



# FINAL REPORT

of

## REGIONAL SYMPOSIUM

on

*“Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens”*

**Chulalongkorn University, Bangkok,  
Main Auditorium, 2<sup>nd</sup> Floor**

**Thursday, 23 Feb 2017,  
8:30 am to 5:00 PM**



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## REGIONAL SYMPOSIUM 23Feb 2017

### *“Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens”*

#### Co-Organizers/Co-Sponsors

- Agroecology Learning alliance in South East Asia (ALiSEA), Regional office, Vientiane
- ASEAN Studies Center (ASC) Chulalongkorn University (CU)
- Chula *UNISEARCH*, ASEAN Cluster Fund,
- Chulalongkorn University, School of Agricultural Resources (CUSAR), Bangkok, Thailand
- United Nations Educational, Scientific and Cultural Organization (UNESCO), Bangkok

**Venue:** Chulalongkorn University (CU), Main Auditorium, 2<sup>nd</sup> Floor **Date:** Thursday 23 Feb 2017 **Time:** 8:30 am to 5:00 PM

Post-secondary institutions are significant knowledge producers, sometimes with research farms, adult training and extension programs. Agriculture represents a significant part of the national economy and a major source of employment for millions of mostly rural people in Southeast Asia. Some 6500 higher education institutions (HEIs) exist in the region. Yet their capacity to serve farmers, rural communities and sustainable agriculture is not well understood. Little research has examined what HEIs do, the models of agriculture development they promote, research results they transfer, the scope and types of farmer-academic partnerships that exist, what may be considered best practices, or their long-term impacts on poverty reduction, environments or food security. Governments, agriculture research centers and universities do not yet collect any uniform extension data that can be shared or analyzed. Moreover, post-secondary institution roles in contributing specifically to agro-ecological or organic agriculture teaching, research and service are poorly studied. There are significant knowledge gaps and research needs.

Chulalongkorn University School of Agricultural Resources (CUSAR) in Bangkok is leading a small one year study (June 2016-May 2017) to begin documenting and understanding the role of post-secondary and research institutions in farmer extension services and their contribution to ecologically sustainable agriculture and rural development in up to eight ASEAN countries with strong agriculture economies (Cambodia, Indonesia, Laos, Malaysia, Myanmar Philippines, Thailand and Viet Nam). Core research support is provided by the “ASEAN Cluster Fund,” *Chula UNISEARCH* office with a supplementary grant from Chula’s ASEAN Studies Center (ASC). ALiSEA has also provided additional funding with UNESCO collaboration. This research aims to understand the role of university-based farmer extension services in inhibiting or enabling agro-ecological transitions in Southeast Asia. In this respect the research is also being conducted under the mandate of UNESCO Bangkok’s Regional Unit for Social and Human Sciences in Asia and the Pacific (RUSHAP) and UNESCO’s *Management of Social Transformations (MOST) Programme* which aims build better bridges between research, policy and practice while promoting a culture of evidence-based policymaking that supports positive social and environmental change. Selected national partner focal point teams (2 people from each ASEAN country) will be provided modest funding for travel and research expenses to present findings at this regional workshop 23 Feb 2016 in Bangkok. Results are intended to help ASEAN governments, universities, agriculture research organizations and others to think critically and plan more strategically to improve agriculture education and research while strengthening farmer extension services and their contribution to the UN global *Sustainable Development Goals (SDGs), 2015-2030* and COP 21 Paris Agreement Climate Action for Southeast Asia.

- **DEADLINE for Abstracts** (250 to 500 words): Thursday 5 January 2017
- **DEADLINE for Full 1<sup>st</sup> DRAFT Papers:** Friday 10 Feb 2017

All accepted abstracts will be included in the symposium kit. Authors are also requested to submit full 1<sup>st</sup> DRAFT papers to be discussed at Symposium and published in proceedings to follow. Participation in the 23 Feb symposium is FREE. But space is limited and preregistration is requested. To submit an abstract or to request Paper Guidelines and Meeting Agenda please contact:

**Dr. Wayne Nelles**, Visiting Scholar, CUSAR [waynenelles@gmail.com](mailto:waynenelles@gmail.com) (about the academic program)

