



**Asia-Pacific
Economic Cooperation**



APEC SYMPOSIUM ON CLIMATE CHANGE

**“Adaptation Strategies with Mitigation Potential
for Food and Water Security”**

Manila, Philippines
Agricultural Technical Cooperation Working Group
February 2012

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Economic Cooperation**



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The APEC Symposium on Climate Change is undertaken by the Philippines to fulfill one of its commitments in the APEC Action Plan on Food Security, as embodied in the Niigata Declaration approved during the APEC First Ministerial Meeting on Food Security in 2010. Symposium participants are composed of policy makers and implementers, researchers/scientists and practitioners from APEC economies and selected organizations. The symposium intends to initiate and sustain information exchange among resource speakers and participating APEC economies on adaptation strategies in agriculture with mitigation potentials. The symposium will also discuss and elicit recommendations on strengthening institutional arrangements to promote widespread adoption in APEC economies. Strengthening of networks and linkages with international organizations will also be pursued.

Manila, Philippines
Agricultural Technical Cooperation Working Group
February 2012

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“Adaptation Strategies with Mitigation Potential for Food and Water Security”

EDSA Shangri-la Hotel

February 6 – 8, 2012

Manila, Philippines

Day 1 February 6, 2012	
0830 – 0900	Registration Boracay Room
Morning Session Boracay Room	
0900 – 0945	<p>Opening Program</p> <p>Emcee: MS AMALIA B. CABUSAO</p> <p>Welcome Remarks</p> <p>DR SEGFREDO R. SERRANO Undersecretary, Policy & Planning Department of Agriculture APEC-ATCWG Focal Point, Philippines</p> <p>Introduction of Participants and Speakers</p> <p>DIR ALICIA G. ILAGA Focal Point, APEC & Climate Change Policy & Planning, Department of Agriculture Project Overseer- ATC 04 2011A</p> <p>Message</p> <p>HON PROCESO J. ALCALA Secretary Department of Agriculture</p> <p>Group Photo</p>
1000 – 1030	Coffee Break and Networking

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Symposium Proper Boracay Room	
Moderator: DR LIBERTADO CRUZ Philippines	
1030 – 1040	Symposium Overview, Objectives, Expected Output and Administrative Arrangements DIR. ALICIA G. ILAGA Focal Person, APEC & Climate Change Policy & Planning, Department of Agriculture Project Overseer- ATC 04 2011A Paper 1: Greenhouse Gas Emission and Mitigation Potential of Agriculture: Highlighting Rice Production Systems DR REINER WASSMANN Coordinator International Rice Research Institute Climate Change Consortium
1040 – 1110	<ul style="list-style-type: none">• Significant sources of GHG in the tropics• Global and regional estimates of agricultural GHG mitigation potential• Agricultural technologies and practices that have been proven to mitigate emissions• Long-term outlook for GHG mitigation in agriculture
1110 – 1140	Paper 2: Climate Change Adaptation Options in Crop and Livestock with Mitigation Potential DR HIDEKI KANAMARU Natural Resource Officer (Climate Change) Climate Impact, Adaptation and Environmental Sustainability Team, Climate, Energy and Tenure Division (NRC), Food and Agriculture Organization <ul style="list-style-type: none">• Commonly adopted climate change adaptation strategies and criteria/rationale for selecting these strategies• Impact of these strategies to yield/productivity, animal health and food safety• Which of these strategies have mitigation potential, and to what extent (level of significance of mitigating effect)• Prospects and constraints for widespread adoption of adaptation strategies with mitigation potential

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	<ul style="list-style-type: none">• Policy and institutional requirements to promote widespread adoption of adaptation strategies with mitigation potential
1140– 1210	<p>Paper 3: Adaptation and Mitigation Strategies in the Asia-Pacific Region and Policy Recommendations to Support Farmers’ Organizations</p> <p>MR RAUL MONTEMAYOR Co-Chair, Asia Committee IFAD, Medium-Term Cooperation Programme in Asia Pacific Region (MTCP) Farmer’s Forum</p>
1210 – 1300	Synthesis and Open Forum
1300 – 1430	Lunch Break and Networking
Afternoon Session Boracay Room	
Moderator: MR IGNACIO GARCIA Chile	
<p>Economy reports shall address the following:</p> <ul style="list-style-type: none">• Particular climate change vulnerabilities of economy and how these affect agricultural productivity and food security• Climate change adaptation strategies most widely used and how/why these have been selected• Which of these strategies have been proven to have mitigation potential, and benefits obtained from these strategies• Institutional arrangements that led to wider adoption of these strategies• Policy options for wider adaption• Financing options• Extent of adoption and/or prospects for widespread adoption of these strategies	
1400 – 1420	Economy Report : MR MARIO BIN VALERIANO Malaysia
1420 – 1440	Economy Report : MR TAKIYAUDIN BIN HAJI MOHMAD Brunei Darussalam
1440 – 1500	Economy Report : DR JIRAPA INTHISANG Thailand
1500 – 1520	Coffee Break and Networking
1520 – 1540	Economy Report : MR NGUYEN VU HOAN Viet Nam

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1540 – 1700	Synthesis and Open Forum
1830 – 2000	Welcome Dinner Santan Room Host: Philippine Department of Agriculture

Day 2 February 7, 2012

Morning Session Boracay Room

Moderator: DR KALAYA BOONYANUWAT
Thailand

0900 – 0930	<p>Paper 4: Biotechnology for Adaptation with Mitigation Potential</p> <p>DR SATURNINA C. HALOS Biotechnology Expert Biotechnology Coalition of the Philippines</p> <ul style="list-style-type: none">• Strategies that make use of biotechnology• Impact of these strategies to yield/productivity and mitigating effects and food safety• Which of these strategies are already being adopted or are ready for adoption by farmers• Prospects and constraints for widespread adoption of these strategies• Policy and institutional requirements to promote widespread adoption of these strategies
0930 – 1000	<p>Paper 5: Watershed Management Framework for Climate Change Adaptation and Mitigation: An Approach for Food and Water Security</p> <p>DR ESTEBAN C. GODILANO Climate Change Expert Climate Change Congress of the Philippines</p>
1000 – 1030	Coffee Break and Networking
1030 – 1100	<p>Paper 6: Video Documentary Presentation: Seed Banking of Rice as a Climate Change Adaptation Practice of Matigsalug Women in Mindanao</p> <p>MS AMALIA B. CABUSAO Editor in Chief</p>

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	Mindanao Times <ul style="list-style-type: none">• Benefits of seed banking to climate change adaptation• Best practices for seed banking and how these evolved• How and why these practices are handed down• What are the constraints to adaptation• Role of women in the community in seed banking
1100 – 1200	Synthesis and Open Forum
1200 – 1330	Lunch Break and Networking
Afternoon Session Boracay Room	
Moderator: MR CHRISTOPHER JOHN BIAI Malaysia	
1330 – 1350	Economy Report : MR DANIEL BARRERA Chile
1350 – 1410	Economy Report : DR RICARDO F. ORGE The Philippines
1410 – 1430	Economy Report : MR PHILIP A. SHULL The United States
1430 – 1530	Synthesis and Open Forum
1530 – 1600	Coffee Break and Networking
1600 – 1615	Economy Report : DR HUU-SHENG LUR Chinese Taipei
1615 – 1630	Economy Report : DR JINHO KIM Republic of Korea
1630– 1645	Economy Report : DR SONCAI YOU People’s Republic of China
1645 – 1730	Synthesis and Open Forum
Day 3 February 8	
Morning Session Boracay Room	
Moderator: MR PHAM HONG HIEN Viet Nam	

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0900 – 0920	Presentation of Draft Resolution DR ELISEO R. PONCE
0920 – 0940	Paper 7: Climate Resilient Farming Communities through Innovative Financial Mechanisms MS LURRAINE VILLACORTA Climate Change Adaptation Project Manager International Labor Organization
0940 – 1010	Coffee Break and Networking

	The Way Forward: Strengthening Networks for Region- Wide Adoption Moderator: MR WILLIAM VERZANI The United States
1010 – 1040	Adaptation Financing: Status and Prospects World Bank's Financing and Technical Assistance on Climate-Smart Agriculture (CSA) CAROLINA V. FIGUEROA-GERON Lead Rural Development Specialist RD, NRM and Envi Sector Coordinator for the Philippines Sustainable Development Department- East Asia and the Pacific The World Bank
1040 – 1110	MR ANCHA SRINIVASAN Principal Climate Change Specialist Environment, Natural Resources and Agriculture Division Southeast Asia Department Asian Development Bank
1110 – 1200	Synthesis and Open Forum
1200– 1330	Lunch Break and Networking
Afternoon Session Boracay Room Moderator: MR WILLIAM VERZANI The United States	

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1330 – 1530	<p>Opportunities to Enhance Networking in the Asia Pacific Region: The Asia Pacific Adaptation Network (APAN)</p> <ul style="list-style-type: none">• Objectives and Expected Outputs of the Consultation Meeting MR MOZAHARUL ALAM Regional Climate Change Coordinator, UNEP Regional Office for Asia and the Pacific• Overview of APAN DR PUJA SAWHNEY Coordinator of the Regional Hub Asia Pacific Climate Change Adaptation (APAN), IGES• Capacity Building and Climate Change Adaptation DR LE THI THU HUONG Climate Change Adaptation Specialist Asia Pacific Climate Change Adaptation (APAN), IGES• Managing Climate Change and Adaptation Knowledge MS JIHUYN KIM Knowledge Management Coordinator IGES Bangkok Regional Center Asia Pacific Adaptation Network (APAN)• Introduction of International Council for Local Environmental Initiatives (ICLEI) as Sub-Regional Node of APAN DR VICTORINO E. AQUITANIA Regional Director, ICLEI – Local Governments for Sustainability , Southeast Asia Secretariat• Introduction of SEARCA as Thematic Node of APAN: <i>CCHAMPioning Food Security and Rural Poverty Alleviation in Southeast Asia</i> DR MARILIZA V. TICSAY
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	<p>Coordinator SEARCA Knowledge Center on Climate Change Adaptation in Agriculture and Natural Resource Management in Southeast Asia (KC3)</p>
1530 – 1600	Coffee break and Networking
1600 – 1800	<p>Symposium Synthesis and Next Steps</p> <p>Resource Person: DR ELISEO R. PONCE</p> <p>Presentation of Outputs: Participants’ Representative</p> <p>Reactions:</p> <ul style="list-style-type: none">• FAO• Asian Development Bank• World Bank• Asia Pacific Adaptation Network• APEC Philippines <p>Closing Remarks</p> <p>DR SEGFREDO R. SERRANO Undersecretary, Policy & Planning Department of Agriculture APEC-ATCWG Focal Point, Philippines</p>
1900 – 2100	<p>Farewell Dinner Batanes Function Room</p> <p>Host: Philippine Department of Agriculture</p>

