in that direction, small producers need to achieve higher efficiencies with economies of scale through the ability to cluster together. The ability to collectively transact with the rest of the value chain is critical to gaining a greater share in the value generated by the sector, thus raising incomes and welfare of farmers and their families. Various models of clustering have been in existence, including traditional cooperativism, nucleus estates, and corporatization of collectives. Sharing of best practices and positive experiences in this area is a valuable tool toward achieving more inclusive growth in the sector, thereby serving the interest of equity.

The efficient operation of land markets is critical to attracting productive investments in the agriculture sector. Weak governance, political conflict and outright rebellion have also gotten in the way of security of land tenure in many parts of the region, posing further impediment to investment and increased productivity. The importance of well-functioning land markets and assured security of tenure, thus, cannot be overemphasized.

Another crucial challenge of an institutional nature is the research and innovation system that is critical to sustained productivity improvement in food and agriculture systems. Issues range from inadequate budgetary allocations to bureaucratic shortcomings that either stifle (rather than promote) innovation or lead to inefficient and nonresponsive outcomes. Innovation systems must be guided by the actual demands of resilience, equity, and integration, for the products of research and innovation to become truly instrumental to uplifting lives in rural communities.
How Ready are the Philippine Agricultural Cooperatives for the ASEAN Economic Community?

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The cooperative movement in the Philippines is guided by the principles of cooperation. Agricultural cooperatives in the Philippines came in four waves. The first wave was during the American regime when four laws were passed to organize and provide financial assistance to credit and marketing cooperatives. However, cooperatives failed due to poor inculcations of principles. The second wave was during the immediate post-war period, where non-collateral and large-scale financing was provided to the farmers’ cooperative marketing associations through the Agricultural Credit and Cooperative Financing Administration (ACCFA). In 1960, the Catholic Church organized primary cooperatives as a response to poverty and social injustice. Nine years later, the agrarian reform law was passed and cooperatives served as primary conduits for credit, supply, and marketing services to beneficiaries. The third wave came when Martial Law declared the entire country as an agrarian reform area and formed Samahang Nayon at the barangay level and the Kilusang Bayan at the municipal level. The Kilusang Bayan had two basic types: area marketing cooperative and cooperative rural bank. After the Martial Law came the fourth wave. In 1990, the Cooperative Code of the Philippines (RA 6938) was enacted and the Cooperative Development Authority (CDA), the lead government agency to develop and regulate cooperatives, was created.

At present, there is an increased membership in cooperatives due to CDA’s campaign to establish coop branches and laboratory cooperatives. In 2012, cooperatives were reclassified under RA 9520 into three membership types: primary, secondary, and tertiary. Cooperatives in the Philippines are encouraged to work in unison and collaborate to get a fair deal from large-scale buyers of their products as well as expand to grow for community services. New members infuse capital and savings to support operation of the expanded business and service. Agricultural cooperative activities include input supply, production, post-harvest, processing, and marketing, credit and financing, cash trading, selling at market price, production of high quality goods and provision of better services, wholesale business, and minimizing expenditures.

The government provides support and privileges to cooperatives in the form of preferential rights and treatment in supply allocations, entitlement to loans and other eligible papers with financial institutions, exemption from the bidding requirement when transacting with the Philippine government, and tax exemption for members.

Agriculture cooperatives in the Philippines face several challenges particularly concerning the following: infrastructure; access to financing; government subsidy allocation (farm inputs, postharvest facilities, equipment); marketing; agricultural research and technologies; and Filipino colonial mentality.
Clustering Approach to Agroenterprise Development: The Coop Experience

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Most registered cooperatives in the Philippines are multipurpose, agriculture-based cooperatives. The Lamac Multi-Purpose Cooperative is an agricultural cooperative established in 1973 with only 70 farmers and an initial capital of PHP 3,500. As of September 2014, the cooperative has grown and now has 18 branches, over 40,000 members, and PHP 863 million in total assets.

The cooperative joined the Farmer Entrepreneurship Program—a partnership project of three institutions that combined their strengths to provide the three critical elements for success. These institutions with their contributions are: (1) Jollibee Group Foundation, with its influence in the market, (2) National Livelihood Development Corporation for access to finance, and (3) Catholic Relief Services for the clustering approach in farmers’ agroenterprise development. Agroenterprise is a new approach in farmers’ development that expands assistance to farmers beyond farm production to include value chain participation. Thus, targets are not just yields and surplus but also sales, income, and investment. Capacity building focuses on three areas: farmers’ new knowledge, skills, and values; innovative farmer organizing for collective marketing; and partnerships for enabling support to farmers.”

Lamac Multi-Purpose Cooperative, with four clusters and 54 members in two sites (Sudlon and Dalaguete), has a remarkable marketing performance between December 2013 and October 2014. It provides value-added services to its cluster members such as a significant difference between farm gate and trading post prices as well as higher recovery rates. Several key interventions were placed to ensure the continued progress of the cooperative, including:

1. Establishing agroenterprise as a special project under its Business Development Support (BDS) department
2. Developing its in-house capacity for agroenterprise development
3. Providing support for farmers’ cluster organizing and trainings
4. Working with both traditional and new markets
5. Promoting the Lamac Multi-Purpose Cooperative as a specialized intermediary
6. Creating a site working group for collaboration backed up with partnerships at different levels

Q: How can the findings of the presentations help promote resilience, equity, and integration in Southeast Asian agriculture?

A: (by Ms. Aveceda) Cooperative principles promoting equality and equity among coop members and their communities include: (1) democratic member control (2) economic member participation. Market and price risk reduction through collective action/cooperative (risk-sharing), venturing into multipurpose cooperatives doing diversified/multisectoral activities to reduce risks and generate more resources instead of single business activity; capacity-building and technical assistance for coops. Market integration practicing bargaining power and economies of scale; vertical integration in cooperatives from input supply and production to consumption point.
Cooperatives pave the way for inclusive growth (farmer participation through cooperatives), equitable distribution of income of clustered farmers in the cooperative, women participation and empowerment in the agriculture and cooperative sectors. Working with both traditional and new markets, cooperative as a specialized intermediary (production and marketing support to farmers) can promote resilience.

Q: What important new knowledge has been gained? What knowledge gaps remain?

A: (by Ms. Aceveda) Government support to coops should be preferential and equitable in the allocation and distribution of fertilizers and shipment of goods. Some of the major threats to cooperatives are competition from technology-based and low interest rate financial services of commercial banks. Farmers have the adaptive capacity against climate impacts. However, there is very little knowledge of the implications of the ASEAN Economic Community (AEC) and what qualities are needed to inculcate in cooperatives to make them ready for AEC.

A: (by Ms. Uy) The following are important new knowledge in the study: (1) Agroenterprise clustering approach through farmer entrepreneurship program: finance, credit, and farmers’ supply facilitation and focus on production, value chain approach, and capacity building process; (2) Most successful cooperatives are those with savings and credit services; (3) Farmers are not yet ready to work with the corporate group who are ready to practice inclusive business; and (4) 64 percent of members of the Philippine cooperatives are women (But in leadership, men dominate).

What policy implications/recommendations may be drawn from the presentations?

A: (by Ms. Aceveda) The following recommendations were presented:

- Government should support cooperatives, particularly in terms of further development of agri-related infrastructure, financing service, subsidy allocation, R&D
- Professionalization among coop members;
- Value addition and diversification of products, finding the value proposition of farmers’ products (identifying unique products per cluster) to have competitive advantage
- Consolidation and merging of small cooperatives to strengthen the coop sector
- Public-private partnership and collaboration with local government units

(by Ms. Uy)

- Support for farmers’ cluster organizing and trainings
- Strengthen partnership with support institutions and organizations
- Enhance services to enable capacities of farmers and micro-cooperatives
- Deputizing apex cooperative federations in regulating cooperatives

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1. Ms. Grace Aceveda; 2. Ms. Joan Cua Uy; 3. A slide from the presentation of Ms. Uy
Agricultural Policy and Institutional Reforms in Thailand: Experiences, Impacts, and Lessons

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Macroeconomic factors affect the performance of agriculture. The success of Thailand in reviving the agricultural sector after the economic crisis of 1997 and 1998 was in part due to the flexibility of the exchange rate. Higher crop shares in agricultural value increased due to a surge in the world commodity prices while labor productivity growth has been higher than yield. As such, food and carbohydrate security is no longer a concern as gains in food safety and nutrition are becoming more important. The sustained GDP and agricultural growth have also resulted in a steady decline in overall poverty growth.

In Thailand, farming is becoming more commercial and mechanized. Farm sizes are becoming bigger and the production has become easier with the use of machines. The paddy pledging policy has placed no limit in quantity purchased at higher price than the market price. It is expensive, but more physical than economic in nature.

The country perceives challenges in the agriculture sector in the future, such as increasing labor productivity and building up the resilience of farmers and farming systems to the impact of climate change.
Agricultural Policy and Institutional Reforms in Malaysia: Lessons and Implications

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The rate of growth of Malaysian agriculture, particularly of forestry, livestock, and fishing, has declined from 6.6 percent in 2000 to only 2.1 percent in 2010. Its share of GDP in 2012 and 2013 has also declined, from 8 percent to only 7 percent. Not surprisingly, employment in this field was also reduced from 15 percent in 2000 to only 11 percent in 2011. Due to the low productivity, the ratio of share of output to worker is also low. The industrialization drive and export crop-centric policy (emphasis on oil palm and rubber) were responsible in the slow growth of food industry in Malaysia. Malaysia is a net importer of most food items such as live animal, dairy, cereals, meat, fruits and vegetables, and feedstuff for livestock. In 2014, the food deficit stood at MYR 17 billion. Despite this, the achieved level of self-sufficiency in rice, the country’s staple food, exceeded the stipulated target through extensive market interventions and supports.

Unlike Thailand, majority of the commodity sectors in Malaysia are largely government-driven to ensure equitable growth and development. However, results so far are mixed, as proven by the growing economic gap between the commercial and plantation sector and the smallholders. This is despite the fact that the future of the Malaysian agriculture lies in the hand of smallholders in all subsectors such as oil palm (45% are smallholdings), rubber (90%), cocoa (98%), fruits and vegetables (96%), and fisheries and livestock (95%). Smallholdings are perceived as liabilities and problematic due to their “uneconomic size” and other structural deficiencies. However, with the right policy framework and support, smallholders promise a combination of economic, social, and environmental returns.

The advantages of the smallholder sector are: (1) preservation of resources and the environment since smallholders take care of their geophysical surroundings to ensure their farms’ sustainability (as compared to large estates, which destroy biodiversity and environment in the long term); (2) integrated small farms produce more output per ha; (3) successful smallholders create a dynamic small entrepreneur community which distribute industry profit equitably; (4) farming knowledge and skills are passed on to the next generation (compared to “come and go” workers in the estates); (5) instil good values in farm family; and (6) preservation of the rural landscape. Hence it is proposed that the government institute a new policy shift to empower as well as enhance the capacity of the smallholders to become viable and vibrant to improve the sector contribution to agriculture and the economy at large.
Vietnam is the leading country in the region in putting an institutional structure around its development strategy—of thinking beyond just agriculture. Its Ministry of Agriculture has been expanded, and it is now the Ministry of Agriculture and Rural Development (MARD).

One of the government’s initiatives in the sector is to promote resilience and equity in agriculture; small farmers have to be protected from natural risks because they cannot efficiently and easily absorb the losses from natural disasters, such as typhoons and pests/diseases. The upper limit of the genetic potential of rice is already reached; the trend now is thinking beyond rice or carbohydrate production, and toward multiple enterprise and nutrition security. In this regard, the three objectives of ARD2014, which are equity, resilience, and integration, can be simultaneously achieved through the approach of complete value chain or total agribusiness system approach.

One effective example of the value chain approach is the contractual integration between the regional agro-industrial processors and consolidators and the small farmers across countries. It is a symbiotic arrangement, wherein the agro-processors provide modern technology/inputs and market assurance, while the small farmers produce higher quality agricultural commodities according to the specifications of the agro-processor.