**Dr. Supawan Visetnoi**, Lecturer, CUSAR [Supawan.V@chula.ac.th](mailto:Supawan.V@chula.ac.th) (about the academic program)

**Mr. Naruep Jukping** [naruep.j@chula.ac.th](mailto:naruep.j@chula.ac.th) (For information about logistics, hotel, transportation, etc)

## SYMPOSIUM PROGRAM (FINAL)

### *“Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens”*

**REGIONAL SYMPOSIUM**  
**Chulalongkorn University, Bangkok, Main Auditorium, 2<sup>nd</sup> Floor**

**Thursday, 23 Feb 2017, 8:30 am to 5:00 PM**

#### OVERVIEW

Mainstream “modern” (often so-called “conventional”) largely industrial-scale mono-crop agriculture remains one of the world’s greatest contributors to global environmental problems: pollution, desertification, deforestation, drought, depleting aquifers, water diversion, biodiversity loss, land degradation and more. Agriculture may also be the world’s single greatest contributor to climate change. Moreover, this largely agrochemical-dependent industrial, market-driven agri-food system has still not provided food or nutritional security for some 800 million of the world’s poor, mostly rural people, including almost 60 million in Southeast Asia.

How have universities contributed to such problems or on the other hand aimed to mitigate them through extension services with farmers? Chulalongkorn University School of Agricultural Resources (CUSAR) is exploring this question in a one year study called *“Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens”* with support from the Chulalongkorn University UNISEARCH Fund (“ASEAN Cluster” Project Grant); Agroecology Learning alliance in South East Asia (ALiSEA); United Nations Educational, Scientific and Cultural Organization (UNESCO); and Chula’s ASEAN Studies Center (ASC).

The research in sum aims mainly to:

1. Explore what roles universities play in either exacerbating or mitigating environment, food security, poverty reduction and agricultural development challenges in ASEAN and contribute to social or rural transformation.
2. Understand through quantitative empirical evidence combined with good qualitative analysis, how, why and to what degrees Southeast Asian universities inhibit or support agro-ecological and organic approaches in teaching, research and extension services.
3. Provide policy, program and curricular recommendations for future education, research and extension services and rural development planning in response to perceived knowledge and capacity gaps.

Preliminary results from national case studies will be presented at this ASEAN regional workshop on 23 February 2017 in Bangkok then edited and published in a good quality book of workshop proceedings.

## SYMPOSIUM PROGRAM

8:30 am to 9:00 am Registration

9:00 am to 9:30 am **Welcome and Opening Host Remarks**

- **Associate Professor, Dr. Kanisak Oraveerakul**, DVM, Ph.D., Dean, Chulalongkorn University School of Agricultural Resources (CUSAR), THAILAND
- **Professor Kiat Ruxrungham, M.D.**, Vice President for Research and Innovation Chulalongkorn University
- **Asst. Prof Dr. Jakkrit Sangkhamanee**, PhD. Department of Sociology & Anthropology and Member, Executive Committee, ASEAN Studies Center (ASC) Chulalongkorn University
- **Mr. Somchai Charnarongkul**, Director General, **or Representative**, Department of Agricultural Extension (DOAE), Ministry of Agriculture and Cooperatives (MOAC), Kingdom of Thailand

9:30 – 10:30 **SESSION ONE: Project Contexts, Theoretical Issues and ASEAN/MEKONG Regional Perspectives on Agriculture Education and Extension Networks**

**MODERATOR & RESPONDENT: Mr. Aziz Arya**, Policy and Programme Officer, Food and Agriculture Organization of the United Nations (FAO), Principal Regional Office for Asia and the Pacific (PROAP), Bangkok.

- **Dr. Wayne Nelles**, Visiting Scholar, Chulalongkorn University School of Agricultural Resources (CUSAR), Bangkok, THAILAND
- **Mr. Pierre Ferrand**, Regional Coordinator, Agroecology Learning Alliance in South East Asia (ALiSEA) and Mekong, Regional Office, Vientiane, LAOS; with **Dr. Htet Kyu**, ALiSEA National Coordinator for Myanmar.
- **Dr. Virginia Cardenas**, Global Forum for Rural Advisory Services (GFRAS), Coordinator, Asia-Pacific; and Dean of College of Public Affairs, University of the Philippines Los Baños (UPLB)
- **Ms. Martina Spisiakova**, Knowledge Management Coordinator, Asia-Pacific Association of Agricultural Research Institutions (APAARI), Bangkok, THAILAND