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SYMPOSIUM REPORT

Day 1

Opening Program: 9:00 am to 10:00 am

Welcome Remarks:

Dr Segfredo R. Serrano

Undersecretary, Philippine Department of Agriculture
and APEC Agriculture Technical Cooperation Working Group
Focal Point for the Philippines

Dr Serrano welcomed the participants of the APEC Symposium on Climate Change on behalf of the Government of the Philippines. He pointed out that the symposium is in fulfillment of one of the commitments made by the Philippines in the APEC Action Plan on Food Security which was approved by the Ministers along with the Ministerial Declaration during the First APEC Ministerial Meeting on Food Security in Niigata, Japan in October 2010.

He expressed his hope that at the end of the symposium, APEC participants would have developed stronger cooperation in addressing the issue of enhancing capacities on the adaptation and mitigation of climate change for a more secure food and water systems. He also hoped that the participants would have identified the way forward towards APEC’s next collective action on the issue.

He acknowledged and thanked APEC for sponsoring the symposium, Chinese Taipei and the Kingdom of Thailand for co-sponsoring, and the resource speakers from various international and local institutions.

The full text of Dr Serrano’s Welcome Remarks is presented in Annex B1.

Message:

Hon Proceso J. Alcala

Secretary, Philippine Department of Agriculture

The Secretary expressed the hope that the symposium would be able to achieve its objectives, i.e., to thresh out technologies, best practices and other strategies for climate change adaptation that have mitigation potential, and initiate a continuous exchange of information and capability building within APEC on this approach. He pointed out the Philippines’ framework strategy of treating mitigation as a function of adaptation, while being aware of the vulnerability of other key sectors. The Climate Change Program of the Philippines aims to build the adaptive capacity of farming and fishing communities, increase the resilience of natural ecosystems to climate change, and optimize adaptation with mitigation opportunities towards sustainable development.

He ended his message by expressing his hope that the symposium would be able to map out the way forward towards enabling a widespread dissemination and adoption of these adaptation strategies with mitigation potential through the strengthening of local and international institutional arrangements and networks, supported with appropriate financing instruments and mechanisms. He further expressed that the symposium would result to a

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continuous concerted efforts by APEC member economies to address the challenges of climate change in agriculture.

The full text of Secretary Alcala’s Message is presented in Annex B2.

Symposium Proper

Morning Session: 10:30 am-1:00 pm

Moderator: **Mr Libertado Cruz**, Philippines

Symposium Overview, Objectives, Expected Output and Administrative Arrangements

Alicia G. Ilaga

Director, Policy & Planning

Focal Person, Climate Change, Department of Agriculture, Philippines

Ms Ilaga reiterated the symposium objectives, which are reflected in the program. To achieve these objectives, Ms Ilaga emphasized that the symposium was designed in accordance with the themes of climate change adaptation strategies in crop and livestock with mitigation potential, institutional arrangements toward the widespread dissemination and adoption of adaptation and mitigation strategies, and establishing networks and linkages for region-wide adoption.

Economy reports, as previously advised to the participants, tackle climate change adaptation strategies most widely used in the respective economies, how/why these have been selected, which of these have been proven to have mitigation potential, and benefits obtained from these strategies.

The final output that is expected at the end of the symposium is a synthesis of the presentations and recommended next steps to promote wider dissemination and adoption.

The full text of Ms Ilaga’s presentation is included in Annex B3.

Greenhouse Gas Emission and Mitigation Potential of Agriculture: Highlighting Rice Production Systems

Reiner Wassmann, PhD

Climate Change Expert

and Coordinator of the Climate Change Consortium
of the International Rice Research Institute

Mr Wassmann presented the different pathways of GHG emissions from agriculture, then focused on rice production system and identified water-saving technique as the most promising adaptation strategy with a high potential for mitigation. Rice fields are major contributors to GHG in agriculture where methane is emitted by microbial processes in flooded fields as well as nitrous oxide from microbial activity on soil nitrogen. Carbon emission from rice fields is substantial in 5 out of the 9 rice-producing economies in the ASEAN ranging from 13.5 – 26.1% of their individual economy emissions. Alternate wetting and drying (AWD) is a promising technology developed and promoted by IRRI. This technique addresses the limited water supply due to climate change and its mitigation potential in reducing carbon emission has been proven.

The presentation of Mr Wassmann is attached as Annex C1.

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Open Forum

Trigger question: *Given that water saving technique, as the most promising adaptation strategy with a high potential for mitigation in rice production, what economies have effectively translated this technology into a national policy, and what has been the results?*

Mr Wassmann:

Economies in Asia have some programs or agricultural projects. However, there is no economy that has a economy-wide dissemination on this. The agricultural water-saving projects that are implemented are driven by concrete need or demand. Water consumption can be translated into savings.

In the Philippines, one very good program is the new irrigation scheme in Bohol where the National Irrigation Authority is able to determine which part of the barangays are getting enough water. There are also areas where farmers rely on the water coming from the pumps. In some areas, farmers pay a certain fee for an area irrigated.

Mr Philip A. Shull, the United States:

Is it better or easier to introduce the water saving technique in large or small units?

Mr Wassmann:

Whether it is a large or small unit, you still deal with people. We always have to consider cost-efficiency. What's important is the attraction or economic benefit for farmers to adopt these policies.

Ms Jirapa Inthisang, Thailand:

How should crops be managed during high-water in rainfed areas?

Mr Wassmann:

Consider all options, whether these are sophisticated or simple. Make sure that plants are not experiencing water stress. An option is to think of other crops or commodities that can be planted after rice in irrigated areas.

There should not be any negative impact in farmers' income. Look into production level. We do not propose something that has a negative impact on the farmers.

Viet Nam:

What is the most important mitigation for rice production?

Mr Wassmam:

Look into the specifics, the particulars. Before thinking of changes in the systems altogether, consider important matters such as efficiency.

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Mr Montemayor:

It may be dangerous if too much focus is given on the mitigation in rice at the sacrifice of food security. Rice only contributes almost 1.5% of the GHG Emission. Even if rice production is doubled, it will only contribute 2% compared to livestock and reforestation. When making decisions, it is best to put these in their proper perspectives.

Climate Change Adaptation Options in Crop and Livestock with Mitigation Potential

Mr Hideki Kanamaru, PhD

Natural Resource Officer

Climate Impact, Adaptation and Environmental Sustainability Team

Food and Agriculture Organization

The presentation concerns a new concept to agricultural development that addresses both adaptation and mitigation, which is labeled by the FAO as climate-smart agriculture (CSA). FAO advanced the theory that climate smart agriculture would enable the world to face the challenges of achieving food security while coping with climate change. The presenter also reminded the audience that CSA practices and technologies would differ from situation to situation. For each situation, the selection of appropriate technology/practice should consider four criteria: agro-ecological suitability, economic and social feasibility, increased resilience against impact of climate hazard exposure and contribution to GHG/high potential for carbon sequestration. In promoting appropriate technologies/management practices, policy must address the challenges of tenure security, limited access to information, local experiences and capacity development as well as up-front investment cost. Up-front investment cost should include the cost of establishment and maintenance involved in adopting a new management practice. International financing should take into consideration that this cost differs from economy to economy.

Mr Kanamaru's presentation is attached as Annex C2.

Open Forum

Trigger question: *Given the potential Climate Smart Agriculture policy, what economies have effectively translated this into a national policy, and what has been the result? What difficulties have been encountered, and how has these been addressed?*

Mr Kanamaru:

The concept of climate-smart agriculture is relatively new and FAO is still in the process of promoting it. The nature of the concept is very important, i.e. the world will be able to face the challenges of achieving food security and coping with climate change. There are many key players involved in the process of developing a national action plan or a policy on climate change.

Mr Eliseo Ponce:

There are farmers/community generated technologies that have both adaptation and mitigation functions. Many of these technologies were developed in different economies at different periods. These have not been effectively upscaled even within economies such as the contour

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technology in the Philippines. Has FAO looked into this development specially the institutional constraints that affect the wider adoption of these indigenous technologies?

Mr Kanamaru:

There are a lot to learn in indigenous knowledge or practices. Lack of shared information prevents widespread adoption of technologies. Practices are location specific – practices in one region may not be applicable in another. Extension plays a big role in promoting the wider adoption of these technologies.

Adaptation and Mitigation Strategies in the Asia-Pacific Region and Policy Recommendations to Support Farmers’ Organizations

Mr Raul Montemayor

IFAD Medium-Term Cooperation Programme in Asia Pacific Region (MTCP)
Farmer’s Forum

The presentation contends that in planning out adaptation and mitigation strategies to climate change, there must be focus on the farmer and not only on his/her crops/livestock. In this regard, he proposed basic approaches to adaptation to climate change: build up the resilience of farmers, augment their capacity to cope with climate change and help them recover from disasters. He then provided a list of steps that contribute to the resiliency of farmers, augment their capacity to cope and help them recover from disasters. He also gave basic approaches to mitigation and identified activities farmers can do to help in mitigation. More importantly, Montemayor stressed that farmers should be able to share the benefits through an incentive and rewards program. In conclusion, he said that farmers play a crucial role in climate change adaptation and mitigation, therefore they must be heard in policy, and should participate in action program planning as well as in technology development.