Considering the lessons and implications shared by these three countries (Thailand, Malaysia, Vietnam), it can be concluded that:

1. Markets should be made independent; there is a need to minimize distortionary market interventions by the government.
2. Government subsidy should be given for risk-mitigation and agro-insurance against natural calamities/pests/diseases; rather than market price controls or manipulations that just breed corruption.
3. No matter how efficient small farmers are, they cannot become rich from 1 or 1.5 hectares of rice production.
Q: How can the findings of the presentations help promote resilience, equity, and integration in Southeast Asian agriculture?

A: (by Ms. Huong) Farmers’ income remains low while productivity is high. Financial support (such as microfinance program) from the government is one way to improve farmers’ income. Agro-insurance is another way as it helps reduce risks. In Vietnam, we had a pilot program on agro-insurance for rice production by poor farmers. It seems that it did not work quite well, thus future programs should focus on non-poor producers of cash crops.

Q: What important new knowledge has been gained? What knowledge gaps remain?

A: In Thailand, farmers are very efficient but they remain poor. There are 20 million rich farmers because they have more land (economies of scale). Smallholder can be efficient but they will not get rich. They need to diversify their income sources. Agriculture is a risky endeavor, but people are naturally risk-averse. Farmers want their children out of agriculture. Not all farmers can handle risks.

Q: What policy implications/recommendations may be drawn from the presentations?

A: (by Ms. Huong) Let the market work. Provide the information then let the farmers produce.

(by Dr. Poapongsakorn) Market-oriented policy. Let the farmers react freely to the market. Government should not intervene. Government should only provide R&D and infrastructure support.

1. Dr. Nipon Poapongsakorn; 2. Dr. Fatimah Mohamed Arshad; 3. Ms. Do Lien Huong
Innovation Systems for Eco-Efficient Future of Asian Agriculture

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The eco-efficient future for agriculture envisions the smarter use of natural resources toward achieving development outcomes—food security, income, and nutrition—under growing threats of climate change.

Dr. Campilan stated that productivity, sustainability, and resilience are three major areas affected by challenges in agricultural and rural development (ARD). These challenges include bridging yield gaps, conserving natural resources, and adapting to and mitigating climate change. An eco-efficient ARD takes into consideration these three areas while making sure to raise yields fast enough on existing land, water, or natural resource while reducing environmental footprint. Several innovations for this endeavor have been devised and adopted for use. Key pathways to eco-efficiency include:

1. Large-scale adoption of better crop varieties and management practices based on sound agro-ecological advice
2. Increased investment in best practices that offer large enough gains to compensate farmers for greater risks
3. Reduced investment in inputs that are being overused
4. More efficient use of resources to obtain greater returns at lower costs—ecological, agronomic, socioeconomic
5. Spread of technologies that make possible quantum leaps in agricultural productivity
6. Protection against future losses in productive capacity

The International Center for Tropical Agriculture (CIAT) has a research program for eco-efficient agriculture focusing on enhancing crop productivity, intensifying soils and landscapes, and creating policies and decision support. CIAT conducts collaborative research with national and regional partners to support innovation systems for eco-efficient agriculture through: (a) cassava value chains (adding value to cassava production for diverse markets and values); (b) forages and livestock (access for smallholder livestock production); and (c) systems and landscapes (sustaining diversified livelihoods in crop-livestock systems).

Dr. Campilan presented three cases. Case 1 provided predictive analytics for the cassava sector in Asia, which is seen to be affected by changing temperature and rainfall. Other challenges that are noted include managing wastes from large-scale starch processing, sustainable cropping systems intensification/soils-natural resource use, and emerging climate-induced crop diseases and migratory pests. Case 2 is situated in the Greater Mekong, highlighting its climate-smart villages and enhancing its adaptive capacity and livelihood resilience. The third and final case focuses on food resilience in Asia-Pacific through root and tuber crops which are the staple food crop in the area.
Decision and Policy Analysis for Eco-efficient Agriculture in a Changing Climate

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In the face of climate change, there is a need to increase agricultural production by at least 70 percent to meet the demands by 2050. With this, the term climate smart agriculture (CSA) has been coined. This approach envisions agriculture that sustainably increases productivity, enhances resilience, reduces GHGs, and enhances achievement of national food security and development goals. CSA promotes eco-efficient agriculture which generates multiple benefits for the poor since it is competitive, profitable, sustainable, and resilient.

As such, a searchable global compendium of CSA practices and a CSA prioritization framework participatory process has been developed. This allows filtering of CSA practices according to specific contexts, such as production systems, and assessing their performance associated with adaptation, mitigation, and food security indicators that must be considered for use.

There are global, ready-to-use, current, and future climate databases and crop suitability models such as novel data mining and analytical techniques for big data, seasonal weather forecast schemes, and weather insurance packages, and near real-time land use change monitoring.

To identify the profile of a CSA country there must be a baseline assessment of current CSA status. This is to allow donors and governments to engage with the concept and to determine entry points for research and investment. A climate-adapted sustainable agriculture is technology-adapted, applies site-specific management, utilizes agroclimatic forecasts, and proper politics to facilitate adaptation and mitigation.

Capacity Development and Institution Building for National Agricultural Innovation Systems

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Climate change and global issues have a huge influence for capacity development and research toward innovation. The implementation of this requires working for development through research and strengthening international collaborations with developing and emerging countries.

There are three complementary dimensions of activities under capacity development and institution building, namely: restructuring agricultural higher education and research system to promote agricultural innovation systems, promoting agricultural innovation platforms with partners in developing countries, and contributing to a global capacity development for agricultural innovation systems through the Tropical Agriculture Platform (TAP) initiative. These activities aim to address (1) food and nutrition...
security, (2) climate change adaptation/mitigation, (3) sustainable agriculture/agro-ecology, (4) soil conservation, (5) water scarcity, (6) price volatility, (7) competition for land, and (8) food losses and wastage.

Agreenium was founded by France’s two leading agricultural research institutes and six agricultural/veterinary “grandes écoles” and universities.

The institution was formed to restructure the rich and diverse but scattered system of agricultural higher education in France. By restructuring the system, there will be room for improvement in the relationship between education and research. It is also formed to increase transparency, visibility, and attractiveness of the system as well as its contribution, position, and recognition in the global agricultural research system.

Another activity under capacity development and institution building is promoting agricultural innovation platforms in partnership for research and training, such as CIRAD and Agreenium. A platform in partnership is a group of partners willing to work together with shared objectives and outlooks carrying a long-term commitment and shared human and financial resources as well as shared research topics within a defined geographical area with the mobilization of a critical mass of scientists, competencies, and activities. These platforms will be responsible in determining needs at a global context, such as:

1. Increase of risks at global level
2. Need for strengthening the North-South solidarity
3. Global economic, social, environmental, food, and energy challenges
4. Agricultural research is a particular concern
5. Partnerships with scientific institutions in the countries where the research system is weak
6. Transferring the knowledge generated by a small number of institutions is not enough to meet the Millennium Development Goals
7. Harnessing CIRAD’s and its partners’ broad experience in developing and emerging countries

The last activity under capacity development and institution building is contributing to a global capacity development for agricultural innovation systems through the TAP initiative. This platform facilitates capacity development for agricultural innovation systems in the tropics. It is a constituency of 44 partners with target groups (along the value chain) involving policymakers, institutions, the private sector, and civil society active in agricultural innovation (research, extension, education, etc) as well as relevant development agencies, among others.

The needs assessment confirmed that interventions that aim to fill gaps in capacity in agricultural innovation in tropical areas are confronted with a broad set of problems. TAP works with these problems by a mechanism that will build on and complement existing mechanisms and advocate and supports sound capacity development for agricultural innovation systems (CD for AIS).

Planned activities at the global, regional, and national levels are the following:

1. Development of a common capacity development framework (global)
2. Set-up of an information management system (global)
3. Advocacy and policy dialogue (global, regional and national)
4. Marketplace to bring together supply and demand for capacity development cooperation (regional and national)
5. Validation of the common capacity development framework through supporting assessments and interventions (8 target countries interested in strengthening CD for AIS: 4 in Africa, 2 in Asia, 2 in Central America)

On the other hand, selected activities at the country level include:

1. Development of a shared vision of CD for AIS among partners in the country
2. Development of CD for AIS action plans, based on country-led assessments
3. Establishment of a mechanism/platform for advocacy, dialogue, and action on CD for AIS
4. Improvement of capacity for joint innovation by local/national value chain partnerships
5. Improvement of the organizational culture, practices, and procedures of key stakeholder organizations
Innovation Systems for Eco-Efficient Future of Asian Agriculture: Some Reflections

DR. GELIA CASTILLO

Eco-efficiency is a vision and a promise of tropical agriculture whose 45 years of existence since 1967 has produced a “Remarkable Record of Science for Change.” This is CIAT now.

The document *Eco-Efficiency: From Vision to Reality* says the following:

Eco-efficient agriculture increases productivity while reducing environmental impacts. Eco-efficient agriculture meets economic, social, and environmental needs of the rural poor by being profitable, competitive, sustainable, and resilient. ... Eco-efficient agriculture cannot effectively address the needs of the poor without taking into account the particular needs of women.¹

These all sound like perfection and perfection takes time; lots of efforts and inputs; tons of grassroots work for eco-efficiency to translate from PROMISE to fulfilment in REALITY. From vision to reaching the poor is a long distance but searching through its stockpile of technologies, publications, and agricultural practices could yield eco-efficient dividends not otherwise imagined. “Mine the gold mine” for gems of material significance from its 45 years of existence.

Going through my thick stock of materials, an ACIAR Monograph No. 99 confronted me. It was entitled: “Developing Agricultural Solutions with Smallholder Farmers,” which was a report on a participatory project on forages for smallholders carried out from 1995 to 1999 with a new phase to commence in 2003 with CIAT as the managing agent. The authors Peter Horne and Werner W. Stür did this 20 years ago, long before climate change became the “flavor of the month.” Notice the title—it says with, not for. It shows a step-by-step process of engaging farmers until the development workers’ role changed from teacher to facilitator.² This is probably not the only material which can be pulled out from the archives of experience.

In Asia, the future is now: “Cassava for diverse markets and uses” has a built-in eco-efficiency. It grows under less than ideal soil fertility conditions, it survives typhoons and floods because it is a root crop, but it is not a preferred food in all places. It has to pass through livestock production for it to be consumed as preferred staple food. The potential adopter to reach for increased consumption is the consumer.

The key pathways to eco-efficiency for food security, income, and nutrition do not look like terribly new and different from those pathways in the past. They are probably worded more elegantly but there is a familiarity in them.

At this time in the life of AGRICULTURE, the two papers by Peter Läderach et al. and Frederic Lapayrie are very much welcome indeed for agriculture is losing its luster as an academic course to take and as a profession to pursue. Agriculture is losing its appeal to young people. Perhaps climate-smart agriculture will bring back agriculture’s “sex appeal” and agro-ecology approaches and the restructuring of agricultural higher education and research system would open up renewed career choices in agriculture. We need a new crew of agriculturists to take us to the next century, for agriculture, until now, is the only way we produce food.

There is a diminishing and ageing stock of plant and animal breeders and agronomists; but hopefully an increasing stock of crop, systems, and climate change modelers. I like plant breeders because “they get

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as close to God as we can get.” They produced higher-yielding crops with pest and disease resistance and climate-smart products like drought-, submergence-, and salinity-tolerant rice varieties. Today is a time of incomparable challenge to the world, particularly of smallholders. I like modelers not because I understand what they are doing, but because I look forward to their results, which try to answer questions of what, where, when, how much, and how long. Extension workers and other farmer intermediaries are also a vanishing breed and we need them to engage farmers in active participation in the research, development, and adoption process of eco-efficient ways of doing agriculture.

Notable among the conclusions of the VISION document is the statement. “Humankind—given prospective demands and socio-economic, political, and environmental challenges—will not be able to sustain and survive based solely on low-input agricultural systems... The best possible outcome is for high-input, intensive agriculture and low-input agriculture to come closer to each other.” Doing more with less and perhaps doing more with more seem to be indicated.