10:30 – 10:45 *Coffee/Tea Break*

10:45 – 12:00 **SESSION TWO: National Case Studies (1), Focal Point Teams – MALAYSIA, MYANMAR, and THAILAND,**

**MODERATOR & RESPONDENT: Dr. Narumon Hinshiranan**, Representative of the Director, Chulalongkorn University Social Research Institute (CUSRI)

- **MALAYSIA: Dr. Norsida Man**, Associate Professor, Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia (UPM)

- **MYANMAR:** **Dr. Nyein Nyein Htwe**, Agricultural Extension Specialist, Yezin Agricultural University (YAU), Nay Pyi Taw; **Dr. Khin Oo**, Retired Professor of Agriculture; and **Dr. Htet Kyu**, ALiSEA National Coordinator for Myanmar.
- **THAILAND:** **Dr. Supawan Visetnoi**, Lecturer, Chulalongkorn University School of Agricultural Resources (CUSAR), Bangkok; and **Dr Somkid Keawtip**, Director, School of Administrative Studies, Maejo University (MJU)

12:00 – 13:15 *LUNCH Break*

13:15 – 14:30 **SESSION THREE: National Case Studies (2) Focal Point Teams CAMBODIA, LAOS and VIET NAM**

**MODERATOR & RESPONDENT:** **Prof. Dr. Surichai Wun’Gaeo**, Director, Center for Peace and Conflict Studies (CPCS), Chulalongkorn University and Rural Sociologist.

- **CAMBODIA:** **Dr. Buntong Borarin**, Vice-Dean of Faculty of Agro-Industry, Royal University of Agriculture (RUA) Phnom Penh, CAMBODIA and **Mr. Chun Nimul**, Lecturer, Svay Rieng University.
- **LAOS:** **Dr. Saythong Vilayvong**, Office of Research and Service, National University of Laos (NUOL) and **Dr. Malavanh Chittavong**, Faculty of Agriculture, NUOL
- **VIET NAM:** **Dr. Pham Van Hoi**, Director, Center for Agricultural Research and Ecological Studies (CARES), Hanoi, Vietnam National University of Agriculture (VNUA) and **Dr. Nguyen Thanh Binh**, Mekong Delta Development Research Institute, Can Tho University (MDI-CTU)

14:30 – 15:30 **SESSION FOUR: National Case Studies (3) Focal Point Teams INDONESIA and PHILIPPINES**

**MODERATOR & RESPONDENT:** **Dr. Chantana Wungaeo**, Faculty of Political Science Chulalongkorn University

- **INDONESIA,** **Dr. Siti Amanah**, Bogor Agricultural University (IPB) and National Representative GFRAS, with **Ms. Epsi Euriga**, Faculty/Staff Yogyakarta Agricultural Extension College (STPP Yogyakarta), Ministry of Agriculture; and **Dr. Helmi Helmi** Professor of Agriculture Development, Agribusiness Department, Faculty of Agriculture, Andalas University, with **Mr. Rafnel Azhari**, Lecturer/Researcher, Andalas University.
- **PHILIPPINES:** **Dr. Ted Mendoza**, Professor, University of the Philippines Los Baños (UPLB) and **Dr. Virginia Cardenas**, Dean of College of Public Affairs, UPLB and GFRAS, Coordinator, Asia-Pacific.

15:30 – 15:45 *Coffee/Tea Break*

15:45 – 16:45 **SESSION FIVE: Final Reflections: Expert Presenters and Participants**  
(Open Dialogue/No Papers)

**Co-MODERATORS Dr. Wayne Nelles**, Visiting Scholar, Chulalongkorn University School of Agricultural Resources (CUSAR), Bangkok, THAILAND with **Ms. Ushio Miura**, Programme Specialist/Team Leader, Education Research and Foresight, and Chief, Education for Sustainable Development (EDS), UNESCO Bangkok, Asia-Pacific Regional Bureau for Education.