Mr Montemayor’s presentation is attached as Annex C3.

Open Forum

Trigger question: *Given the key role that farmers play in adoption of adaptation strategies with mitigation potential, what has been the experience in Asia in translating this national extension policy? What has been the result? What difficulties have been encountered, and how has these been addressed?*

Mr Montemayor:

In the Philippines, the institutional framework on climate change is already in place and the farmers are part of the framework. The Department of Agriculture has also put up a forum or platform for the private sector, the farmers and other sectors, which is linked with the Climate Change Commission.

In terms of actual programs and policies, the focus is on the coping mechanisms. The government has also early warning systems wherein farmers are given advisories based on La Nina or El Nino projections. Due to the increasing fuel cost, biomass is also promoted, not just as a source of energy but also for the production of

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compost and other inputs.

Most of the visible efforts are in the coping mechanisms. There are still a lot of things to be done on climate change resiliency.

The Aquino administration has also doubled the budget for agriculture. It is a good sign after long years of neglect. Hopefully, the funding support will be sustained.

Farmers must be capacitated on resiliency for them to be prepared for any adversity.

Undersecretary Serrano:

When you look at the impact of climate change, look into the mindset of the farmers. Risks have been dealt with by farmers and these are calculable but with climate change, these become uncertainties and uncertainty cannot be calculated.

Mitigation is easier to sell compared to adaptation. Certain economies/sector will do their share to help generate resources that may help in the mitigation/adaptation process.

Government must address the concerns of climate change because farmers can handle uncertainties from better information.

Consider the traditional knowledge of indigenous peoples. Most of these were generated by regularities of experience. It is just a matter of putting them in proper perspectives.

Afternoon Session: 2:00 pm-5:00 pm

Moderator: **Mr Ignacio Garcia**, Chile

Adaptation Strategies with Mitigation Potential for Food and Water Security

Mario Bin Valeriano

Assistant Director

Department of Agriculture, Malaysia

Malaysia's two recent policies, the National Policy on Climate Change and the National Green Technology Policy, were formulated to collectively guide the nation towards addressing climate change holistically, ensuring climate-resilient development, developing a low carbon economy and promoting green technology. Emphasis is on strengthening capacity of the nation to reduce the economy's vulnerability to climate change whilst promoting mitigation responses that also enhance sustainable development.

Malaysia has been proactive in its efforts to mitigate climate change on rice production in the granary areas in the economy. Two of its adaptation strategies are through research and development (R&D) involving potential mitigation such as drought tolerance varieties, research on aerobic rice that consumes less water, and increase water use efficiencies (WUE) among others; and by water resources management, through the introduction of Integrated Water Resources Management (IWRM) plans. Its implementation has also

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strengthened Malaysia’s ability to deal with floods and droughts. Other potential mitigation strategies to reduce emissions are through irrigated rice water management; nitrogen fertilizer management and manure management have been proven effective.

The presentation of Mr Valeriano’s paper is attached as Annex C4.

Open Forum

Trigger question: *Can you elaborate further on Malaysia’s agro forestry program and its Vision 2020? What are some important lessons learned on implementing a national policy on adaptation with mitigation measures from this policy?*

Malaysia: The emphasis on sustainable land management, one objective of the Agro forestry program, involves agro-forestry particularly on the integration of plantation crops to enhance agricultural production and farm income of the farmers. The program also intends to involve other agricultural organizations in the implementation. But since I am not involved in the agro-forestry program of the economy, I cannot give specific information on Vision 2020 of the economy.

Chile: *What are the key issues related to your economy’s extension program?*

Malaysia: Malaysia faces serious problems in the provision of extension services. The number of participating farmers is increasing. In developing highlands agriculture, farmers are being encouraged to adopt recommended practices and guidelines to prevent occurrence of disasters in the economy.

Chile: *How is an economic model being used in planning for climate change?*

Malaysia: Collaboration is done with other organizations such as the Asian Development Bank (ADB) to come up with an economic model that is pro-poor and which involves a clear implementation scheme for mitigation.

Adaptation Strategies with Mitigation Potential for Food and Water Security in Brunei Darussalam

Mr Takiyudin Bin Haji Mohmad

Plant Breeder

Department of Agriculture and AgriFood

Ministry of Industry and Primary Resources, Brunei

Brunei explains that most of the food needed by the economy is imported. Therefore, the government has pursued a policy of attaining rice security. Brunei’s main policy instrument involves subsidy on land development, price support, research, and extension. Despite high government subsidy and support, the program is encountering problems of farmer takers and performance. There have been dropouts of farmers involved and those that are still in the program have to improve their efficiency or yield to acceptable levels.

Mr Mohmad’s presentation is attached as Annex C5.

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Open Forum

Trigger question: *What is the policy response of the farmers in the economy, and incentives to rice production? What are the contributions of the set policies to climate change?*

Brunei Darussalam: Each farmer is given two hectares of land for productive use, after a private company cleared the said land. Incentives are likewise provided in the form of irrigation and drainage system. Subsidies are given when purchasing rice seedlings from private companies.

Mr Garcia, Chile: *How effective is the crop insurance program in Thailand and Brunei Darussalam?’*

Thailand: In Thailand, many types of crop insurance have been implemented in the past. The Ministry of Agriculture after three years of implementation has improved the program by providing subsidies instead to the farmers. This was later converted to Weather Index Insurance where a rain gauge is being used to determine the amount of rainfall that might hit a certain area. The results of the index serve as the basis for the forms of government assistance that will be provided to the farmers. The recent change in the government administration does not guarantee the sustainability of this program.

Brunei Darussalam: In Brunei crop insurance program is still a work in progress.

The Philippines: *With regard to the rice self-sufficiency program in Brunei, would it be hard to convince the farmers to implement the adaptation strategy if there is only 3% gas emission produced on rice?*

Brunei Darussalam: Farmers are usually eager to plant rice because they have a ready market. However, land is very, very precious that we have to compete with the residential sector. The Department of Agriculture is being pushed to the boundary. With this, we have to conduct a study on its sustainability.

Thailand’s Economy Report

Ms Jirapa Inthisang, PhD

Economist, Professional Level
Office of Agricultural Economics
Ministry of Agriculture and Cooperatives

Ms Kalaya Boonyanuwat, PhD

Animal Husbandry Technical Officer, Senior Professional Level
Department of Livestock Development

Thailand has identified farming strategies that have mitigation potentials. Among the key strategies are changing of cropping patterns, crop calendar adjustment, diversification of crops and varieties, adoption of sustainable agriculture, and improvement of soil nutrition through organic agriculture and tailor-made fertilizer program; genetics improvement,

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adjustment of feeding formulations, upgrading of animal housing, and management of waste and manure also help reduce greenhouse gas emission in the livestock sector.

Thailand’s policy response includes the establishment of the National Committee on Climate Change Policy and Thailand Greenhouse Gas Management Organization (2007), implementation of the First National Strategy for Climate Change Management (2008-2012) and the Climate Change Alleviation Plan for Agriculture (2008-2011), and formulation of the Second National Strategic Plan of Agriculture for Climate Change (2012-2016).

The presentation of Ms Jirapa’s report is attached as Annex C6.

Open Forum:

Trigger question: *What were the difficulties encountered by Thailand and lessons learned on its Climate Change Policy?*

Thailand:

The difficulties we are facing concerns two factors:

1. Knowledge management for the Climate Change Plan
2. Dealing with the farmers with regard to mitigation policies. Farmers had a hard time understanding their involvement on the effects of climate change.

Agriculture in Thailand is a special sector that is greatly affected by climate change, though there are other sectors that are likewise affected and are also possible sources of gas emissions.

The Thai Government explained to its constituents that all citizens have to be involved in the adaptation measures to protect not only the farmers’ but everybody’s welfare as well. They were also informed that the mitigation policy for climate change is a world agenda. It benefits the economy and the world in the long run, i.e., the people and the environment.

Mr Garcia, Chile:

Have you thought of early warning systems and how these work with the farmers?

Thailand:

In theory, we want to have these before any disaster occurs. In Thailand, we need to improve our early warning system since the information about the climate data is given within a very short period. If we learn how to improve the system before any disaster happens, we will be able to train the farmer on how to use the information and adjust their farming practices based on the data and information.

Ms Alicia Ilaga, the Philippines:

Please elaborate on Thailand’s Tree Bank Program. How successful is Thailand in using the trees as collateral for loans?

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- Thailand:** When the program on Tree Bank started, the government worked with farmers’ cooperatives. It was being implemented from the community level up to the national level. The Ministry of Agriculture distributes seeds to the farmers to plant. The farmers will then register the tree in the community, will be provided with incentive for this project and will given Green credit, where the value of the trees will be calculated for use as collateral for loans.
- One problem is that Thailand keeps on growing trees which are not being sustained. A lot of trees have been planted since the program started. We need to come up with a strategy on how to address this concern.
- Chinese Taipei:** *Up to what extent has the crop insurance program in Thailand been conducted?*
- Thailand:** Thailand has no crop insurance program anymore. The World Bank introduced the Weather Index Insurance Program instead in 2005.
- Chinese Taipei:** Taiwan had difficulty in evaluating the extent of damage caused by climate change and the question still remains on who will pay - the private insurance company or the government.
- People’s Republic of China:** *What is the average yield in rice production after the effect of Climate Change?*
- Thailand:** It depends on the variety of the crop and specific location. Generally, in Thailand, the yield ranges from about 2,000 to 3,000 kilograms per hectare per harvest.
- Malaysia:** In Malaysia, it is about 10-12 tons/hectare per harvest for farmers depending on their areas.
- Viet Nam:** Viet Nam has three seasons, and depending on the location, South Viet Nam has higher yield compared to North Viet Nam. It is because temperature is a factor in grain distribution.
- Chinese Taipei:** *Cassava production is increasing based on the climate change study in Thailand. What else did you find out about this?*
- Thailand:** It is because of increase in precipitation. In some areas, rains come when it is already harvest season.
- We conducted research on methane emission resulting to the low production of crops.