Agriculture seems to be receiving renewed support, but as CIAT says—“not enough.” Considering that agriculture, as of today, is the only sector that produces food, I hope agriculture gets a hefty share of international funding. “Seeing is believing is trite, but it still works. ICT is a big help but it is not a substitute for human input in getting results from vision to reality.

Q&A

How can the findings of the presentations help promote resilience, equity, and integration in Southeast Asian agriculture?

A: (by Dr. Campilan) In addressing growing complexity of agricultural development challenges for smallholder producers, the vision of an eco-efficient future for agriculture focuses on the smarter use of natural resources toward achieving development outcomes—food security, income, and nutrition—under growing threats of climate change. CIAT collaborates with national and regional partners in research to support innovation systems for eco-efficient agriculture through cassava value chains, forages and livestock, and systems and landscapes.

Q: If Agreenium will be used as a platform, will it be able to share knowledge on GMOs?

A: GMOs is a sensitive and a political issue. Scientists do not interfere with the debate, rather they promote awareness on what food to eat and what society to create.

Q: Are there other variations you used in your simulations and modeling (e.g., soil, landscapes, etc.)?

A: So far, land-use is the only variation used in the simulations. But CIAT is also looking to consider population growth, food requirements, and dietary changes.

Q: Does your simulation factor labor cost? Climate change means there will be less monoculture for upland. A lot of agri-modeling and practice may change.

A: Maps are the only ones shown in the model. It’s the first step.
forecast schemes, and weather insurance packages; and near real-time land use change monitoring.

(by Dr. Lapeyrie) There is no sustainable development without a culture of science; no culture of science without local generation of scientific knowledge.

What policy implications/recommendations may be drawn from the presentations?

- There is a need to develop smallholders
- International networks to collaborate with the Philippines in empowering smallholders
- Advocate polyculture
- Policy recommendations for agriculture must include health awareness
- Organic food and medicinal plants to promote multi-diversification of food as a measure to address food security
- Interdepartmental collaboration among the Philippine DA, DOH, DepEd in promoting awareness
- Policy advocacies to focus not merely on food security but food independence
- Climate change predictions must be complemented by the needed requirements from the farmers to cope with the effects and impacts of climate change

- Technologies and resources, as well as new researches should be shared among countries
- Partnership, collective action, and mutual trust

(by Dr. Laderach) Use of decision support tools to link each practice to additional ‘context variables’ that users can search for when deriving a list of CSA practices that may work within their system(s) of interest. Tools that can assist in identifying vulnerable areas and crops to climate change; climate analogues tool to find areas in the world with similar current and future climates; helpful in assessing what types of practices might work in an area is by seeing what works in a location with a similar climate either now or in the future; useful in narrowing down the list of CSA practices or adding practices to the list that may not be immediately obvious

(by Dr. Lapeyrie) We should work for development through research; strengthening scientific communities in developing and emerging countries; developing innovative practices for fostering scientific partnerships; jointly designing with the partners platforms in partnership for research and training; jointly generating scientific knowledge and promote innovation at local, regional, and global levels.

1. Dr. Dindo M. Campilan;
2. Dr. Peter Läderach;
3. Dr. Frédéric Lapeyrie;
4. Dr. Gelia T. Castillo
CARP: Quo Vadimus?

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The presentation started with a history of the Philippine Comprehensive Agrarian Reform Program (CARP). In 1988, Republic Act 6657 or the Comprehensive Agrarian Reform Law was passed and then extended in 1998. In 2009, Republic Act 9700 or the Comprehensive Agrarian Reform Program Extension with Reforms (CARPER) extended CARP for five years to 2014, and was then again extended to 2016. The CARP was initially created with the vision to “improve the quality of farmers’ lives through greater productivity of agricultural lands.”

By the year 2014, CARP shall have distributed 5.05 million hectares, leaving but 321,000 hectares or an accomplishment rate of 99 percent. About 2.6 million farmers shall have gained some form of ownership to an average 1.2 hectares and the Philippine government shall have acquired and distributed 16 percent of the total Philippine land area of 30 million hectares. Japan’s vaunted land reform distributed only 1.76 million hectares of its 37 million while Taiwan distributed 0.5 million hectares of the 3.62 million that it had. This land area covered only rice farms.

The average yield among agrarian reform beneficiaries (ARB) or agrarian reform community (ARC) versus the national average are lower by 40 percent and eight percent for coconut and sugar, respectively, and higher by 10 percent and 50 percent for palay and corn, respectively. Between the year 2010 and 2012, ARC-affiliated ARBs received an average of PHP 22,446 in credit support and PHP 23,246 in irrigation support—worse figures would be observed in non-ARC/ARB, which account for 46 percent of ARBs, if they are included.

Productivity, Misplaced Exogeneity, and Land Reform

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Several myths surround the economics of land reform. The first myth is that large farms are inefficient based on the typical conclusion that large farms have high transaction costs and such implies market failure. Large commercial farms pay institutional wage greater than subsistence wage; thus, there is less labor leading to lower yield per hectare. Such claim is a fallacy as there could be other explanations for land inefficiency, such as land quality. Transaction costs are business costs that can just be as much as the costs of production. Land reform does not eliminate hired labor; in fact, in the Philippines it increased following Marcos land reforms. Moreover, land may be transferred from being tenanted to left fallow. Farm size, therefore, is endogenous.
The second myth says that share tenancy is inefficient. The canonical Stiglitz explanation of the existence of share tenancy shows that it is “privately efficient but socially inefficient” and as such is “tantamount to a 50 percent income tax (i.e., results in too little labor!).” Still, there is no reason to ban shared tenancy as it is as efficient as any other means of hiring labor. Agency costs of labor-shirking are small in repeated-games context. This perspective takes us back to the first myth where agency costs are synonymous to market failure. Also, people fail to consider that share tenants are farmers too, not workers. Researches from Bell (1977) and Shaban (1987) find that productivity is inversely related to share tenancy, but more recent researches such as that of Sharma and Dreze (1996) and Pender and Fafchamps (2001) state the opposite. Neither result is meaningful, so tenure choice can be considered endogenous.

Q&A

Q: Is there microinsurance in Vietnam?
A: There is an agricultural insurance for disasters that affect rice. There is high productivity, but farmers’ income remains low.

Q: In Vietnam, is there a premium subsidy program for insurance?
A: Financial support is necessary. Microinsurance cannot be implemented without financial support from the government. The focus shouldn’t be on poor farmers, but on cash crops.

Q: What percentage of the labor force is in agriculture? Why do we need to give subsidies?
A: Forty percent of the labor force is in agriculture (Thailand), 11 percent of GDP comes from agriculture. Fifty percent of the labor force is in agriculture while 20 percent of GDP comes from agriculture (Vietnam). Fifteen percent of the labor force is in agriculture while 7 percent of GDP comes from agriculture (Malaysia).

Q: Why is Thailand’s rice program so slow given that the technology is already in place?
A: Competitiveness must be compared. Do not just look at yield per hectare. Irrigated and rain-fed yield must be compared. The judgement point is the world market. Thailand is the largest exporter of rice in the world.

Q: Why does Thailand export more rice than Indonesia? What policies did you use?
A: Market-oriented policy. Let the farmers react freely to the market. Government should not intervene. Government should only provide R&D and infrastructure support.

Q: What was there in Vietnam’s policies that enabled it to produce faster?
A: Let the market work. Provide the information then let the farmers produce.

Q: Will opening more land for agriculture be beneficial?
A: We cannot afford to do it because of ethnic diversity in Malaysia.
Q: Malaysia provides many different forms of subsidies to its farmers. Doesn’t it violate the WTO?

A: We hide behind the boxes. Malaysia’s production is higher than Thailand’s, but farmers are more organized in Thailand.

Keep in mind that the poor are the pool of votes for policy makers. There is always political interest. For rubber, the research focus is always upstream so the downstream (labor) was not improved. Palm oil is very productive. It is called the lazy man’s crop.

In Thailand, farmers are very efficient but they remain poor. There are 20 million rich farmers because they have more land (economies of scale). Smallholders can be efficient but they will not get rich. They need to diversify their income sources.

Diverse farm sizes and organization forms can coexist in an efficient agriculture (according to land characteristics, skills and shadow prices of agents).

Q: Should we push for food security or food self sufficiency?

A: On regional integration, the problems of a national food shortage can be solved by regional food security integration. Smallholders must be integrated into big markets but the mechanisms are lacking. Contract farming is one way.

Consider the multi-functionality of agriculture and food—environment, food security, biodiversity, rural landscapes, social safety, and the like. Let the small farms be handled by smallholders. There is a need to promote community-supported agriculture—organic agriculture, sustainable agriculture.

Smallholders must be empowered because they depend on agriculture for their lives. Farmers should organize themselves and be selective (cooperatives, farmers organizations, etc.) because if small farmers are nurtured, they will thrive.

Agriculture needs diversity in order to preserve genetic materials. Are we willing to sacrifice the agro-ecosystems? We should promote diversity in farming systems.

Comment: The Philippines didn’t invest in industries when other countries did. Their solution was to send labor abroad for remittances.

A: Nuclear farming: large farm specializes in downstream coordination regarding crop, variety, timing, quantity, quality controls, marketing (transformation over space, time, and form). Small farms specialize in management intensive labor, operation of farm equipment and enforcement against intruders. LandBank should be motivated to facilitate long-term lease arrangements between collective CLOA beneficiaries and agribusiness concerns.
THEME 6
REGIONAL COOPERATION
AND INTEGRATION

The impending culmination of the ASEAN Economic Community (AEC) in 2015, and the recognized need to plan strategically well beyond, is calling attention to the various modes of regional coordination and cooperation that need to be pursued especially in the various aspects of the food and agriculture system in the region. For example, as indicated above, food security might very well be most efficiently approached through regional cooperation rather than primarily at the national or local levels.

Knowledge building and sharing across the region is critical to stronger integration, while also building greater resilience and promoting wider equity especially where deliberate efforts toward inclusive access to knowledge are pursued. SEARCA’s role in regional cooperation and collaboration in higher education in agriculture and rural development is a unique and critical one.

Finally, the dynamics of intra- and extra-regional trade in agricultural commodities will inevitably and increasingly receive prominent attention, particularly because sensitive agricultural products have been among the longest holdouts to the full liberalization of trade in goods within the region, and indeed globally.

Wide disparities across the region in factor endowments, technology access and institutional efficiencies have led to a situation where costs of production for the same crops (e.g., rice) vary widely across the region. Such disparities create comparative advantages that should ultimately define the appropriate trade patterns in agricultural products among countries in the region. However, policies that are often politically determined rather than grounded on sound economics have traditionally distorted the markets for farm and fishery products. This makes the necessary adjustments to a more open trading regime as propounded through the AEC especially complex and challenging.

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Mr. Thadavong stated that food security is a high priority and long-standing agenda in ASEAN. In this regard, he presented the relevant ASEAN policy and measures to food security, particularly the AEC (A7: 38–40) and ASCC (B3, B4) Blueprints, ASEAN Integrated Food Security (AIFS) Framework, ASEAN Multi-sectoral Framework for Climate Change, and the ASEAN Plus Three Comprehensive Strategy on Food Security and Bioenergy. He further expressed the importance of interlinkages for effective and efficient food security, policy coordination, trade, information, and multistakeholder engagement.

Concisely, the AEC and ASCC Blueprints aim to enhance intra- and extra-ASEAN trade and cooperation to empower and promote agricultural cooperatives, enhance food safety and security, and provide access to healthcare while promoting a healthy lifestyle. The AIFS Framework and Strategic Plan of Action on Food Security (SPA FS) is a regional coordination and cooperation platform that iterates “food security” exists when physical and economic access to food is granted to all individuals. It was adopted in the 14th ASEAN Summit in March 2009 (Thailand) following the 2007/2008 food price crisis. It was pledged that the highest priority is given to food security, and that ASEAN’s commitment to the objectives of the World Food Summit and the Millennium Development Goals (MDGs) is reviewed. The primary goal of the AIFS is to ensure long-term food security and nutrition, and to improve the livelihoods of farmers in the ASEAN region.