Reflections on:

- Impressions/issues arising from Regional Papers and National Case Studies
- Developing a long-term university extension research and rural service agenda for ASEAN
- Linking project follow-up to global/UN *Sustainable Development Goals (SDGs), 2015-2030* and COP 21 Climate Action commitments
- Contributing agri-food system knowledge/expertise to the *ASEAN Work Plan on Education, 2016-2020* and other regional policy frameworks with planned outputs
- Gender mainstreaming in extension research, university education and farmer services
- Agricultural ASEAN University Network (AAUN) Maejo University led under AUN Auspices
- University-International Agency, Civil Society and Farmer partnerships
- Building or Improving Agricultural Research for Development (AR4D), Education and Extension Networks across ASEAN and Greater Mekong Subregion (GMS)
- ASEAN-GMS Agriculture Higher Education Policies, Reforms and Capacity development
- University extension capacities and needs in ASEAN and GMS Member States for “*Promoting Safe and Environment-friendly Agro-based Value Chains*” re “Knowledge Pillar” of new ADB led *Core Agriculture Support Program Phase II (CASP2) Strategy and Action Plan, 2018-2022*.

16:45 -17:00 **SESSION SIX: Wrap-up Remarks and Next Steps**

- **Dr. Supawan Visetnoi**, Lecturer, Chulalongkorn University School of Agricultural Resources (CUSAR), and **Dr. Wayne Nelles**, Visiting Scholar, CUSAR, Bangkok, THAILAND
  - Publication of Proceedings (with Policy Recommendations)
  - Policy Brief (informal document or formal publication summarizing recommendations - TBC)
  - Future Policy Dialogue on Research Findings with National Government, Regional and International Agencies in ASEAN and SEAMEO Officials/Experts
  - Implementation of National Case Study Recommendations
  - Expanding/Growing and Strengthening our Regional Network and Synergies with new Complementary National or cross-national Initiatives
  - Planning New Projects and Collaboration

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Separate Venue – **TBA**

18:00 – 19:30 **INFORMAL NETWORKING RECEPTION & CLOSING DINNER**

(by **INVITATION** –  
*Symposium Speakers and Resource People*)

## **\*\*SPEAKER BIOS\*\***

### **Siti AMANAH**

Dr. Siti Amanah is a senior lecturer at Bogor Agricultural University (IPB) Indonesia. Her major is Extension-education and development communication. She completed her undergraduate in 1989 with a cum laude in agricultural development and extension from Faculty of Agriculture, Brawijaya University with a thesis on leadership and community participation in village rice barn. She graduated as Master in System Agriculture (Honours), School of Agriculture and Rural Development, Western Sydney University in 1997 with thesis about learning and teaching extension-education in higher education. She finished her doctorate degree in extension-development from IPB with a dissertation on local wisdom in coastal community development. She has engaged for two decades in research and development on advisory services/extension education, community empowerment, and capacity development. Integrating research, education, action for improvement towards sustainability is one of her concerns considering current economy and socio-ecological issues. She is as General Secretary for Indonesian Association for Development Extension and an affiliate for Global Forum for Rural Advisory Services. She likes to see better support for extension-education to feed the world safely through a sustainable way.

### **Nguyen Thanh BINH**

*Dr Nguyen Thanh Binh* is currently working as a researcher and lecturer at the Mekong Delta Development Research Institute, Can Tho University, Vietnam. He has experience in applying both qualitative and quantitative research approaches to study agricultural extension, farming systems, rural livelihoods, water resource management and vulnerability assessment. His educational background includes a Bachelor in Agronomy from the Faculty of Agriculture, Can Tho University, Vietnam; an International Master in Rural Development - a joint academic degree from Ghent University in Belgium, Agrocampus Rennes in France, Humboldt University of Berlin in Germany and the University of Cordoba in Spain; and a PhD in Agricultural Sciences from Faculty of Agriculture, Bonn University, Germany.