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Chinese Taipei:

Why is your prediction so high? What is the basis for this?

Thailand:

In some scenario, it is not actually predicted but it is based on the existing information that has already been collected believed to be a reoccurrence of the scenario.

Climate Change on Agriculture in Vietnam: Integrating Climate Change in Policymaking Decision in Agricultural Sector

Mr Nguyen Vu Hoan

Deputy Director

General Affairs Division

International Cooperation Dept.

Ministry of Agriculture and Rural Development

Mr Pham Hong Hien

Science, Technology and Environment Dept.

Ministry of Agriculture and Rural Development

Disasters in Vietnam caused by climate change have hampered its otherwise rapid socio-economic development. Millions of hectares are estimated to have been affected by floods. In places where the sea level rises, it is predicted that a dozen million of people will lose their houses.

To address this concern, the government issued a national logical framework of a program responding to climate change, which aims to strengthen capacity to adapt to, mitigate and reduce the negative impacts of climate change on agriculture. The framework addresses the integration of poverty alleviation and reduction programs with projects responding to climate change mitigation and adaptation strategies. Policies to integrate climate change in agriculture and rural development were also proposed. Several recommendations which MARD needs to undertake in response to climate change were recommended.

The presentation of Mr Hoan and Mr Hien is attached as Annex C7.

Open Forum

Trigger question: *Given Viet Nam's policy response on Climate Change, what are the difficulties experienced by the economy and how were they addressed? What are the lessons learned?*

Viet Nam:

Financing is always a problem. We posit that priority must be placed on the aspect of macro planning particularly for the lowland area. Hence, we need to diversify the financial sources from the various sectors to strengthen the capacity of the agricultural network in this aspect.

There is a need for a communication campaign on the impacts of climate change particularly on agriculture, since Viet Nam is still an agriculture economy.

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Day 2

Morning Session: 9:00 am-12:00 pm

Moderator: **Ms Kalaya Boonyanuwat**, Thailand

Agricultural Biotechnology for Climate Change Adaptation and Mitigation

Ms Saturnina Halos, PhD

Biotechnology Expert

Biotechnology Coalition of the Philippines

The paper discussed traditional and modern biotechnology applications to strategies proposed for climate change adaptation and mitigation. Current experience with GM crops is highlighted as indicative of their mitigation and adaptation potential as well as sustainability. Important activities needed to efficiently manage biotechnology especially by a developing economy are discussed. The breadth of biotechnology shows that economies need not be sophisticated to be able to use some effective biotech tools for adaptation and mitigation. Possible areas of collaboration among economies are also discussed. It is noted that there are many ways of adapting and mitigating climate change. Economies should be open to technologies be it conventional, organic or GM –based farming.

The presentation of Ms Halos is attached as Annex D1.

Open Forum

Trigger Question:

Among the ASEAN economies, what economies have been most successful in adopting biotechnology to address the issue of food security and climate mitigation?

Ms Halos:

GM crops will be a good adaptation and mitigation potential.

Thailand has been very successful in using tissue culture that enables the economy to export cut flowers around the world, which involves primarily the orchid farmers. In China, BT cotton is extensively planted. There is also an extensive adoption of bio-fertilizers, which reduces not just the requirement of inorganic fertilizer but also provides better protection to crops.

In the Philippines, about 7,000-8,000 hectares of rice, corn and sugar cane farms had been applied with bio-fertilizers. Chile is also producing genetically modified seeds for export.

We don't have much literature about the different biotechnology tools. That would be interesting to do like what has been done with GM crops. A socio-economic impact study and its environmental impacts was done by a UK scientist.

Question:

What factors have been responsible among economies with successful biotechnology programs?

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Ms Halos: Positive socio-economic factors are usually the driving force in the adoption of any technology farming. Farmers consider it as an insurance against pests or infestation in the case of GM crops. American farmers talk about the ease of managing herbicide-tolerant crops. The traits are mostly to the benefit of the farmers as it has been driving the adoption of technologies like tissue culture. In the Philippines, banana planting materials are derived from tissue culture. As banana grows, it also accumulates pathogens that are transferred from one planting material to another. The practice, therefore, to replant every 2 years with clean planting materials increases productivity and reduce pesticide usage.

It would be interesting to generate figures that will give proof to statements like these.

Mr Barrera, Chile: *How will you incorporate the genetic improvement program for soils in land use due to climate change especially in the Philippines and APEC member-economies?*

Ms Halos: We do not have any information on research for crop adaptation and for soil quality. I am not aware of a general program for crops in the Philippines. But there is a breeding program for rice that aims to develop varieties for site-specific conditions. They first characterize the sites where rice is planted. There are about six categories and rice is bred to suit the different rice environments.

Ms Esquejo, the Philippines: *National government organizations worldwide are so noisy about the adoption of GM. Are there studies about the long-term effects of GM on crops as a way of convincing others for its adoption?*

Ms Halos: Most of the studies conducted are on animals. None would show long-term effects. There are certain claims but there are no scientific data to back these up. The regulatory system should be science-based. Otherwise, decisions should be based on objectively gathered information or data using scientific methods.

The state of knowledge now shows that there is no validated claim about health effects. The GM crops have the same composition like all other crops. The DNA is the same. A new protein is studied very well. There is an international guideline on how to look at toxicity and allergenicity which are attributes of protein.

Any GM crop that is released in the market does not have any potential for toxicity and allergenicity. The regulatory system is very strict.

Mr Shull: The use and spread of biotechnology is already contributing greatly to the mitigation of greenhouse gas emission, both in

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reducing the use of agricultural chemical and the expansion of “no till.” In Argentina, 95% of the land used for soybean is “no till.”

The Philippines has been a leader in the adaptation of GM crops such as golden rice and BT eggplant. It has been a very progressive approach and has embraced technology especially in the presence of USEC Serrano and Ms Halos.

Ms Halos: The establishment of the GM fertilization is a source of pride to us. In six years, our small corn farmers were able to obtain additional income of about six million dollars. It was a good investment.

Ms Ilaga, the Philippines: *GMOs are usually looked at as potential “polluters” to the environment. For most environmentalists, the only solution in sustainable agriculture is organic farming. What creative solutions or strategies can you suggest towards a more rational and wider use of GMOs for the participating economies? The aim is the attainment of food security.*

Ms Halos: The best information that can be given is the result of research, which is objectively verified. It takes political will to use BT as a potential tool of agricultural development. The adoption of technologies like biofertilizers provides a permanent solution to the problem of pollution from the use of inorganic fertilizers.

Mr Shull: The adoption of BT and any other modern technology are proven safe and must be embraced by all of us. The challenge is to find a way to market it and convince the public that they have nothing to fear.

Undersecretary Serrano: The regulatory system of any technology that is to be regulated must be a step ahead of the technology. In the Philippines, a separate system for GM is in place, and it is important to pass a standardized risk assessment system. The integrity of the risk assessment must be beyond pressure. Aside from the regulators, scientists are also involved in risk assessment. And these have given us a lot of confidence regarding the system.

Stakeholders are free to give their inputs. For groups who have opposed what we have approved, the important thing is provide the Department of Agriculture with scientific and objective evidence that will allow it to reverse its decision and the conclusion as regards specific policies of its regulatory system. The regulators make the rules. The public has the obligation to obey the rules, and there are no exceptions.

Question: *What is the perception of farmers about GM Corn and are there obstacles involved?*

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Ms Halos:

The farmers from the beginning were very involved in looking at the technology, even during field trials. There were efforts to stop these experimentations and we let the farmers talk about their own perceptions, needs, and experiences. When we had a public consultation about commercializing the BT Corn, 200 farmers signed a resolution to signify that they like the technology. Since its introduction in 2002, the adoption has been very rapid.

Watershed Management Framework for Climate Change Adaptation and Mitigation: An Approach for Food and Water Security

Mr Esteban C. Godilano, PhD

Climate Change Expert

Climate Change Congress of the Philippines

The paper talked about using watershed boundary as a planning domain in climate change adaptation and mitigation as against the traditional planning approach using political boundaries. The paper further suggested that coconuts be used as a major commodity in the list of adaptation crops with high mitigation potentials especially in coastal areas and areas prone to severe soil erosion. To promote widespread adoption of these strategies for watershed management, a watershed management framework is included in the National Convergence initiative of the DA-DENR-DAR. For coconut, the nationwide coconut planting forms part of the National Re-Greening Project of the Philippine Government.

The presentation of Mr Godilano is attached as Annex D2.

Open Forum

Trigger question: *To what extent has your concept of watershed management been adopted by the Philippine government?*

Mr Godilano:

The Philippines has a very good policy on watershed management in agriculture areas. This is embedded in the Department of Agriculture’s national policy on climate change. The Implementing Rules and Regulations (IRR) under the Climate Change Action Plan for the government spell out the use of watershed as a planning domain.

On the other hand, the national convergence initiatives of the DA-DAR-DENR does not yet subscribe to the principle of using watershed as a planning domain as major strategy to address the issue for food and water security. This has been aggravated by problems in the development of watershed maps at the provincial and regional levels. The Bureau of Soils and Water Management is already using the watershed approach in their small water impounding projects. For the national irrigation system, the DA is still teaching them how to design irrigation infrastructure based on the impacts of watershed. Climate-proofing of irrigation infrastructure are also being determined.