The AIFS Framework comprises five components, which are distinctive but interrelated in nature to facilitate cooperation in addressing food security in the ASEAN region. The AIFS Framework’s components are supported by corresponding strategic thrusts as follows:

Component 1: Food security and emergency/shortage relief
- Strategic Thrust 1 - strengthen food security, including emergency/shortage relief arrangement

Component 2: Sustainable food trade development
- Strategic Thrust 2 - promote conducive food market and trade

Component 3: Integrated food security information system
- Strategic Thrust 3: Strengthen integrated food security information systems to effectively forecast, plan, and monitor supplies and utilization for basic food commodities

Component 4: Agricultural innovation
- Strategic Thrust 4 - promote sustainable food production
Strategic Thrust 5 - Encourage greater investment in food and agro-based industry to enhance food security
Strategic Thrust 6 - Identify and address emerging issues related to food security

Component 5: Nutrition-enhancing agriculture development
Strategic Thrust 7 - Utilize nutrition information to support evidence-based food security and agriculture policies
Strategic Thrust 8 - Identify policies, institutional, and governance mechanisms for nutrition-enhancing agriculture development in AMS
Strategic Thrust 9 - Develop and strengthen nutrition-enhancing agriculture policies/programs and build capacity for their implementation, monitoring, and evaluation

The following are the other highlights in the presentation:

1. The priority commodities for food security (2015-2020) include maize, rice, soybean, sugar, and cassava.
2. Livestock, fishery, and crops for staple food, shall be identified in the implementation of the AIFS Framework and SPA-FS.
3. Decision making should be done in consideration of proper information, communication, dialogues, and linkages.
4. Vulnerability groups and nutrition aspects, among others, are some issues left to be further addressed.

Agri-food Industry Investments to Promote Food Security

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CropLife is an agricultural group composed of major research-based agro companies with regional and 15 national associations in 91 countries established to promote and research crop protection and plant biotechnology. CropLife Asia’s vision is for Asia to become a region where innovative crop science and technologies enable the efficient productivity of food and agricultural systems and contribute to the improvement of food security and the sustainability of everyone in an economical, social, and environmental manner.

There is a changing trend in the distribution of hunger in the world as the number of undernourished people has gone down by 200 million in 2014 from 1992; nonetheless, one out of nine people are still starving. The complexity of the food system is one reason contributing to these statistics, given that food and agriculture, which has a slow growth impact and requires great development assistance, is the world’s largest industry. Dr. Tan observed that there has been declining development assistance to agriculture. There is a need, therefore, to discuss in the concept of agricultural research investment.

Food investment sources reached its highest in 2013, with private companies investing in research and development. Research spending falls mostly to the top three crop research areas, particularly crop seed and biotech traits, food animal and health, and crop chemicals. The other highlights of the presentation are the following:

1. Genome structure and dynamics and crop breeding are two of the most important technologies involved in accelerating plant biotechnology.
   • Corn, soy, alfalfa, cotton, squash, papaya, sugar beets, and canola are common crops with commercially available biotech seeds
2. Introducing a new product using a plant biotechnology trait is less costly than those with agrochemical costs.
3. With the aim of food security and safety,
   • farmers should be provided with solutions to cope with the effects of pests and diseases
   • crop yield should be increased to raise the living standards of rural communities in emerging economies
4. Crop protection increases yields by almost 50 percent, with potential for higher yields.
5. The use of technology plays an important part in increasing crop viability and productivity.

Toward Food Security in ASEAN through Sustainable Agri-food Systems

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Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. There are five dimensions to food security: availability, accessibility, utilization, stability, and emergency. The ASEAN Integrated Food Security Framework identified five components and nine strategic thrusts with the primary goal of ensuring long-term food security and nutrition as well as improving the livelihoods of farmers within the ASEAN region.

Social, economic, and environmental challenges threaten food security and sustainable agrifood systems (SAS) in terms of income competitiveness, food safety, and environmental service. Three intervention areas were keyed out. First, the use of sustainable inputs and crop management practices (crop production technologies) should be promoted through various capacity development measures. Second, policies, strategies, and dialogue concepts for a sustainable agrifood sector should be developed and well coordinated with regional sectors. Third, sustainable crossborder value chains with the private sector should be incorporated to promote market linkages. The priority topics in SAS are biocontrol, farm economics, and soil and nutrient management for priority crops such as rice.

Farming practices should be able to integrate climate smart value chains given that the ASEAN region has a high dependence on natural resources and is one of the most vulnerable regions to climate change. Entry points for scaling up climate smart practices and investments are to be identified, with great focus on climate proofing, facilitation of technical transfer of best practices, technical feasibility assessment, and capacity building on financial opportunities, private sector linkage, and advisory services for investment proposals.

Q: Regulatory agencies take so long to make decisions, how do we act collectively to address this?
A: NGOs are influencing regulators today more than 20 years ago. We must create fear among the regulators so that they may act quickly. Politics plays a big role in this. Politicians take sides. ■

Q: Regarding the AIFS, there should be a reliable seasonal climate forecast and reliable crop forecasts in place. Hopefully, with the help of donor countries (Korea), there will be. In terms of components, only 1 and 3 actually work. Early warning systems do not support timely systems. How can the Korean support address this?
A: More capacity building of AMS (aggregate measurement of support) must be developed to provide timely information and collect accurate data. ■
Q: Where does fishery and aquaculture fit in the food security discussions, because the fishery sector is one of the most vulnerable sectors in food security?
A: Nutrition was subsumed within the umbrella framework of food security. With the new strategic thrusts, fishery is getting some attention. But in Asia, food security is influenced by rice. More food crops, including fishery, must be included in FS discussions.

Q: Does fisheries contribute to food security, why was it not mentioned here?
A: Fisheries also contribute to food security. GIZ in collaboration with FAO has supported ASEAN in the development of the draft new Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture, and Forestry (FAF), 2016–2025, which includes fisheries. Fisheries may not be included in the discussions, but it contributes mainly to livelihood and foreign exchange earnings from export to many ASEAN member states. GIZ is willing to collaborate with partners in supporting ASEAN to address food security.

Q: What mechanisms can we use?
A: With regard to mechanisms, best practices from the GIZ project on Sustainable Agrifood Systems that support ASEAN in addressing food security can be submitted to ASEAN for seeking policy support since the project has mechanisms that may be used at the ASEAN level. Guidelines developed from the project can be submitted for adoption by ASEAN high level authority and the ministers.

The private sector does not own the technologies. There are no monopolies. Technologies are open-access to all. Markets are very dynamic, and the infrastructure for marketing will develop by itself.

Q: In terms of climate smart agriculture practices, wherein some are not adopted, how can those that are adopted be scaled up?
A: GIZ created an ASEAN climate resilient network (including climate smart agriculture practices), which are demand-driven and need existing good partnerships with other organizations.

Countries don’t openly provide climate data, partly due to market competition in agriculture. Each country must be supported to enable them to invest. ASEAN must hurry up because they are still using 1950s and 1960s technology.

National food security depends on regional food security. Singapore and Brunei are classic examples of this.
SESSION 6B | AGRICULTURAL TRADE

Convened by ERIA
Moderated by Dr. Gilbert M. Llanto, President, Philippine Institute for Development Studies

Enhancing Intra-ASEAN Agricultural Trade: Identifying Choke Points to Supply Chain Connectivity and Opportunities for Improvement

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The presentation focused on how to enhance regional integration by looking at choke points in agricultural supply chains that may constrain trade flows and competitiveness of agriculture products. Choke points were identified in two main areas: (1) infrastructure, transport, logistics services; and (2) regulatory regime and processes in the import and export clearance. The study used gravity modeling to determine the impact of reducing choke points on intra-ASEAN trade. Results suggest that reducing trade time can raise the levels of intra-ASEAN trade. In order to shorten trade time and thereby reduce trade cost, country-specific reforms such as transparency and reduction of corruption, improved infrastructure in both ICT and transport (e.g. e-Customs, better roads leading to border checkpoints), greater competition in logistics services, and regulatory environment are recommended.

Enhancing Supply Chain Connectivity and Competitiveness of Agriculture Products: Identifying Choke Points and Opportunities for Improvement in Vietnam

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The presenters looked into the agricultural supply chain connectivity in Vietnam focusing on crustaceans and fish (HS03) and animal or vegetable oil (HS15), which have been contributing to the country’s agricultural trade, particularly with ASEAN+3 partners. The common choke points identified for these are more or less the same as those in Dr. Intal’s presentation. From the paper’s findings, several policy implications can be drawn, namely, the development of supporting infrastructure facilities, (i.e., warehouse, cold chain, road connection, testing facility, etc.;) development of e-platform for information exchange between and among customs and other government agencies; harmonization of standards with
partners; human capacity development; improved partnership between farmers/fishermen and local processors; and application of advanced quality standard systems and promotion of FDI projects in the processing field. AEC integration is seen as positive but it poses risks. The presenter claimed that the most serious risk is that without integration, development (in Vietnam) cannot take place in this day and age.

**Q&A**

**Comment:** Findings of the ERIA study are consistent with the Wallace-North Paradox in transaction cost. This just means that the ERIA study is “right on track.”

**Q:** By following the ASEAN agreement/commitment, can other ASEAN countries improve like Vietnam?

**A:** Most of the blueprint measures should be viewed as concerted reform efforts. Much of the reforms are domestic in nature, and thus educated bureaucracy is needed for these reforms to be realized. These include among others, better coordination and refinement of regulations to improve stakeholder interaction. Following the Vietnam experience, collective leadership and sharing of best practices can be considered factors for success.

**Q:** We already have the platform for integration but the greater challenge is how can it be implemented?

**A:** Interestingly, the newer member countries (i.e., Cambodia, Lao PDR, and Myanmar) are more serious in using the ASEAN blueprint in undertaking major reforms. The challenge lies in “older” member countries like the Philippines, Thailand, and Indonesia. As such, political commitment is needed for reforms to take place. We may also need to go beyond AEC and look at other countries like China. China is moving forward in reforms and infrastructure. Moreover, we must not look at trade facilitation only, but also improvement of human capital, as well.

**Q:** Please elaborate on what you meant by “behind the border” reform issues.

**A:** Consistency in national and provincial laws is important. In the experience of Indonesia and Vietnam, many provincial-level regulations are regarded as the solid foundations for the growth of the private sector.

**Q:** Why is Vietnam active in joining such agreements when these pose risks, particularly to smallholder-farmers?

**A:** There have been a lot of qualitative and quantitative impact assessments of transpacific partnerships (TPP). Under TPP, domestic reforms are pushed, and a new environment for doing business is created. For instance labor-intensive businesses, such as the textile industry, are positively impacted by TPP. At present, Vietnam has competitiveness in some agricultural commodities but not for all. Hence restructuring or new reforms must take place.

**Q:** From the point of view of Vietnam, can financial liberalization be excluded from AEC 2015?

**A:** Foremost, we cannot implement all targets for 2015. However, we need to tell the world that AEC is a serious matter in the region. The challenge with the financial sector is that it is so blurred. When you talk about financial capital, it is not merely a regional issue but a global concern. Financial capital can go anywhere in the world.

1. Dr. Ponciano S. Intal, Jr.; 2. Dr. Vo Tri Thanh; 3. A slide from the presentation of Dr. Intal
The Role of Universities in Agriculture and Rural Development: The Case of Thailand

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The basis of Dr. Kasemsap’s presentation is the definition of sustainable development (Brundtland Report 1987). He mentioned that one of the basic pillars of sustainable development is agriculture through sustainable intensification (“doing more with less”) and controlling the demand side (not only the production side).