### **Borarin BUNTONG**

**Dr. Borarin Buntong** is currently Director, Division of Research and Extension, Royal University of Agriculture. He is a Fruit and Vegetable Postharvest Expert. Dr. Buntong studied in Agricultural Engineering for his undergraduate at Royal University of Agriculture, Phnom Penh Cambodia. He received his Master in 2004 and PhD in 2012 specializing postharvest technology at King Mongkut's University of Technology Thonburi, Thailand. He has been involving in the field of postharvest technology for more than 15 years through teaching the undergraduate student in various university and agricultural colleges in Cambodia. He also experienced in conduct the training and extension to rural farmers, NGO staff, and many other expert in Cambodia. He conducted many researches in postharvest technology of fruits and vegetables as well as cereal grain and cut flower and food supply chain. In addition to his major of postharvest technology, he works a lot in project evaluation and community development. Some noted work involved in project evaluation experience include the dietary diversity survey for the food nutrition and home garden program of the Cambodia HARVEST-USAID funded project, Assessment of postharvest loss on vegetable value chains in Cambodia, and impact assessment of input supply that established and trained by HARVEST program through the on job training on evaluation program of Michigan State University. Currently, his research interest is fruit and vegetable technology development for rural and urban farmers, especially packaging, storage, transportation and supply chain management. He is very active in Royal University of Agriculture. Since 2006, he has been working in ADB funded postharvest project for improving livelihood of

rural Cambodian for more than 5 years before become the PI in HortCRSP USAID funded project on safe vegetable production in Cambodia and Vietnam which has been proof of success in establishing the saving group and net house and composting for produce safe vegetable through reduction of chemical pesticide and fertilizer. He is also very active in connecting the producer to the market. At present, he serves as the country partner for AVRDC-USAID funded project on postharvest vegetable in Cambodia. He also serves as PI in the USAID funded project implemented by Horticulture Innovation Lab for the project entitle “Innovations to build and scaling of safe vegetable value chain in Cambodia

### **Virginia CARDENAS**

Dr. Virginia R Cardenas has spent the last three decades as a professor, administrator, researcher, extension expert, and an advocate of people-centered extension/rural advisory services. Serving both as national and international consultant on extension education/community development, social development, gender and development, and institution building/capacity development, she has influenced the management of rural extension including risks and vulnerabilities affecting agricultural producers in the country and Southeast Asia. She was Vice Chancellor for Community Affairs of the University of the Philippines Los Banos from November 2006 - October 2011. After her stint as Vice Chancellor, she was appointed by the Southeast Asian Ministers of Education Organization Regional Center for Graduate Study and Research in Agriculture (SEAMEO-SEARCA) as Deputy Director for Administration from 2012-2015. After her stint with SEARCA, she returned to UP Los Banos and was appointed by the Board of Regents of the University of the Philippines as Dean of the College of Public Affairs and Development. Dr. Cardenas had devoted her career in developing community-based participatory rural development approaches and tools, capacity/institution building, networking and professionalizing extension services here in the Philippines and abroad. She founded the Philippine Extension Network, Inc in 2001 (now the Philippine Extension and Advisory Network, Inc.), and spearheaded the organization of the Asia-Pacific Islands Rural Advisory Services (APIRAS) in 2011 where she currently serves as the regional focal perso. She is a member of the Steering Committee of the Global Forum for Rural Advisory Services (GFRAS) from 2011 to the present.

### **Epsi EURIGA**

**Ms. Epsi Euriga** is a faculty staff at Yogyakarta Agricultural Extension College, Ministry of Agriculture of Republic of Indonesia. She is a doctoral student on extension-education science at Bogor Agricultural University with Ministry of Agriculture sponsorships. She has been involving as project team from Bogor Agricultural University for Australian Centre for International Agricultural Research (ACIAR) project FIS/2014/059 Expanding Spiny Lobster Farming in Indonesia since 2014 (ongoing). She has been undertaking dissertation on extension of horticulture sustainability based on needs, opportunities and abilities. She completed her undergraduate in 2004 with a cum laude in finance from Faculty of Economics and Business, Gadjah Mada University, Yogyakarta, Indonesia. She graduated as the best grade on Master of Science in Finance from Magister Science and Doctor, Faculty of Economics and Business, Gadjah Mada University with thesis about Prospect Theory (behavioral finance) in 2012. She has highly motivated to support agricultural sustainability through government extension-education to achieve food self-sufficiency with the environment consideration.