There is a need to educate the field people on how to use

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maps in planning development projects specially rural infrastructure such as rural road networks and postharvest facilities, which should also be made climate resilient. It may be costly but it is worth the investment.

Half of the Department of Agriculture’s budget is allocated for the irrigation system for food security purposes. The DA’s Climate Change Office will be more aggressive in promoting watershed as a planning domain to avoid serious damages to the irrigation infrastructure.

There is also a proposal to create a Watershed Council in the Department of Public Works and Highways specifically to help the DA in its water impounding projects and minimize damages to rural and agriculture infrastructure.

In using the watershed as planning domain, the first thing to do is to characterize the watershed based on the nine steps discussed in the presentation. These steps are based on the International Climate Change guidelines. Part of the watershed characterization is to generate the master plan, which should be approved by the local communities. In the Philippines, the Department of Environment and Natural Resources is the responsible agency in prioritizing the work on the characterization of the various watersheds in this economy.

Comment:

Watershed management can be used when planning for adaptation but not for mitigation.

Mr Godilano:

Where landholdings are small, production is highly dependent on the integrity of the watershed areas. We can balance greenhouse gas emission at a watershed scale, which will be a very appropriate scale of measurement in planning.

Video Documentary Presentation: Seed Banking of Rice as a Climate Change Adaptation Practice of Matigsalog Women in Mindanao

Amalia B. Cabusao

Editor in Chief

Mindanao Times

The presentation focuses on using traditional rice cultivars with multiple characteristics. These cultivars are suited to various rainfall and moisture regimes; therefore, they are effective when used as adaptation strategies. The use of upland rice varieties without the use of fertilizers, among Matigsalog women, is an example of an indigenous adaptation technology with mitigation potential. This is part of the cultural minorities’ traditional and cultural beliefs handed down from generation to generation, which has been refined by climate change variability. The possibility of wider adoption i.e., mainstreaming the practice among rice Filipino farmers in appropriate agro-climatic and cultural conditions exists. Government should include indigenous technology as a policy option in the promotion of adaptation strategies with mitigation potentials.

The voice-over text of the video documentary presentation is attached as Annex D3.

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Open Forum

Trigger Questions: *What are the important lessons from this case study? What policy recommendations do you recommend to the DA or to PhilRice to insure a more stable rice seed system?*

Ms Cabusao: When we did the documentary, we focused on the rice production practices of Matigsalog women, a sector of the indigenous peoples. We did not delve into the issue of policy recommendations for the DA.

The DA should look into this kind of practices. A comprehensive research can be done about indigenous adaptation strategies with mitigation potential not just in Mindanao but in other parts of the economy as well. The seeds planted by the Matigsalog cultural minority have been passed from generation to generation.

Mr Godilano: The DA, through the Climate Change Office, has directed the Bureau of Agricultural Research (BAR) to serve as the first short step for climate change adaptation and mitigation. It is recommended that it undertake case studies and documentations for this year and the following years about indigenous knowledge in the economy, and determine which can address issues on climate change. It is very important to integrate climate change with agricultural science.

Afternoon Session: 1:30 pm-5:30 pm

Moderator: **Mr Christopher John Biai**, Malaysia **Strategies, Food and Water Security: Climate Change and their Effects in Chile**

Mr Daniel Barrera

Head, Horizontal Issues Department
Ministry of Agriculture, Chile

A sectoral adaptation to climate change is being adopted by Chile, which is a long-term effort with concentration on water use efficiency, risk management, long-term research and innovation, new crop varieties and control of pests and diseases. Notable in Chile's presentation is the strategy for carbon neutralization of the non-energy sector due to the LULUCF sector through afforestation and sustainable management of forests, attenuating and uncoupling the increase of GHG emissions.

Chile's policy response includes the National Action Plan of Climate Change 2008-2012 and Conclusion of Second National Communication on Climate Change, a main commitment with the UNFCCC.

The new agroforestry adaptation plan which is being developed emphasizes water use efficiency, risk management, long-term research and innovation, new crops varieties and control of pests and diseases.

The presentation of Mr Barrera's report is attached as Annex D4.

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Open Forum

Trigger Question: *What were the success stories and difficulties encountered by Chile and the lessons learned on its Climate Change Policy?*

Chile:

We have a difficulty in mainstreaming Climate Change in all sectors of the economy. The constant challenge is on the increase of power sector emissions and introduction of afforestation, which will take more than 50 years to effectively meet the objective to preserve soil against soil erosion.

However, the focus on Climate Change has been changing towards focusing the Government support to small scale farmers and forest owner. At present, the focus is on water sufficiency and water pollution.

The main problem in Chile is land forest.

One measure of success is the second release of national communication on climate change. Chile handles an interesting portfolio of nationally appropriate mitigation actions (NAMA), with international funding support from UNFCCC.

Ms Inthisang, Thailand:

One adaptation strategy is afforestation. Can you share with us some more ideas on this strategy especially if there are incentives given to the farmers or other stakeholders to do it? The US approach deals with the demand side by using biotechnology to increase food production and faces their economy based on supply-demand situation. In the Philippines, it's more on managing demand versus supply. In Thailand, we also talk about balance, introducing staple food other than rice to manage consumption. Some are already doing it, and studies have shown that non-rice eaters in the past are now eating rice; hence it means an increase in demand for rice. The challenge is how to influence people's behavior.

Chile:

Agroforestry is meant mainly for mitigation. Adaptation addresses the issue of competitiveness of the economy. It is a very interesting approach to deal with Climate Change. Afforestation is the government's support to the farmers, which is also aimed at sustaining the native forests of the economy. Moreover, the Government provided agricultural insurance to small and medium farmers to cover their direct costs in crop production.

Mr Shull:

It is true that the US deals with the adaptation based on the supply side, as we have good relationship with other economies and the local farmers can produce the required commodities.

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Demand Shift in Staple Foods and Other Adaptation Strategies with Mitigation Potential in Rice

Mr Ricardo F. Orge, PhD

Climate Change Center Director

Philippine Rice Research Institute

The Philippine government has placed rice security as the center of its food security program. The paper postulates that shifting part of the demand for rice towards other staples is a good climate change strategy. It eases the demand for rice and, therefore, the corresponding area planted and the amount of GHG emitted. This demand shift could result to increased food supply with limited water, and mitigate the effects of typhoons on food production, as other staple crops can better withstand adverse effects than rice. Other staples require less energy for production as compared to rice and corn. The demand shift from rice therefore will result to lesser greenhouse gas emission from the use of energy for field operations.

The Food Staples Sufficiency Program was developed for the period 2011 to 2016 to manage food consumption promoting other staples such as white corn, sweet potato, cassava, and banana.

The presentation of Mr Orge is attached as Annex D5.

Open Forum

Trigger question: *What are the positive and negative effects of your adaptation measures in response to Climate Change?*

Mr Orge:

Rice is a political crop in the Philippines. Most of the efforts are into producing more and more rice to the neglect of other staples.

In the past administration, government efforts focused on achieving rice self-sufficiency. Government agencies were mobilized that resulted to increased rice production. The focus was on hybrid technology, which led to improvement on how the rice is produced from the seedlings to post-harvest.

Viet Nam:

Do you have data on greenhouse gas emissions?

Mr Orge:

We only have secondary data on greenhouse gas emissions as we have limited funds to collect such local data. The focus is on the farmers instead rather than on measuring the greenhouse gas emissions. There are some initiatives, though, from the other sectors to measure the gas emissions. We have no access to the data.

Malaysia:

For the Philippines, how successful are you in changing the mentality of the people in terms of encouraging them to eat non-rice staple food instead of rice?

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Mr Orge:

The Philippines is still starting with a program to shift people's staple from rice; it is actually relatively new. As we all know, people are not machines. They do not easily change eating habits. We have been thinking of certain ways to do it. Please also know that because in the past administration the government has neglected the staples of certain groups. Therefore, non-rice eaters have shifted to eating rice as their preferred non-rice staples became more expensive. This shift increased the demand for rice.

The present Administration is working on food other than rice not only on the rice self-sufficiency program. The idea is to manage the consumption if there is a way to encourage the people to consume other staple crops. The consumers would rather be given other options. PhilRice is looking at diversified farming, i.e., growing rice with other staple crops. With this system, they can have stable income from other foods.

Undersecretary Serrano:

Usually demand management works in a distorted market. If the consumers are offered a cheaper commodity, they would choose this. If you undervalue the consumer price, the signals are sent to the producers who will be adversely affected by the situation. The market is reference pricing based on wholesale/ retail pricing, not based on cost of production. Artificially low priced commodities are not beneficial. Producers suffer from abnormal pricing when government intervenes in the market.

The low-priced commodities will suffer, and this is what the Philippines is trying to address. We have a lot of references in terms of pricing, including the international prices. The more expensive the commodity is, the more disciplined the sector will be and, therefore, there will be balance in the economy. Rice is placed in a consumption market where producers will benefit and at the same time, the farmers are ensured that their produce is reasonably priced so they will produce more. The government's thrust is to commensurate the support for the producers and the market as well.

A less distorted market is a better measure than introducing personalities to encourage the public to consume other staples.

Ms Inthisang, Thailand:

Thailand shares the same sentiments with the Philippines on its plan to diversify staples to include non-rice commodities. We have tried to introduce wheat to the consumers. The Thai people, though, have started to consume more wheat so the problem now is on wheat

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supply as influenced by world production.

Integrating Climate Change Adaptation and Mitigation into U.S. Agriculture

Mr Philip A. Shull, PhD

Agricultural Counselor

USDA

The USA is one of the world’s biggest producers of corn, soybean, and wheat.

USDA approach to climate change adaptation include assessment through identification of risk/vulnerability, appropriate policies, knowledge gaps and management outcomes; engagement through education, science management partnerships and alliances; and management through adaptation with a focus on co-benefits, mitigation of emissions, and sustainable consumption.