He emphasized that Thailand’s success in agriculture and rural development can be attributed to several key factors, namely: commitment of government leaders, innovation and efficiency that lead to productivity, competitiveness and eventually prosperity; technology transfer that has been mainly private-sector driven; clear and simple policy; and human resources. In connection with human resources, the universities are considered the biggest contributor to ARD in Thailand. Apart from performing the traditional roles of teaching, research, and extension (academic service), universities have the capability to influence and guide legislation, and policy-making to make informed decisions. However, it is important for the universities to know what they are doing, for whom they are doing these things, and how they can excel. This is in order for the universities to produce great leaders who will do the right things. For the universities to cope with these challenges, regional cooperation and integration are important as these promote resiliency, equity, and integration toward borderless quality higher education and sustainable agriculture.

Higher Education for Sustainable Development:
The Role of DAAD in the Region

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The second paper presents the current activities and programs of DAAD, which is now the world’s largest funding organization for education. DAAD has been undertaking capacity building activities such as scholarships, internships, and assistance in the establishment of academic institutions in developing countries. In Asia, scholarships in particular are tailor-made to country-specific requirements. It has also programs for its alumni, who are regarded as DAAD’s ambassadors in economic, academic, and development fields. In its activities, it has built networks not just among individuals, but most especially universities and institutions.

Linking the presentation to the conference theme of improved resilience, equity, and integration in SEA agriculture, the following are the major points:
1. Resilience can be addressed by continuing innovation to increase the value of the products and making production more efficient. Moving from rice culture (carbohydrate crops) to nutrition crops is another strategy to produce a nutrition-secure society.

2. Equity can be addressed through technology transfer; letting universities take the lead role in guiding and influencing society.

3. Policy should move toward nutrition security rather than food security only (from carbohydrate crops to nutrient-rich crops such as fruits and vegetables).

Q: With education in Thailand being expensive, does KU have a program/policy to support smallholder farmers’ education?

A: There are KU campuses that provide for direct/special admission of select farmers. At the same time, there are also a lot of scholarships provided by KU which provide cash and in-kind benefits that farmers can avail of.

Q: Can DAAD establish collaboration with open universities that facilitate life-long education of farmers in Thailand?

A: DAAD is open to any education networks and institutions. The first step is to contact the DAAD office in Bangkok.

Q: Can SEARCA include in its policy support to SEARCA/DAAD alumni activities, continuing education and collaborative research?

A: Collaboration is what is being fostered by UC and SEARCA. SEARCA has been supporting alumni activities, and case in point is the presence of many alumni in this ARD conference. If SEARCA cannot provide financial support to activities, we can work together to look for funding, especially since many of the alumni are in a good position to look for additional funds.

Comment: One of the metrics of good faculty are their students, but focusing only on relegating the publications is not a choice. It is part of the system in the university that we are as faculty members. We need to put a good balance between our publication outputs and the service that we provide to our clients. We can continue to produce the publications but it is also important for us to produce good and ethical students.

Q: An entrepreneurship program for students is a good initiative, although the problem is usually the capital. How can we promote entrepreneurship among the students?

A: In the same way that leaders are not born, but made, so are entrepreneurs. Therefore we need to provide tools and opportunities and make the environment conducive. If the students have good projects, support is usually there. It is also important to realize that the students are not the university’s customers but rather the most important products.

Q: KU has an existing memorandum of understanding with Central Mindanao University (CMU), where CMU sends their Veterinary Medicine students on a 2-month on-the-job training at KU. Is there any faculty or staff exchange program as well? Is DAAD also open to supporting our university?

A: KU is open to collaboration with any organizations in ASEAN and even beyond. DAAD grants are open to any organization which have established collaboration with German Universities.

Q: What is the impact of KU’s work in the community, particularly with small farmers?

A: While we have initiatives with institutions to help farmers, technology transfer is not easy to do and takes time.

Q: What policy implications/recommendations may be drawn from the papers/presentations?

A: It is better to create jobs than to find one. To create jobs, we need to produce entrepreneurs rather than academicians. In the process, we have to encourage risk-taking in universities and the appetite for risk-taking must be cultivated. But most of the time, these cannot be turned out in degree programs but rather in short courses and trainings. In addition, student clubs and activities are also effective avenues to develop the skills of the students. The discussion made me reflect on my function as a teacher and researcher. Maybe, we should look beyond the usual promotion metrics (such as number of published papers) and look at the impact of state universities and colleges in ARD, and how the research are utilized. We may need to have different metrics for different faculty. For instance, the landscape architect’s success is measured differently. In IPB, there is what we call techno-preneurship—focusing on technical background and entrepreneurship skills.
Enhancing Sustainable Pest Management through Ecological Engineering Approaches

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The presenters reiterated that pest management in many agricultural crops in Southeast Asia today faces numerous challenges, vis-a-vis unsustainable management tactics, lack of natural control because of depletion of ecosystem biodiversity/balance, spread of invasive species due to the 4 Ts (transport, travel, trade, and tourism), and climate change impacts, etc.

At the same time as the above scenario is escalating, agricultural research and development investments and endeavors in Southeast Asian nations have not increased sufficiently and pest management extension is generally weak and in most cases nonexistent. This, coupled with weak pesticide regulatory systems, can easily fuel pesticide overuse/misuse.

Ecological engineering (EE) approaches involve practices that can increase biodiversity and ecosystem services and reduce the threats of pesticides to two highly important ecosystem services—pollination and biological control. The increase in floral biodiversity in noncrop habitats provide shelter, nectar, alternate hosts and pollen (abbreviated as SNAP) that conserve the natural enemy fauna to protect the pollinators of the crops. Coupled with rational pesticide management through better pesticide regulations, accurate pest diagnosis, and timely professional advice and prescriptions to farmers, sustainable pest management can be achieved to underpin good agriculture production and rural development.
Plantwise: A Global Program to Support Sustainable and Functional Plant Health Systems for Improved Food Security and Livelihoods

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It was revealed that plant pests alone can destroy up to 40 percent of smallholder farmers’ produce. Even higher losses are anticipated regularly in key food crops such as rice due to pest outbreaks. To alleviate the losses, farmers need pragmatic advice, researchers need good pest data, and policy makers need clear messages for frontline decision making. In the context of global food security, helping farmers to reduce losses without overreliance on injecting new land, water and agro-inputs can therefore make significant improvements on their livelihoods and family food security.

Currently, government-based extension services provide advisory services to farmers who bring their problems to them. However, not all farmers, especially those in the rural regions, are able to access such services. The CABI-initiated Plantwise program bridges that gap by going to where farmers are, regularly, to solve their multitude of problems.

Plantwise essentially supports and complements national extension systems in developing countries to provide smallholder farmers with better access to the advice and information needed to help them increase food security and improve their livelihoods by losing less of what they grow due to plant health problems. Plantwise is functional through three key components: plant health systems, knowledge bank (www.plantwise.org), and monitoring and evaluation.

The key entry point relies on the establishment and operation of plant clinic networks which provide primary plant health care and are run by trained ‘plant doctors’ supported by the global knowledge bank which is a central repository within Plantwise for plant health diagnosis and management information.
Tools and Ways for Effective Communication of Plant Health Research Findings

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The final paper talked about communication to agriculture stakeholders which is not only about providing information but also about building relationships, raising awareness, and empowering communities with information and local knowledge. It is a two-way dialogue where parties can participate and actively engage.

This presentation discussed the principles of good communications, challenges faced when communicating research findings, tools and ways of communicating with different stakeholders (with case studies related to plant health), followed by key conclusions and recommendations.

The challenges that are faced in communicating research findings include inadequate consultation between researchers and policy makers/practitioners/farmers; content and messages of inappropriate language (scientific vs. laymen) and technical level; (c) information overload because of inadequate synthesis/navigations; and (d) inappropriate media, tools, and channels used.

A number of tools and ways for communicating research findings to different stakeholders (policy makers, researchers, practitioners and farmers) were highlighted. Examples include various traditional materials (prints, meetings, field events) to innovative multimedia, ICT, and/or mobile-based platforms.

Several case studies were given in relation to communications with practitioners and farmers on plant health research findings, which included CABI’s Plantwise program, Direct2Farm (a mobile agro-advisory services system), and video communication of good seed practices in Bangladesh.

In conclusion, how we communicate will depend on who our stakeholders are, and how we target/tailor our messages and use appropriate tools. Appropriate content, language, and context are sometimes more important than tools to ensure effective communication of plant health research findings.
Q: How do you expect to win versus the big chemical companies who have lots of financial resources?

A: Media plays a big part in motivating and changing behaviors. Behavior change is about repetition and if we are dealing with companies that advertise intensively, we cannot win. Thus, we need to convince the government to change the game to be sustainable. This means changing regulatory processes and policies supporting sustainable actions.

As a take-away, we need to remember that when we communicate, we need to keep it long enough to cover everything, and short enough to keep it interesting. In other words, less is more.

The Plantwise (PW) programme presented fits in well with the three conference themes as it is about building crop production resilience, enhancing equity of smallholders and it integrates, both horizontally and vertically, with various stakeholders involved with the well-being of farmers, providing equal opportunity in terms of gender, accessibility, and quality of service through effective communication channels (plant clinics, complementary events, knowledge bank).

Q: As a clarification, is Plantwise part of CABI?

A: Plantwise is a CABI-led program but with the involvement of different partners.

Q: In the case of the knowledge bank, how can we address inaccuracies in the CABI information?

A: CABI is always open to amendments. Being a dynamic, lively resource, the knowledge bank is not cast in stone. As such, there are channels and ways to correct it.

In dealing with inaccuracies, CABI always goes back to the source to verify information.

Also, with our data sharing agreement, there are processes being followed.

Q: Why do we use the term engineering (in ecological engineering)?

A: The concept of ecological engineering was developed in the 1970s to 80s by Australian ecologist in reducing pests in wine. It is considered as “engineering” because it is about redesigning the content and landscape of ecology.

Engineering in this sense means much thought has been put in restructuring the process.

The CABI Plantwise program provides a strengthened extension approach, supported by its knowledge bank and diagnostics components. It mirrors a one-stop-shop plant health system. Many of the Plantwise projects implemented in the various countries are still at the pilot phase with its concomitant challenges. Considering the diversity and myriad of challenges faced in each country, Plantwise is still being refined and improved with the final aim of making the program a holistic framework and an effective interface for total crop health (any crop, any problem, and not just about pests and diseases).

What policy implications/recommendations may be drawn from the presentations?

I commend the three speakers for being able to link their topics to the theme of this conference on resilience, equity, and integration. As a scientist, I believe that we lacked the vision and the wisdom to see that what we had back in the 1960s was the right way to go. What we have been doing then, we are now bringing back through good agricultural practices, sustainable agriculture, etc. Your presentations were able to have us realize this. We should also remember that we are indebted to the farmers for our profession.

Ecological engineering, simply put, is bringing the clock back.

Aside from highlighting successful models in communication, we need to also remember that technology sells itself. Good technology will promote innovation and adaptation.

In terms of policy implications/recommendations Plantwise offers the message that systematic, clear, and responsible crop health advice and information are key to sustainable agriculture and rural development.

Finally, the communications paper has the most to offer to the Integration theme. It has highlighted a range of tools/ways for effective communication which can be further fine-tuned for content, context, delivery, and functionality to help build more efficient channels to disseminate information succinctly and better put research into use.
Dr. Glenn Gregorio summarized the productivity improvement theme by emphasizing the importance of producing quality outputs or inputs that are of high market value in order to achieve the desired productivity. This goal can be achieved through adopting the following systems: (1) plant and animal breeding, (2) aquatic agricultural systems, (3) farm mechanization/irrigation and water management, and (4) biotechnology.

Throughout the presentations and discussions, productivity has been a constant factor related to the objective of promoting resilience, equity, and integration. For these factors to effectively work as a system, the following considerations must be given due significance:

- Preserve biodiversity of livestock as we improve productivity and keep in mind the small stakeholders
- Equipping/empowering women (gender equality) and youth to ensure inclusive growth
- Special significance of fish for nutritional security
- Restructuring the R&D programs to be demand driven and product oriented
- Include all sectors—crops/livestock/fish etc.
- Private sector involvement to assure sustainability
- Without farm mechanization, resiliency will not be addressed and young people will not stay in farming
- Capacity building for water management is crucial
- Agribiotechnology is now a reality and has addressed resilience, equity, and integration in almost all angles
- Education
- Partnership
- Governance
Furthermore, as the studies and key examples or cases from other countries in the ASEAN were closely assessed, new knowledge on how to address the issues on the agriculture sector management were gained. Additionally, knowledge gaps which need further research and review were identified, as follows:

- Breeding for more cooperation among plant varieties, livestock, fish, microorganisms in the agro-biosystem
- Multiple levels of conservation and data assembly of livestock
- Resilience and equity cannot be addressed if women and youth will not be involved
- “Men should be involved too”
- Communication between disciplines by integrating appropriate technologies and strategies from different agriculture sectors
- Innovations in research should be demand driven
- Water management capacity building of local governments

At the end of the synthesis, it was highlighted that policy implementation and intervention from governments and agencies are very important for all agricultural plans and ideas to fully materialize. The discussions also paved the way for more recommendations which could augment the existing and planned developments for sustainable agriculture development in the ASEAN region:

- Functional biosafety policies in SEA countries must be harmonized
- Water management capacity building
- Farm mechanization enabling policy

THEME 2 INCLUSIVE VALUE CHAINS

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Under the second theme of inclusive value chains, the major themes of the conference, namely: resilience, equity, and integration were broadly and deeply discussed by introducing several mechanisms on how to achieve a highly developed and competitive agricultural sector. This theme was specifically able to cover specific programs for agricultural credit and assistance, as well as the roles of huge and established
companies and marketplaces in involving and drawing small farmers closer to more opportunities in the agriculture sector.

For instance, the role of MFIs in fostering resilience and equity was tackled which detailed particular avenues on how they can provide assistance to local farmers such as:

1. Create/improve loan facilities and services for farmers
2. Improve/develop allied products such as savings/deposits
3. Strengthen and develop innovative products (micro crop insurance, personal health and housing insurance, business development, and direct market linkages)

While integration has been marked as an essential means to achieving success in the agriculture sector, the discussions during the presentations were able to explore not only the opportunities or benefits of integration but also the threats that it may pose to the industry and to stakeholders. Some of the identified opportunities and threats are: entry of microfinance players and agriculture-related companies from overseas; lending with poor credit investigation (“credit pollution”); and farmers being unable to compete with other large and powerful markets. With these challenges however, it has been noted that microfinance can be expanded to include other value-added products and services. This effort further requires an upscaling of MFI services in Southeast Asia.

As mentioned earlier, the role of big markets or established companies in uplifting the lives of poor rural farmers and their support to inclusive development were considered as important key factors in achieving resiliency, equity, and integration. In the case of Nestlé, it has developed high-yielding coffee varieties, available at cost to coffee farmers. Its superior planting materials will raise farmer income and reduce poverty, where buying stations allow farmers to sell at world market prices. Another best practice observed in the case of Nestlé is its provision of technical services and farmers’ trainings to improve coffee yield and quality and help farmers compete. With this example, it is very important for more establishments and companies to support the livelihood of small farming communities or families. Specifically, there is a need to encourage more firms to assist the countryside and disseminate best practices in inclusive value chains in Asia.

Another significant aspect of the agriculture sector which demands equally high attention is the improvement of the logistics systems. If not given proper attention, internal logistics inefficiencies in particular can increase farmers’ risks and lower farmers’ incomes by reducing farm price and raising farm cost, especially that modern market channels are investing in cold chains and allowing large volume purchases.

A logistics system is also very important in facilitating effective and efficient integration among all ASEAN countries. For instance, ASEAN connectivity can expand markets and reduce freight cost (RO-RO) and by opening domestic ports to foreign shipping companies. Several critical ideas and lessons learned concerning logistics system were raised including:

1. Mobile telephony improves access, improves farmers’ bargaining power, promotes inclusiveness
2. Modern market players such as super/hyper markets are improving cold chain logistics, and giving farmers market alternatives
3. Large economic benefits of RO-RO

Since a logistics system is one of the foundations of opening more opportunities to small rural farmers and building stronger agriculture economies in the rural areas, several recommendations have been brought up in order to jumpstart and sustain a system of handling agriculture produce from production to marketing and distribution. The following key ideas were suggested:

1. Sustain advocacies to improve logistics infrastructure, provide timely market information, and minimize rent-seeking activities
2. Increase investment in R&D
3. Strengthen regulatory institutions
4. Improve product quality and standards
5. Enhance efficiency of supply chains within countries and beyond
6. Strengthen public-private sector partnership

Furthermore, the following recommendations were brought into the discussion on how inclusive value chains can better be managed and sustained. This involves:

1. Improving horticulture value chains (e.g., cold storage and better packaging) will benefit small farmers by lowering postharvest losses and improving quality
2. Moderating price and supply fluctuations
3. Reducing intermediation levels
4. Improving the supply chain will increase farm incomes and enhance supply reliability to modern markets
5. Cold storage facilities lower postharvest losses and improve farmers’ price via better quality
6. Different pricing for different value chains (higher price, higher quality for exporters; lower price, lower quality for traditional markets)

Thus, there is a greater demand for more efficient value chains that will enhance farmers’ competitiveness. And as has continuously been reiterated throughout the conference discussions, integration and inclusion is better achieved when there is knowledge sharing and knowledge transfer among the key players of the whole value chain. To achieve this, countries across the ASEAN region must continue to disseminate best practices in efficient and inclusive value chains in Asia and share pitfalls and challenges in making value chains more inclusive, in order to better manage risks and plan strategically for the future.

**THEME 3 SUSTAINABILITY AND POVERTY REDUCTION**

In this part of the discussion, the theme sustainability and poverty reduction was tackled in a targeted manner by focusing the lens on sustainable agriculture, sustainable upland agriculture, impacts of climate change, and other related issues.
change adaptation, and integrated ecosystem management. It has been recognized that in improving resilience, equity, and integration, it is not only the internal, controllable factors that pose a great challenge in the agriculture sector. More often than not, it is the external, unpredictable factors that disable communities and systems from achieving their highest potential or productivity.

To bring about sustainable agriculture and sustainable upland agriculture, basic premises are highlighted. It is currently recognized that sustainable agriculture including sustainable upland agriculture can be brought about through the provision of the supportive enabling environment and application of necessary processes at various hierarchical levels. These enabling environment and processes must take into consideration the necessity of recognizing the multistakeholder, multidisciplinary, multisectoral nature of sustainability as well as its anchor on basic human rights, people-centered paradigm, and the requirement for building up natural capital or the ecological foundation of the natural resource base.

The enabling environment consists of the policy and legal tools, financial knowledge, and shared values. The processes and tools needed should promote necessary linkages as well as the exploration of new and innovative practices and the application of participatory and holistic methods, (i.e., agroecosystem analysis, ecosystem analysis, farmer-scientist collaboration, farmer's field school, participatory rapid appraisal, participatory learning and action, participatory planning and participatory analysis, and learning methods).

Conceptually, sustainable agriculture or sustainable upland development is circumscribed by the pillars of sustainable development, and its core of sustainable livelihoods and sustainable agricultural intensification. These three pillars of sustainable development are ecological, economic, and social.

In light of these, the following were highlighted from presentations that cover both sustainable agriculture and sustainable upland agriculture sessions.

The agricultural systems that were covered were described as productive, sustainable, and resilient; system of rice intensification (SRI), various types of rice-based agroecosystems for lowland areas, and various types of sustainable upland agro-ecosystems (agroforestry, conservation agriculture with trees (CAT), and multiple cropping systems). These types of sustainable agro-ecosystems for both lowlands and uplands are common in Southeast Asia. The findings in these various presentations highlighted the importance of both the enabling environment and the processes needed to develop and scale up these sustainable and resilient agroecosystems.

1. SRI - The enabling environment identified were support of the Ministry of Agriculture and Rural Development (MARD), a two-tiered extension system, empowered communities, and local government support.

   The processes involved were participatory monitoring and evaluation and multistakeholder dialogues which promoted necessary linkages with government agencies, markets, and policy makers.

2. Rice-based agroecosystems with multifunctionality (six types)

   The enabling environment consisted of policy for promoting agrobiodiversity and indigenous knowledge, investments in agriculture while the main processes were farmer-academe partnerships and participatory and multistakeholder involvement.

   The knowledge gap identified is economic valuations of most of the 16 identified ecosystem services functions.

3. Sustainable upland agriculture (i.e., CAT, agroforestry, multiple cropping, and others).

   The identified enabling environments were policy on incentives, security of land tenure, market support, massive information dissemination, providing planting materials at early stage, initial capital, institutional support and enhancing capacities of various stakeholders including partnership build-up as well as improvement of rural infrastructure.

The processes involved participatory approaches (i.e., landcare approach for technology development and dissemination involving participatory land use planning, linkages, and convergence with government agencies and public-private partnerships).

The conclusion is that the complexity of the biophysical and sociocultural environment of the uplands will require a process-oriented approach more than a technological approach given that there is already a portfolio of agroforestry models developed as a result of research.

4. The youth and the farm

The common and worrying trend of the youth not going back to the farm poses a threat to inter-generational sustainability and generates the battle cry “invest in the farm youth” to promote sustainable agriculture.

To reverse the trend the following enabling environment must be promoted: promote access to the land, credit, and needed support services targeting young farmers; provide support for strengthening youth farmer organizations; include young farmers in agricultural policy formulation and decision-making; and protect the rights of young farmers. The processes which should be enhanced are education, which restore dignity to farming, and linkages for partnerships and financial incentives.

A yawning gap commonly identified is the low level of investments in agriculture and the recommendation is to study how remittances can be tapped for this purpose as well as how to increase government allotment for agriculture.

Since the kinds of agricultural systems indicated in the different papers are dominant in the ASEAN landscape (uplands and lowlands), it is recommended further that there must be a clear evidence of their degree of resilience, equity, and sustainability as basis for promoting the enabling environment and identified processes which will enhance their scaling up to bring about greater food and nutrition security and poverty alleviation in the rural areas of the region.

In terms of climate change adaptation and integrated ecosystem management, the discussions were able to arrive at key findings involved in poverty reduction, environmental conservation, information provision, training, and capacity building—all complementary approaches. The following key ideas were pointed out:

- Poor people tend to use reactive, weak, and stop-gap adaptation
- Confluence of hazards, vulnerabilities
- Gender roles affect household adaptation behavior
- Ecosystem-based adaptation tends to be more cost-effective, best if participatory and driven by local actors;
- Low level of financial adaptation presents opportunities;
- Need to increase adaptation investment, but public investment should not crowd out private initiative;
- Capacity for integrated planning and environmental management critical, initiatives underway to address;
- Important role of social capital, networking, and collective action

In terms of new knowledge gained and gaps, the following were highlighted:

1. Low level of investments in agriculture
2. Methodological (creative use of different research methods, e.g., multiple hazard modelling in an essentially bottom-up research)
3. Conceptual development (ridge to reef framework);
4. Operational (guidance on comprehensive land use plans (CLUP), cross-sectoral land use planning and ecosystem management, data sharing)
5. Specific proven technologies/good practices for major crops (rice, maize, cassava)
6. Framing of the discourse on climate change

The emerging policy implications of the studies presented call for actions that will study how remittances can be tapped to increase investments in agriculture; consider both economic and non-
economic dimensions in adaptation assessment and investment planning; develop climate policies that will optimize co-benefits, enhance capacities, and strengthen social capital at different scales, especially at the local level; support the climate proofing of agricultural systems which consider closely related sectors and production systems, will benefit from regional cooperation; build on ASEAN cooperation mechanisms (Multi-sectoral Framework on Climate Change and Food Security a place to start).