Promoting resiliency through advanced breeding/biotechnology, enhancement of land and water resources management through practices such as 0-35% tillage of US cropland, inputs minimization through precision agriculture, and organic agriculture have been proven to have mitigation potential.

Institutional arrangements identified are USG capacity building through agency educational programs, analysis of agency vulnerability to climate change, and USDA Climate Change Science Plan, and stakeholder capacity building such as Extension Disaster Education Network (EDEN) and other extension efforts.

The presentation of the United States is attached as Annex D6.

Open Forum

Trigger question: *What is the percentage of the total greenhouse gas emission in the US?*

Mr Shull: I have no data but I can send this later. But approximately there is about 3% from agriculture in terms of greenhouse gas emission. In 2010 this amounted to about 12 billion tons of GHG.

Hence mitigation measures became economically attractive. We are encouraging the farmers not to mitigate, because we want them to be responsible in their own environment. Our goal is to know the normal practice but direct them to the concept of “Survival of the Fittest” instead, not the biggest in size but the most adaptable.

Malaysia: *This is for the US. What is your opinion or suggestions to those who are members of the GMP, particularly those who are using GMO and are practicing GAP?*

Mr Shull: It is a challenge in any economy where no GM crops

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are permitted. It boils down to persuading the public and the government to adopt that technology. It's true that we can never go back to where we've been but in some cases, we actually can. For instance, Australia was able to do it. It's one way for a cleaner future. We can find a way to do that and move forward.

Chinese Taipei:

There is a high price on corn since 2006, about two times increase. How did you address this? Why is the cost so high? Would you consider other crops for ethanol production?

Mr Shull:

Price is inelastic; it depends on the demand for corn. Corn production continues to grow since demand for corn grows faster for a couple of reasons. China's economy has expanded rapidly because of this. More important is how many people are consuming grains in the world market, especially if demand increases.

I have no answer to your question on ethanol production. The price of inputs is a challenge.

General Comments from the Moderator:

The succeeding presentations are from the economies of Chinese Taipei, Republic of Korea, and the People's Republic of China, which are part of East Asia. They have demonstrated to the world dramatic transformation of their agriculture industries. Thus, they have provided the world with important lessons in agricultural modernization.

Each of these economies presented the serious and potential effects of climate change in their agricultural industries. These are in the forms of changes in temperature, precipitation, changes in water resources, extreme climatic events, and, in the case of the People's Republic of China, desertification.

APEC Symposium on Climate Change Adaptation Strategies with Mitigation Potential for Food and Water Security in Chinese Taipei

Mr Huu-Sheng Lur, PhD

Distinguished Professor
Department of Agronomy
National Taiwan University

Chinese Taipei's response to climate change in agriculture to insure food security is through its adaptation strategy which takes into consideration both technology and socio-economics to implement its policy of increasing food sufficiency from 32% to 40%. The technology aspect takes into consideration the development of forecasting and warning systems, enhancement of stress adaptive breeding, modifying cropping and farming system to be high temperature tolerant, higher water and nutrients use efficiency, and environmental friendly, and infrastructure improvement. Socio-economics includes the diversification of food consumption structure and encouraging of community support for agriculture.

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The presentation of Mr Lur is attached as Annex D7.

Open Forum

Trigger question: *Up to what extent has Chinese Taipei achieved diversification of food consumption structure and the development of community supporting agriculture?*

Mr Lur:

Our rice consumption is relatively low compared to our neighbouring economies probably because the young generation now is into fast food chains. We are into reducing consumption of protein-rich foods and are introducing fiber-rich foods like vegetables and rootcrops.

One non-government organization introduced an all vegetable consumption for 1-2 days per week in the schools. The government, however, does not want to be involved in this initiative.

For the livestock sector, we intend to change the structure, i.e., from beef to chicken. This strategy may harm our commercial relationship with the US because it has lessen our imports for US beef. But on the other hand, it will increase our imports for more chickens.

We are increasing root crop production by using paddy fields more productively. Hence, this changes the energy intake as we change the profile of our food spectrum by changing our daily consumption.

In response to the question on our strategy related to community support in agriculture, here is our experience during the last three years. We have focused on developing our rural activities; therefore, we need more budget to support the program on changing domestic consumption and domestic production. We encourage our farmers' groups to design their own structure in conjunction with their agriculture and to find a special crop and use environment-friendly techniques to support their community lives, in terms of domestic consumption.

Ms Ilaga, the Philippines:

When you mentioned that you have been identifying the hotspots, it seems that you are already into smart agriculture. How widely are you adopting it and what did you do to your extension system to make this work?

Mr Lur:

For infrastructure, it was easy since there is already a subsidy system for farmers' groups. They just need some financial assistance to improve their facilities. This is particularly true for vegetable farmers.

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For the rice farmers who are usually large-scale farmers, we apply life cycle assessment, which is being performed at a research institute. Once a hotspot has been identified, we will suggest some modifications in the planting system of the farmers. This is being done at the Farmers’ Academy.

At the Farmers’ Academy, the farmer-leaders come to learn new technologies and apply these in their own community to change the structure in the system. Then we will assist in marketing and packaging their produce to earn more income.

**Undersecretary Joel Rudinas,
the Philippines:**

How do you reduce the plant density to increase spacing as an adaptation measure?

Mr Lur:

To address lower mitigation, we intend to enlarge the planting space to have a better canopy. It will also help us better manage pests and diseases in the field. We teach the farmer-leaders to change their farming practices on this matter.

Climate Change Adaptation Measures on Agriculture in Korea

Mr Jinho Kim, PhD

R & D Coordination Division

Korean Rural Development Administration

In Korea, climate change adaptation is one of the major components of the National Agenda to enforce the Framework Act on Low Carbon and Green Growth (2010). The Korean government aims to develop and to disseminate cultivation and breeding technologies for climate change adaptation measures in agriculture. For livestock, its objectives are to improve the productivity and the adaptability of livestock and to modernize livestock agricultural systems against climate change and meteorological disasters. For crops, the main goals are to develop new varieties resistant to changing climates and pest. Research has been conducted for the establishment of tropical and subtropical crops. In order to facilitate the adaptation in agriculture, the government of Korea is planning to establish a comprehensive agriculture R&D system.

Mr Kim’s presentation is attached as Annex D8.

Trigger question: *What are the strengths and weaknesses of Korea’s policies and measures on Climate Change adaptation? What have been the effects of these measures so far?*

Mr Kim:

We are focusing on the reduction of GHG emission especially for agriculture. Since weather is also important for the farmers, we are including weather forecasting in the projects with the application of ICT that we will implement. We will likewise

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develop new technologies specifically for climate change adaptation.

Climate Changes Impacts and Adaptation on Agriculture in China

Mr Songcai You, PhD

Professor, Agricultural Disaster Reduction Studies

Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences / Ministry of Agriculture of China

Ms Xiaoli Fan

Executive Assistant

ATCWG Lead Shepherd's Office, Department of International Cooperation

Chinese Academy of Agricultural Sciences

The most widely used adaptation strategies include water saving techniques in agriculture, sustainable management of water resources, limitation of underground water exploitation, and change in planting date. Some strategies with mitigation potential have been identified, including fertilizer management, selection of high temperature tolerance crop species, changing of planting dates, use of agricultural machines to shorten the planting and harvesting period and extend the use of soil water.

The Government of China formulated its National Climate Change Program, outlining objectives, basic principles, key areas of actions, as well as policies and measures to address climate change.

The presentation of China is attached as Annex D9.

Open Forum

Trigger question : *What is the effect of the reduction of GHG in agriculture for the last five years? What are the important lessons in your application of China's strategy?*

Mr You:

Lesser water is used, but we still have to calculate the reduction of GHG emissions as a result of water conservation.

The most important lesson is the realization that the capacity of a developing economy like China in dealing with climate change is weak. We intend to enhance our policy towards this and maximize the use of ICT in the information dissemination related to the adaptation measures for climate change.

Ms Lorraine Villacorta, the Philippines:

Referring to China, Chinese Taipei and Korea, what are the strategies that you can recommend to the Philippines as adaptation strategies to deal with climate change?

Ms Jirapa Inthisang, Thailand:

In relation to the question, what is your consumers' perception towards the market price of produce where Good Agricultural Practices (GAPs) are applied compared to the conventional farming practices?

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Mr You:

We encourage farmers’ groups to adopt the GAP system, with the use of ICT in their farming business. On the other side, we educate our consumers why we need to apply GAP and urge them to read the labels.

Likewise, we encourage competition among the farmers for the best rice or fruit producing farmer. This is one way of promoting GAP and earning the trust of the consumers. In fact, there are consumer groups that require labels in the products that they are buying.

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Day 3

Morning Session (9:00-12:00)

Moderator: **Mr Pham Hong Hien**, Viet Nam

Climate Resilient Farming Communities through Innovative Risk Transfer Mechanisms: Integrated Financial Package –cum- Weather Index-based Insurance An Experience in Southern Philippines

Ms Lorraine Villacorta

Climate Change Adaptation Project Manager
International Labor Organization

The paper illustrates how farmers can be empowered to adapt to climate change through effective innovative financial risk transfer mechanisms. The demonstration project is jointly undertaken by UN-ILO, Department of Labor and Employment, Department of Trade and the Industry and the local government of Agusan del Norte on Climate Resilient Farming Communities in Agusan del Norte through Innovative Risk Transfer Mechanisms” or the “Climate Change Adaptation Project” (CCAP).

The paper avers that measures providing access to market-based instruments often fail because they do not address the core problem which is the affordability to the poor.

With the premise that economic conditions and availability and access to financial and productive resources are key determinants of adaptive capacity of farmers to climate change, three models of innovative integrated financial package were implemented. These consisted of financial cum non-financial services, a weather index-based insurance (WIBI) package, and risk reduction initiatives with early warning systems.