THEME 4 FOOD SECURITY AND FOOD SAFETY

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This theme addressed an important aspect of agricultural and rural development—food security and safety. Dr. Habito in the first plenary yesterday morning made at least three important points relevant to this theme:

1. Food security is one of the societal goals in agricultural and rural development.
2. Food security is best pursued at a regional level.
3. A more holistic, system view is needed to avoid myopic approaches.

With respect to resilience—food security robustness is a country’s ability to withstand any perturbations to its food security system.

Integration was embedded in almost all the session discussions, especially with respect to the need to take an integrated view of food security which is multistakeholder, multisectoral, multilevel and multidisciplinary. Integration particularly has to be a prerequisite in emergency and disaster responses and also in research and training, as well as S&T collaboration for piloting new systems.

Many new ideas were presented and it is satisfying to note the large number of ongoing activities in the ASEAN region by national groups, international organizations, and the private sector. An important gap that was obvious is the lack of communication and opportunities for the different groups to come together to achieve synergy. This conference has confirmed the benefits of sharing forums, and how knowledge shared leads to better knowledge management, and consequently, to speedier translation of knowledge into know-how that can be used to improve food security. Theme 4 sessions addressed four
areas concerned with food security, namely, food safety and nutrition, food security governance, disaster management and mitigation, and S&T collaboration.

The following are synthesis highlights with suggested recommendations, as follows:

1. Emphasize the importance of building a nutrition security element into food security activities and share methodology for what was termed “sustainable nutrition.” The new assessment methodology is important as it would directly contribute to the recently approved new phase of the ASEAN Integrated Food Security Framework and Strategic Plan of Action for 2015–2020. Nutrition security is a new element in this, stated as component 5, with strategic thrusts 7–9. Harmonization of agri-food standards was also discussed in this section, especially in the context of ASEAN member states developing national standards which lend themselves to potential harmonization and therefore contribute to the integration goals of the new AEC 2015.

2. Emphasize the need to have collaborative decision-making mechanisms which take into account immediate and longer term aspects of food security, and in which stakeholders have common platforms with which they can agree on interventions, whether they are to improve resilience or equity. Policies need to be developed that target all dimensions of food security, not just those to grow more food. Effective governance cannot be achieved with policies targeting only one aspect of food security. The complexity of food security must be highlighted to senior government officials and they must be encouraged to develop governance systems that address this complexity. A food security index called the Rice Bowl Index (RBI) was shared which allowed assessment of and discussion on “food security robustness,” a concept which emphasized assessing the stability of food security to threats which disrupt stability. The RBI provides a platform for dialogue among multiple stakeholders on what needs to be done to ensure food security. It is important to have platforms at the national and regional levels which allow different stakeholders to come together to discuss, derive common understanding of the analysis from common data, and make decisions on which aspect of food security is to be tackled given limited resources. A supra-national entity such as the ASEAN Secretariat is recommended to facilitate improved governance for food security at the regional level.

3. Adequate capacity to have operational early warning systems is still lacking which, when in place, can help prevent natural events from reaching disaster status. While national systems are attuned to the practices of disaster risk reduction, the poor, especially the rural poor, are the ones who inevitably bear the brunt of disasters and need more help to recover. Regional and international organizations have in place many response capabilities but these require more alignment with local government, localized weather forecasts, and local communities to be effective in timely delivery. It was noted that while at the ASEAN level there is APTERR (Asean Plus Three Emergency Rice Reserve) to deal with rice stocks for food, there is no equivalent stock of rice seed for planting, a gap which was noted after Typhoon Haiyan in 2013. It was also suggested that getting back to normalcy in rural communities should take into consideration the integration of other food items such as vegetables, fish, and even bamboo into rice-based systems. The need for continued advocacy with donors on the rehabilitation requirements beyond immediate relief needs and toward increased resilience was emphasized.

4. Collaboration was noted to be an important way to overcome disconnects between different elements in the complex food security system. The session had many examples of successful collaboration–partnerships in research and training, and S&T from the ASEAN region. One recommendation is to develop more collaborative mechanisms between sectors and stakeholders to overcome the governance problem in implementing many FS programs and to enable synergies which cut short the time from research to farmers’ fields.
The synthesis has been crafted according to the five governance and institutional challenges in agriculture and rural development policy: the nature of policy agenda and policy content/focus, the need to maintain and appreciate democratic values and political interests, the need for more efficient use of resources, adapting institutions for effective implementation, and evaluating progress of policies and programs.

**Policy Agenda and Policy Content/Focus**

Among the many problems in agriculture and rural development and the limited resources of governments, the issue becomes one of identifying and agreeing on specific priorities. Among the lessons learned is that some countries such as Malaysia, Thailand, and Vietnam re-examined and reformed their agriculture and rural development policies focusing on new priorities.

The following research and policy recommendations are suggested:

- Let markets work. Distortionary market interventions by the government should be minimized.
- Government subsidy should be given for risk-mitigation and agro-insurance against natural calamities/pests/diseases.
- Study combination of land size together with other support services for rice farmers
- Promote complete value chain or total agribusiness system approach. For instance, contractual integration between the regional agro-industrial processors/consolidators and the small farmers across countries.
- Agriculture policies must be framed in the context of overall rural development goals as well as other sectors’ policies and programs

**Maintaining Democratic Values and Understanding Political Interests**

Understanding the processes and mechanisms for decision making and the extent of citizens’ direct involvement is a pressing research concern in agriculture and rural development. The paper presentations
and panel discussions did not explicitly deal on these concerns. Thus, these are to be considered research gaps. The processes and mechanisms for interest articulations and integration into the relevant policy-making exercises should be documented. The policies and interventions for making these processes and mechanisms viable and responsive should also be explored.

**Using Resources Efficiently**

The need for making resources available and using them efficiently and sustainably cannot be overemphasized. The presentation revealed exciting trends and opportunities. Innovation systems for eco-efficient future of Asian agriculture is currently being promoted and improved to address the growing complexity of agricultural development challenges for smallholder producers. Decision and policy analysis for eco-efficient agriculture in a changing climate is another aspect of the innovation system designed to promote resilience, equity, and sustainability. Capacity development and institution building for national agricultural innovation system is being modeled for promotion within the ASEAN region. The following research and policy recommendations are set forth:

- Continuously monitor the impacts of new knowledge and innovations to farmers and to the overall agriculture and rural development
- Set up an enabling environment for strengthening innovation systems in each country and among countries in the region to facilitate collaboration and exchanges
- Design research for revitalizing research-policy linkage based on the value-chain approach
- Engage extension and other farmer intermediaries in research, development, and adoption of eco-efficient agriculture

**Adapting Institutions**

The strength and adaptability of organizations and their relationships determine their effectiveness. Institutional adaptability involves integration across sectors, enhancing organizational capability, and promoting public-private partnerships. Among the lessons learned are:

1. Cooperatives as intermediary mechanisms for inclusive growth to enable equitable distribution of income, promoting women participation, and empowerment
2. Cooperatives as specialized intermediaries that can enhance resilience of farmers from economic and other shocks
3. Agro-enterprise clustering approach is viable in promoting farmer entrepreneurship and capacity building
4. Most successful cooperatives are those with savings and credit services
5. Farmers are not yet ready to work with corporations or business groups
6. 64 percent of members in Philippine cooperatives are women but men generally dominate leadership

The following research and policy recommendations are set forth:

- Conduct researches on the viability/feasibility of agrarian reform and farmer cooperatives vis-à-vis multipurpose cooperatives with clusters of agrarian reform and farmers as members
- Determine the “true” contribution of the cooperatives to financial inclusion/growth and to job generation
- Strengthen the roles of the regulatory body for cooperatives
- Understand and harmonize the roles and interactions of various actors based on the value-chain continuum

**Measuring Progress**

There is a need for a reliable way of assessing how we are doing and of determining successes or failures of designed interventions. It is important for instance to determine implementation gaps and unintended negative consequences of well-intentioned agricultural and rural development policies and programs such as the comprehensive agrarian reform program. Providing assets such as land to farmers is not a guarantee for achieving inclusive development and farm productivity. Other factors such as financial and technical assistance are equally needed.
Synthesis and Closing Message

Research and policy recommendations are thus suggested:

- Determine the causes of failures and successes of agrarian policies and programs
- Identify the mix of factors and support services to ensure equity and productivity of the agriculture sector
- Examine how diverse farm sizes and organization forms can coexist in an efficient manner
- Explore possible combination of land ownership or property rights
- Comprehensive assessment and area-specific investigation into the implementation of agrarian reform policy using successful experiences in the region as benchmarks
- Motivate Land Bank to facilitate long-term lease arrangements between collective CLOA beneficiaries and agribusiness ventures

Other specific recommendations include:

- No farmland ownership limit for publicly-owned firms listed with the PSE
- Allow efficient farmers to own up to \( x > 5 \) hectares of agricultural land
- Allow banks operating in rural areas unlimited ownership of land
- Finish converting Collective CLOAS to individual CLOAS
- Convert LAD (Land Acquisition and Development) into a progressive land tax

Moving Forward

Designing robust governance and institutions that will support equity, resilience, and sustainability in the agriculture and rural development at the same time allowing for greater flexibility and opportunities for regional integration is a difficult and complex task but not entirely impossible. This would require looking at agriculture in the overall context of rural development, nationally, regionally, and globally. We only need the proper resolve and a new mind-set to steer us into the desirable paths. It is because as Albert Einstein said, “We cannot solve the same problem using the same thinking that created them.”
Under the theme regional cooperation and integration, three main issues were thoroughly discussed by looking closely at presentations on various modes of regional coordination and cooperation; knowledge building and sharing; and dynamics of intra-and extra-regional trade.

In the presentations, the ASEAN Integrated Food Security Framework and its implementation progress and development was particularly discussed. It outlined the need for emergency relief, sustainable food trade development, integrated food security information system, agri-innovation and, recently, nutrition-enhancing agricultural development, climate smart value chains, and farming practices. Furthermore, in terms of sustainable food trade development, there were two discussion points identified to further understand the supply chain connectivity in two types of agricultural products: (1) regulatory regime and customs procedures and (2) adequacy, costs, and quality of infrastructure and logistics services. Agri-innovation was also one of the main topics discussed in the presentation. It highlighted two important issues, namely, (1) the importance of private sector (MNC) investment in innovative technologies (e.g., genetic modification) to address increasing food demand, hunger, and malnutrition; and (2) measures to promote investment, which include investment facilitation and reducing barriers to foreign ownership, and improving the regulatory framework on GMO research to speed up innovation. It was also brought up that there is a great need for the crafting of a policy that will forward the specific needs of farmers and other key stakeholders. For instance, a part of this policy may encourage higher participation from the private sector, which can be a more efficient partner to help tackle the problems of food insecurity due to profit-oriented thinking, compared to the governments and international agencies.

The specific knowledge gaps identified under this theme were: (1) limited knowledge on informal cross-border trade, which has thrived and is of much larger magnitude than official trade and (2) need for studies to phase out 20+ sensitive products and two highly sensitive products from the Common Effective Preferential Tariff (CEPT) list.
OVERALL SYNTHESIS

I would like to thank again our theme chairs for their heroic tasks of compressing into five-seven minutes the difficult task of summarizing the richness of the discussions. In fact, perhaps my caveat is a caveat shared by all, that indeed it is impossible to do justice the breadth, depth, and richness of discussions we’ve had in the last couple of days. So the synthesis, theirs and mine especially, are neither exhaustive nor comprehensive. I guess it only reflects our limited observations and perhaps our particular appreciation of the issues covered. And so I think everybody on the stage shares with me the request for sincere apologies for omissions, and in my case it is really my fault if I do not capture adequately all the different nuances to the discussions.

But before I go further may I ask that we all show our appreciation to our superhuman theme chairs.

So let me just go quickly into the questions from the sessions. In the end, what have we learned? Or in some cases, reaffirmed?

1. Productivity improvement is everyone’s business, it’s not just the business of scientists alone;
2. It’s all about fostering and forging more and new linkages: linkages between microfinance institutions and the rest of the financial sector, between large enterprises and small producers, amongst small producers themselves to clustering mechanisms; linking areas to more and better roads and alternative transport modes; and linking logistics players like roll-on roll-off mechanisms;
3. Modern market players, particularly hyper/super markets, induce logistics improvement and expand farmers’ options;
4. Microfinance is an effective vehicle for introducing other value-added products and services needed by farmers;
5. Sustainability entails proper enabling environment and mechanisms and processes; intergenerational stability, especially the role of the youth who are losing interest in agriculture; gender sensitivity; and ecosystem-based approaches are most cost-effective;
6. Link between research and policy on one hand and among research institutions on another, remains inadequate;
7. Food security is not just about rice, in fact that came out very strongly in this morning’s session, nor is it just about sufficiency in rice or in food in general. A regional approach is critical, as I have said in the outset, even as initiatives for food security and food safety are needed at the community, local, and national levels as well;
8. Non-tariff barriers and process barriers get in the way of custom procedures that remain formidable in the region, and these are impediments to effective economic integration.

So what more do we need to know? What are the knowledge gaps? These are just a sampling, it’s not a comprehensive listing of what came out from the discussions.

1. Significance and implications of informal and cross-border trade are yet to be further explored;
2. Assessment of nutrition security and nutrition vulnerability also need to be further explored;
3. There are innovative modes and incentive mechanisms for getting more, especially large businesses, to assist small producers. Again more of these modes need to be fervently explored;
4. The political economy of the last remaining 20+ ‘sensitive products’ in the free trade area agreement also needs to be studied; and
5. There are further modes of regional cooperation in the different facets of that cooperation that still have to be explored and tried.

Finally what are the implications for policy? What came out among other things were:

1. Assist farmers to link and participate better in the value chains and this is the responsibility of government, of civil society organizations, and the private sector all collectively;
2. We need to overcome undue attention to rice self-sufficiency because this has in fact led to distortions and inefficient use of resources. If we look at a more regional solution, we might end up with more efficiency;
3. Food security policy must incorporate nutrition security;
4. We have to incentivize initiatives toward clustering of small farmers/producers;
5. Improve and harmonize regional quality standards, again in the interest of greater integration;
6. Align disaster response approaches with local government, local weather forecasts, and local communities
7. We need to scale up microfinance institutions in Southeast Asia that have been shown to be quite effective in addressing the needs of farmers not only in finance but also in crop insurance and other value-added services; and
8. We need to prioritize improvements in logistics systems and pursue upscaling of the RO-RO systems that have proven to be useful especially in the two archipelagic countries in the region, Philippines and Indonesia.

On implications for action not just for government:

1. In general, we need the more advantaged players, the stronger ones among us. These are countries, firms, private groups, or development partners. They need to take deliberate actions to reach out, link up to, and assist the less advantaged ones, the smaller players, the weaker ones, if we are to achieve win-win outcomes in the region; and
2. We need to widen and strengthen knowledge sharing and exchange across Southeast Asia whether it is knowledge in the form of ideas, technology, good practices, and tools for analysis or tools for action.

And so in the end I could say that only by doing all of these can we really achieve a **RICH**—meaning, resilient, inclusive, competitive, and harmonious—**ASEAN**.

And so what we really need is a ‘RICH’ ASEAN agricultural community.

Thank you very much.
Distinguished Ladies and Gentlemen,

It is a pleasure and an honour for me to be here today on behalf of the Food and Agricultural Organization, to symbolically receive the outputs and policy recommendations of this Second International Conference on Agricultural and Rural Development in Southeast Asia.

I wish to congratulate you on a very comprehensive program, which brought together a diversity of stakeholders from various disciplines and fields of study to discuss agricultural and rural development in Southeast Asia, under six well thought out themes—productivity improvement; inclusive value chains; sustainability and poverty reduction; food security and food safety; institutions and governance and regional cooperation and integration.

Indeed, the high quality of the syntheses as presented in the last session, truly reflect the comprehensiveness with which each theme was analyzed and addressed in the context of the program of the forum, toward strengthening resilience, equity, and integration in food and agriculture systems in ASEAN countries.

Ladies and gentlemen, I am pleased to note that all of the thematic areas discussed are congruent with the work being undertaken in the region under FAO’s five strategic objectives, which I will now outline, highlighting specific examples of ongoing work in the ASEAN region:

**Strategic Objective 1 is focused on helping eliminate hunger, food insecurity, and malnutrition.** While considerable progress has been made toward improving the nutritional status of people in the ASEAN region, high child stunting rates, micronutrient deficiency, and increasing obesity continue to be major issues to be addressed in the region.
FAO has been providing technical assistance to ASEAN member states in mainstreaming nutrition into the ASEAN Integrated Food Security Framework and its Strategic Plan of Action for Food Security (2015–2020). At the country level, assistance is given to countries in revisiting their food security policies and strategies with the objective of integrating nutrition and updating policies and related action plans.

Support is being provided to Myanmar and Vietnam to formulate and implement national action plans to achieve zero hunger by 2025 and it is expected that other countries will join in due course. These plans are designed to achieve progress along the five pillars of the Zero Hunger Challenge of the UN Secretary-General, launched in June 2012. These five pillars are: (1) 100 percent access to food all year round; (2) zero stunted children less than 2 years of age; (3) all food systems are sustainable; (4) 100 percent increase in smallholder productivity and income; and (5) zero loss or waste of food.

**Strategic Objective 2 is focused on making agriculture, forestry, and fisheries more productive and sustainable.** Smallholder farmers are supported by increasing their agricultural productivity and production through promoting pro-poor agricultural policy and governance, strengthening farmer organizations and the capacity of women in agriculture, promoting good agricultural practice and value chain development, linking farmers to markets, strengthening agricultural research and extension and communication linkages, pursuing a “Save and Grow” and sustainable agricultural intensification approach, promoting the use of sustainable agricultural mechanization systems, enhancing the resilience of farmers to climate change, and promoting regional implementation of the Globally Important Agricultural Heritage System (GIAHS) and Geographical Indications (GI), etc.

Under a regional rice initiative, FAO provides support to Indonesia, Lao PDR, and the Philippines in pursuing an array of options to make agriculture more productive, sustainable, and efficient in resource use. These include rice-fish, rice-livestock, and rice-vegetable systems, integrated pest management, Trees Outside Forests (TOF), policy and legal frameworks to support effective ecosystem control of insect pests, safeguarding rice heritage and culture under the framework of GIAHS, improved canal operation techniques, and climate-smart agriculture. This initiative also supports policy processes, and particularly the (re)formulation and implementation of national rice strategies or policies, grounded in the Regional Rice Strategy formulated by FAO in 2014.

On-going work activities in Myanmar, Cambodia, Vietnam, and the Philippines are focused on increasing food production and food security both at the national and household levels through groundwater exploration, watershed management, seed production, and rain water harvesting, while promoting the sustainable use of the natural resource base.

Through a consultative process, FAO is working with countries in the region, in developing planning strategies for the sustainable use of agricultural mechanization across their agri-food systems.

Sustainable management of natural resources and integrated ecosystem management are indispensable for future sustainable agricultural production and productivity growth. FAO has prioritized a regional initiative on enhancing equitable, productive, and sustainable natural resource management and utilization through a blue economy. This regional initiative focuses on supporting sustainable management of natural resources through improved governance, ecosystem approaches, and participatory processes and actions to improve implementation at local levels; improving governance and ownership of natural resources by smallholders; supporting the reduction of poverty, improved resource rents, increased food security and improved nutrition of rural, coastal, and riparian communities with sustainable intensification of food production; and supporting the management of transboundary issues (e.g. water management, fisheries, forest pests, and animal health) and adaptation to climate change.

**Work under Strategic Objective 3 is focused on reducing rural poverty.** While significant progress has been made in reducing poverty in the region, statistics indicate that a majority of the world’s poor still live in the Asia and Pacific Region. They are the group of people excluded from the benefits of economic growth and require targeted support. Farm laborers and the landless in rural areas of the region, still cannot produce sufficient income to surpass the poverty line. Strategies being pursued to address this target group are varied and include various social protection and safety net measures, implementation of the International Year of Family Farming (IYFF) observed this year; support for
country level implementation of the Voluntary Guidelines on the Responsible Governance of Tenure; and the creation of off-farm and nonfarm rural employment and agriculture-related income generating activities through promoting farmer organizations, farmer field schools, skills training, and inclusive value chains with special attention to women, whereby the poorest can play a productive role throughout the entire value chain.

Strategic Objective 4 is focused on enabling inclusive and efficient agricultural and food value chains. Countries across the region face increasing levels of food losses and waste and often fail to recognize the important role of food loss and waste reduction in addressing food security and hunger. Globally, an estimated 1.3 billion tons of food (approximately 30 percent of global food production) is lost or wasted every year. FAO is currently implementing the Save Food Asia-Pacific Campaign across the region, while building technical capacities and developing an evidence base to support policy and strategy development to manage these issues. FAO’s work in the region also addresses upgrading food quality and safety and the formulation of associated standards and regulatory frameworks to ensure that food safety meets the needs of consumers and facilitates trade.

Capacity building of value chain stakeholders—small farmers, traders, processors, packagers and exporters, and retailers—to competitively and efficiently supply local, domestic, and international markets, is yet another area of focus under this strategic objective. Capacity-building initiatives and activities address production (including organic production), certification including participatory guarantee schemes, postharvest handling, food quality and safety issues, contract farming, direct marketing and investment, and finance for value chain improvement.

In Cambodia, Lao PDR, and Myanmar, FAO has implemented two projects, funded by the Common Fund for Commodities and the International Fund for Agricultural Development (IFAD), where existing value chains for small farmers were improved, or in some cases new value chains created.
Through a regional Japanese funded project titled *Support to Capacity Building and Implementation of International Food Safety Standards in ASEAN Countries*, FAO provides support to countries in the region on standards development and understanding Codex standards and their implementation. A project on the *Promotion of Rural Development through the Development of Geographical Indications (GI) at the Regional Level in Asia* provides support to four countries of the region namely Thailand, Cambodia, Lao PDR, and Vietnam to increase incomes of smallholder farmers through the development of GI value chains, improved infrastructure for internal and external control systems, improved market access, and increased recognition of GI by consumers.

Lastly, **strategic objective 5 is focused on increasing the resilience of livelihoods from disasters.** Negative consequences of climate change are seen in the frequent occurrence of natural disasters (e.g., floods and droughts) which have doubled in the region over the past 10 years. These disasters have affected food production and price stability. FAO has been directly supporting work related to disaster risk reduction/disaster risk management/climate change adaptation (DRR/DRM/CCA) across the region and enhancing capacities for disaster risk reduction in agriculture in Cambodia and the Philippines. Work in the Philippines is being integrated into the ongoing emergency response efforts of Typhoon Haiyan. DRR/DRM support was instrumental in the formulation of a national plan of action (PoA) for DRR/DRM in the agriculture sector in countries including Cambodia, the Philippines, and Lao PDR and expansion is planned for other countries.

FAO promotes conservation agriculture to strengthen production system sustainability and intensification within its DRM framework that links emergency and rehabilitation activities to longer-term development and technical assistance activities, and is currently piloting conservation agriculture projects in Indonesia and in Timor-Leste.

*Ladies and Gentlemen,*

I am pleased to inform you that the recommendations that have been delivered to me here, today, will be shared with our technical team at the FAO Regional Office for Asia and the Pacific, and will certainly be considered in the formulation of future programmes and actions for technical assistance to ASEAN member countries.

In closing, I wish to once again thank the organizers of this meeting for inviting FAO’s participation in and contribution to this forum.
SESSIONS
EXHIBIT AREA & BOOK LAUNCH
LAUNCH OF SEARCA’S 10th FIVE-YEAR PLAN

PATHWAYS TOWARD INCLUSIVE AND SUSTAINABLE RURAL DEVELOPMENT IN SOUTHEAST ASIA

SEARCA’s Tenth Five-Year Plan

Pathways toward Inclusive and Sustainable Agricultural and Rural Development

Tenth Five-Year Plan of SEARCA (2014-2019)
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