The project has demonstrated that integrated financial mechanisms when bundled with non-financial services greatly enhance productivity of sustainable livelihoods among climate vulnerable farmers.

Ms Villacorta’s presentation is attached as Annex E1.

Open Forum

Thailand: *What are the characteristics of farmers in the Philippines?*

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Ms Villacorta:

Small farmers in the Philippines have low-income, have no stable cash flow, no collateral or capital assets and they cannot formally access services such as loans or financial support, and they have limited business knowledge. What is increasing is their age. They are getting old and their children do not want to go into farming; they prefer to go into other endeavours.

China:

What are the premises of the demonstrations?

MsVillacorta:

We have developed a package from a system of features preferred by the farmers and providers themselves. We have to make sure that no matter how accessible and affordable it is, it has to be sustainable from the point of view of providers. The purpose is that they have access to these affordable capitals, so that in the end they will gain some profit, some of which can be used for the next cropping season, especially during hard times. Also, the purpose is that their dependence on loans will decrease and their business knowledge is increased. From mere farmers, they become entrepreneurs, earning more income and having more business knowledge.

Coping with climate change risks is so much easier if one has easy access to financial and productive resources; a farmers do not have to travel far just to get loans.

Mr Dennis dela Torre, the Philippines:

What are integrated in the financial package that can change the perception of farmers about insurance?

MsVillacorta:

The integrated package consists of an insurance that protects farmers, which is the crop insurance. Normally, integrated into the loan is a repayment insurance that protects the creditors and not the farmers. A major insurance literacy or awareness raising must be done. There are still many farmers that have to be convinced of the packaged on crop insurance or the need for this protection. Giving them with adequate training is one way to change their perception about crop insurance.

Chile:

What is the role of the aggregator? What are your insights on zeroing on capacity building entity?

MsVillacorta:

The aggregator consist the rural bank, the cooperative and the LGU. As mediators or aggregators, they are the financial service providers. They also serve as the capability builders because they also provide training services with the support of government offices such

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as the DA, DOLE and DTI.

While ILO has already ended its role in the project, the services are still being provided by the certain organizations or entities through climate change Adaptation Support Program in the Province of Agusan del Norte. And this is still supported by DTI and DOLE.

Ms Esquejo, the Philippines: *One of the success factors of the program is the model being tied-up with season-long training, the farmer field school. Will this also succeed in short term capability building activities for the farmers?*

MsVillacorta: Yes, it will also succeed. There are variations in the model in some LGUs. The preparatory stage or pre-training, no matter how long it takes, should ensure that the values are in place. The season long training actually deals with the issues for the particular cropping period.

The Way Forward: Strengthening Networks for Region-Wide Adoption

Moderator: **Mr William Verzani**, the United States

Adaptation Financing: Status and Prospects

World Bank's Financing and Technical Assistance on Climate-Smart Agriculture (CSA)

Ms Carolina V. Figueroa-Geron
Lead Rural Development Specialist
World Bank

A number of economies have made impressive progress in integrating climate-smart agriculture (CSA) into their development and growth programs. Barriers to large-scale adoption of CSA still remain, especially due to the need to overcome aversion to short-term costs associated with such a transition. Food-insecure economies face the greatest challenges of all.

An assessment of CSA requires an integrated approach, tackling altogether productivity and food security, risk and resilience and low carbon growth. Integration and institutional coordination, however, remains a daunting challenge for most client economies.

Integration of strategies and financing mechanisms for the productivity, adaptation and mitigation agendas remains a challenge for achieving CSA, within economies, within development partners and financing organizations.

World Bank Group loan commitments to agriculture have increased substantially in the past decade. The WB also assists its various client economies in accessing a number of emerging funds aimed at tackling climate resilience, low carbon growth, or food security issues. The challenge is to be able to use these funds with other public and private fund sources in order to achieve CSA, which integrates productivity, food security and climate

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change. The presentation enumerated several World Bank programs to mobilize financing for CSA.

The presentation of Ms Geron is attached as Annex E2.

Open Forum

Question: *Is there a technical assistance from the Bank in a form of a grant?*

MsGeron: The World Bank and ADB will only echo what the shareholders are saying. There must be a clear idea what the scope of climate change adaptation is. Everything has to be financed in terms of development.

Adaptation Financing: Status and Prospects

Mr Ancha Srinivasan, PhD

Principal Climate Change Specialist

Asian Development Bank

The presentation showed that Asia is most vulnerable to climate risks over the next 30 years.

Climate change impacts may vary across Asia but they will place immense strains on public sector budgets in all economies. Cost of adaptation include additional costs of adapting infrastructure & buildings, additional costs of making new infrastructure and building resilient to climate change, costs of climate-proofing investments in developing economies, and additional estimated investment and financial flows needed for adaptation.

There was a considerable increase in adaptation financing from dedicated climate financing instruments in 2011. Key issues identified include sources and types of funding, type of access, governance, adequacy, predictability and sustainability, and absorptive capacity. Several recommendations were offered to enhance resource flows for adaptation. Basic allocation principles to classify proposals include the adaptation beneficiaries pay principle, emitters pay principle, ability to pay principle, and climate-change winners pay principle.

The presentation concluded that adaptation is critical and costly in the short term. Both emitters pay and the ability to pay principles have a potential to raise sufficient amount of funds. Private sector can be involved more effectively if climate-change winners pay and emitters pay principles are employed. Future focus should be on adaptation metrics, private sector involvement, and promotion of synergies between adaptation and disaster risk financing.

Mr Srinivasan's presentation is attached as Annex E3.

Open Forum

Question: *You mentioned that it will be the national responsibility of each economy regarding adaptation. Based on your slide, you are presenting a compromised view that financing will come from multi-lateral sources resonating from the presentation of Ms Geron of World Bank. Were you referring to adaptation financing or both adaptation financing and adaptation planning? Or financing of adaptation planning? Because from the initial view of looking at it, you repeated the polluters pay principle.*

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Mr Srinivasan:

We cannot wait for the finance to come until we start on planning something. It is important in the interest of developing economies to make good plans, which include the scope of climate adaptation planning.

If we want to assist our vulnerable population, planning can be done at the local or national level. In terms of financing, it is a joint responsibility. You draw the line in terms of burden sharing, based on negotiations and agreements. You cannot wait for somebody to give additional money to plan for adaptation. It is really a joint responsibility to raise finances required for adaptation.

Mr Godilano, the Philippines

In terms of adaptation financing, will this be a grant or a loan? Our stand as civil society organization is that no adaptation strategy should be debt creating. If it is adaptation, it should be grant money. So why do you have to get a loan for adaptation?

Mr Srinivasan:

Each economy must have to decide. There is no clear cut differentiation between grant and loan in terms of adaptation planning and climate proofing of investments. It cannot be black or white in terms of grants and loans. At ADB, we are trying to get the grant element towards the climate proofing. But you have no option but to take loan for infrastructure, then you can apply the climate proofing for infrastructure as a grant.

Afternoon Session: 1:30-6:00

Opportunities to Enhance Networking in the Asia Pacific Region: The Asia Pacific Adaptation Network (APAN)

Mr Mozaharul Alam, PhD

Regional Climate Change Coordinator, UNEP Regional Office for Asia and the Pacific
Bangladesh

Ms Puja Sawhney, PhD

Coordinator of the Regional Hub
Asia Pacific Climate Change Adaptation (APAN), IGES
India

Mr Mozaharul Alam announced the APAN consultation meeting on February 9, 2012 and provided its objectives and expected outputs. Mr Sawhney explained APAN's origins, vision, aims, activities and outcomes.

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The idea for APAN arose from the 28th session of the Subsidiary Body for Scientific and Technological Advice of the UN Framework Convention on Climate Change (UNFCCC SBSTA). From there the United Nations Environment Programme (UNEP) organized through several consultations the Global Adaptation Network (GAN) and 5 regional networks of which APAN is one. APAN has five subregional nodes and three thematic nodes selected from applications by the Steering Committee. SEARCA is the thematic node responsible for agriculture.

The vision of APAN is ‘to build climate resilience of vulnerable human systems, ecosystems and economies through the mobilization of knowledge and technologies to support adaptation capacity building, policy-setting, planning and best practices.’ In line with this, APAN has set five objectives and four types of activities. APAN is supported by the UNEP, IGES, AIT-UNEP RRCAP, ADB, SIDA and APN. More information can be accessed through the APAN website: <http://www.apan.net>.

The presentation is attached as Annex E4.

Capacity Building on Climate Change Adaptation

Ms Le Thi Thu Huong, PhD

Climate Change Adaptation Specialist

Asia Pacific Climate Change Adaptation (APAN), IGES

Viet Nam

APAN’s capacity building activities in Asia Pacific region are on capacity development of key training institutions, capacity development of national/sub-national policy makers/government officers, and other capacity building activities. In Southeast Asia, capacity building is on identification of capacity gaps, challenges, and capacity development needs, action plan to address identified capacity needs and priorities of action in Southeast Asia.

The presentation of Ms Huong is attached as Annex E5.

Managing Climate Change and Adaptation Knowledge

Ms Jihyun Kim

Knowledge Management Coordinator

IGES Bangkok Regional Center

Asia Pacific Adaptation Network (APAN)

Thailand

Ms Kim explained that there is a need to integrate and systematize knowledge on climate change adaptation because knowledge is coming from many sources. Knowledge management comes about through the interaction of people, technology and processes and comprises of networking, capacity building and knowledge products. The six pillars of knowledge for adaptation are also explained.

There are already 22 members of the knowledge management network. Knowledge is shared through a web portal www.asiapacificadapt.net, bimonthly thematic seminars, workshops, E-communiqué, and annual climate change adaptation forum starting 2010.

To enable developing economies in the Asia-Pacific region to access climate funds, the Climate Change Adaptation Project Preparation Facility for Asia (ADAPT-Asia) was

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established with USAID funds. Information about this facility is also available at <http://adapt-asia.org/>. The ADAPT-Asia Annual Forum is going to be held March 14-15, 2012 Bangkok, Thailand.

Ms Kim’s presentation is attached as Annex E6.

Introduction of International Council for Local Environmental Initiatives (ICLEI) as Sub-Regional Node of APAN

Mr Victorino E. Aquitania

Regional Director, ICLEI – Local Governments for Sustainability,
Southeast Asia Secretariat
Philippines

ICLEI, with more than 1,200 members all over the world, was established in 1990 as the international local government association, movement and agency for sustainability. Its mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global sustainability with special focus on environmental conditions through cumulative local actions. It pursues eight major goals covering integrated sustainability policy, resource-efficient city, biodiversities securing ecosystem services, low carbon and climate neutral cities, resilient communities, green infrastructure, green urban economy & jobs, and healthy & happy communities.

The ICLEI Southeast Asia Secretariat started its operations in 1999 with the Cities for Climate Protection Campaign in the Philippines, and then it expanded to Thailand and Indonesia in 2002. It became a legal entity in 2004. It has 30 members in Thailand, Indonesia and Philippines. Program areas covered are aimed towards biodiversity, water and sanitation, green climate cities, sustainability management, and resilient communities.

Mr Aquitania’s presentation is attached as Annex E7.

Introduction of SEARCA as Thematic Node of APAN: *CCHAMPioning Food Security and Rural Poverty Alleviation in Southeast Asia*

Ms Mariliza V. Ticsay

Coordinator

SEARCA Knowledge Center on Climate Change Adaptation in Agriculture and Natural Resource Management in Southeast Asia (KC3)
Philippines

Ms Ticsay described the program of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture or SEARCA’s Climate Change Adaptation and Mitigation Program (CChAMP). The program strives to come up with (1) empowered agriculture and natural resource institutions addressing climate change adaptation and mitigation in the region; (2) well-informed policy and decision-makers on the impact of climate change in agriculture and natural resources; (3) science-based knowledge on climate change adaptation and mitigation in agriculture and rural development; (4) mainstreamed climate change adaptation and mitigation in national and sub-national development plans; and (5) an informed public and effective management of knowledge on climate change in Southeast Asia. CChAMP has four components along SEARCA’s mandates, namely, research and development, capacity development and knowledge management, mainstreaming in development management, and scholarship and grants.

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SEARCA is also undertaking vulnerability assessment and economic analysis of adaptation in Cambodia, Philippines and Vietnam with IDRC funds, and a project on mainstreaming of climate change adaptation and mitigation in local development plans funded by the EU. It established a repository website of climate change information, is managing an online course on responding to climate risks in agriculture and in Southeast Asia and has organized various learning events on responding to climate risks/change in agriculture and natural resource management. SEARCA belongs to a 10-member knowledge management network of established institutions in the region.

Mr Ticsay’s presentation is attached as Annex E8.

Open Forum

Chinese Taipei:

How do you mobilize the different knowledge networks established in a economy?

Mr Alam:

We are still working on the consolidation of different knowledge management networks. For example, my colleague needs to bring in many partners who are either generating or disseminating the use of knowledge. Different initiatives are all contributing to the whole knowledge management system capturing all the elements, bringing the communities together and working together as one.

If we are to look into the other knowledge management system on how they strategize and how they work together, we are trying to solve the link with UNDP areas with adaptation initiatives. We do not want to come out in isolation. The idea is how to consolidate all these efforts. We need collective brainstorming on how to effectively address this issue.

Brunei Darussalam:

We’d like to know more about the mainstreaming of the Climate Change initiatives at the international level.

Mr Alam:

Mainstreaming plan needs to be part of the process and there are critical elements that might be considered on how to integrate them into the current planning process. It could be part of the policy, strategy or of the project which has a certain lifetime in terms of adaptation issues. There is a need to determine the capacity, e.g. designing an infrastructure in a coastal area. We need to determine the process of putting it in place to address the issues that might come in the next decades.

Another issue to look at is financing. If we’re looking into the Climate Change, there’s financing from the inside and from the outside since we’re talking about the integration of efforts. The integration of mainstreaming cannot happen with only the internal financing and without the external financing. There’s a whole issue of responsibility of responding to climate change.

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Mr Dela Torre, the Philippines:

A lot of our laws require so many plans involving the local government agencies. Is the Climate Change Action Plan a stand-alone plan of the local government unit? Or should it be mainstreamed as part of a major plan? Hence, how should mainstreaming be done? Also consider that climate change cuts across sectors and regions.

Mr Aquitania:

We must have a common understanding of the terms with the involvement of the different agencies and come up with the integration process. In our experience, we discussed the process with our partners how it should be done.

In terms of knowledge management, all contents that are used in the process form part of the mainstreamed plan.

How do you include the local government? Each of them has their own program. We must consider how we process all the potential programs that we can integrate. We can involve private organizations also in the process.

Mr Dela Torre, the Philippines:

In the inclusion of knowledge, knowledge management groups will have some aggregation, filtering and so on, but there's no assurance that they are coming into common terms. There's a need for an operational framework from national to regional, sub-national and/or sub-regional. How shall we consider then the coverage of the plan if we say national or regional plan especially if there is an inclusion of corresponding processes? Where are we coming from and where are we going?

Mr Alam:

Knowledge creation is not a one-way process. Many initiatives are already in place and this is where the mainstreaming issue hits the road. At what scale do we want to adapt at the local level? How much do we change?

Mr Dela Torre, the Philippines:

There is peculiarity in terms of federal state and in the local government organization nexus. We don't speak on the level of intervention on the scale of the municipalities alone but even in the barangays or villages in the Philippines. We need to pay attention to the language we used and the way the knowledge is being transferred

We can consider the connections that exist that can be useful in terms of the knowledge requirements that the local government need.

We can start with a model, with a substance, with the players, with the pool they are manifesting. What matters is we start with the players in the field.

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Symposium Synthesis and the Way Forward

Mr Eliseo R. Ponce, PhD

Resource Person

Former Professor of Research & Extension Management

Visayas State University

Philippines

Mr Eliseo Ponce recapitulated the discussions, the lessons learned from the various presentations and the next steps the group could undertake in the line with Climate Smart Agriculture framework. Mr Hsu-Sheng Lur of Chinese Taipei followed with the presentation of the resolution agreed by the delegates in their personal and professional capacities for the APEC and multilateral agencies such as the World Bank and the Asian Development Bank to organize the APEC Adaptation and Mitigation in Initiative in Agriculture (AAMIA) to provide a platform to further the issue of climate change adaptation with mitigation strategies towards food and water security.

The synthesis and the next steps including the resolution are attached as Annex E9.

Reactions

Mr Kazuyuki Tsurumi, Food and Agriculture Organization of the United Nations

Mr Tsurumi thanked the APEC for inviting FAO in this symposium, which to him is very important. He said that the group came up with a good resolution for Climate Change. The resolution to form the AAMIA shows unity among the APEC economies. The FAO is willing to provide international support to all the activities that will be planned based on the Resolution.

Ms Carolina Geron, World Bank

Ms Geron congratulated the conduct of this symposium. She said that the World Bank will be very honored to be part of planned AAMIA. On behalf of the World Bank, she would like to extend support to the resolution that the participants agreed. To her, it sends a very strong message that there is really a need for an integrated approach for Climate Smart Agriculture. The approach should take into consideration a rational policy and institutional support mechanism that would ensure increased productivity and safeguarded food security and improved messages on how Climate Smart Agriculture is being done.

She feels that in the APEC economies, there are a lot to learn as well as to share successful experiences. Most economies have experiences that can be shared when they try to operationalize the Climate Smart Agriculture at the local level.

This is a very good opportunity considering that the knowledge is there for the take off of the corporate partnership. World Bank is ready to partner with APEC since most economies are the Bank's client economies, and the Bank is very much excited to be able to move this agenda along. Hopefully in the future, as these issues in the international arena, we will be reminded that financing is not just the main issue but more so that we are able to integrate all of our efforts, given the rational policy and institutional framework so that together we can hurdle all of these constraints of Climate Change towards Climate Smart Agriculture.

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Mr Mozaharul Alam, Asia Pacific Adaptation Network

Mr Alam congratulated the forum for coming up with a timely forum, considering the discussion in the international arena that climate change is important. In terms of requests and types of activities to be delivered by APAN these would be synchronized with the terms indicated in the Resolution. Water security and food security are important elements to consider in climate change adaptation strategies. With that, the resolution that was presented was appropriate in addressing the major issues and concerns of the present situation.

Reactions and Final Remarks: Dr Segfredo R. Serrano, Undersecretary , Department of Agriculture, Philippines

Below is the full script of the speech:

“My personal thanks to the delegates for their active participation in the symposium and to the Secretariat for making this Symposium possible.

The Resolution has a proper integrity, and we are in full support of the ideas that have been expressed. You might want to add some more points to be considered before we transmit this in a full blown proposal. This Resolution reflects the collective sentiments of all the members.

The term adaptation with mitigation potential has a soft meaning to the various sectors, units, clients, in the agriculture industry in our respective economies. It only reflects that adaptation is an urgent concern. Agriculture is not really the main problem but can become part of a solution. With APEC, we realized and we recognized the various capacities, and the resolution is an expression of our voluntary commitment to one another that will unite all our efforts to mitigate the effects of Climate Change.

In a way, it is one advantage of this forum where voluntary offers of cooperation are much more seen and felt than negotiations and commitments. From this particular angle, APEC is a very useful venue for all of us. We also like to appreciate the commitments and support by our partners in the multi-lateral institutions. Finally, this is going to be a solid contribution to the next ministerial meeting.