### **Pierre FERRAND**

Mr. Pierre Ferrand an agronomist, holder of a Master of Agronomy and Food Science from ISARA-Lyon, France, and a Master of Science in Tropical Agriculture Development from CNEARC (post graduate college for tropical agronomy) in Montpellier, France. He has been working in the field of agriculture development for over 12 years, including 5.5 years in Myanmar (2006-2011) implementing Food and Livelihood Security Projects (agriculture development and extension, value chain development...) and 3.5 years at Gret Headquarters in Paris (2011 to 2015) as Project Officer in agriculture development and value chain. Starting

from May 2015, he moved to Vientiane, Laos PDR, to take part to a regional project (Laos, Cambodia, Myanmar) addressing the promotion of agroecology transition in South East Asia. He is in charge of facilitating the emergence and coordinating at regional level an Agroecology Learning Alliance, bringing together all relevant stakeholders active in the field of agroecology (CSOs, research centers, government officials, private sector).

### **Nguyen Thi HAO**

Ms. Nguyen Thi Hao Completed BSc on Rural Development and Extension, Hanoi University of Agriculture in 2010. She worked for Center for Agrarian Systems Research and Development (CASRAD) – Vietnam Academy of Agricultural Sciences from 2010 to 2012. She was then recruited by Study Center of Gender, Family and Community Development (GFCD), and worked there for 1 year. In 2013, she enrolled MSc on Rural Economic and Sociology, within the Cooperation Program of Vietnam National University of Agriculture and University of Liege, Belgium. She completed MSc in the end of 2014, and started to work at Center for Agricultural research and Ecological studies (CARES, under Vietnam National University of Agriculture) since early 2015. She involved in several international projects, playing a major role in data management, analysis and report writings.

### **HELMI**

Dr. Helmi is a social scientist by training with undergraduate in socio-economic of agriculture, masters in social development studies, and Ph.D in agrarian development (focus on public policy). His research focuses on agriculture and local economic development; integrated land, water and forestry management policy and institutions; knowledge and innovation management in agriculture; and social entrepreneurship and social business. He is a professor in agrarian development at Andalas University, Indonesia, where he was served as Vice Rector for Planning, Development and Cooperation between 2010 -2016. He has involved international activities related to his expertise, among other with FAO, UNDP, ADB, and The World Bank Indonesia. He is currently involved with UNESCO's initiative on sustainability science and social inclusion.

### **Pham Van HOI**

Dr. Pham Van Hoi is a lecturer on agroecology and environmental sciences at Vietnam National University of Agriculture (VNUA). He completed his MSc at Ateneo de Manila University, the Philippines in 2001 on Sciences in Social Development, and PhD at Wageningen UR, the Netherlands in 2010, on Environmental Sociology. He was appointed Executive Director of Center for Agricultural research and Ecological studies (CARES, under VNUA) since 2014 where he has been co-PI and researcher in different international projects on sustainable agricultural and rural sociology.

### **Nyein Nyein HTWE**

Dr. Nyein Nyein Htwe, is Associate Professor from Department of Agronomy, Yezin Agricultural University (YAU) and a graduate of YAU in the field of field crop production. After graduation, she joined to Department of Agriculture as an extension agent. In 1996, she was appointed as a demonstrator in Department of Agronomy, YAU. Now she is working as an associate professor since 2014. She continued her postgraduate study and got Master Degree specialized in Agricultural Extension Education in 2001. In 2010, she finished her Ph.D study from King Mongkut's University of Technology Thonburi, Thailand in the area of post-harvest Technology. He got Crawford Fellowship award 2016 and developed new curriculum and syllabus for agricultural extension under the supervision of Australian Professors. She is doing researches in collaboration with JICA, ACIAR and other local and international organisations.

## **Htet KYU**

Dr Htet Kyu, born in 1956, is an MSc (Soil Science) and PhD (Agronomy) degrees holder with a 23 year working service with Myanmar Agriculture Service (MAS) in Land Use Division and Seed Division. In collaboration with Yangon Technical University and Yezin Agriculture University, he also took part in providing series of lectures in soil fertility management and advanced crop physiology and guiding several scholars with their master and PhD research work. In 2004 he joined Gret-Myanmar in Northern Rakhine State as an agronomist and project team leader for food security project and livelihood development project. In 2008, he worked for UNDP Yangon as an agriculture specialist in the agriculture recovery project of Nargis cyclone affected five townships of the delta area. In 2009, he worked as an international agricultural extension specialist for the Nam Ngum river basin development project in Laos. Then from 2011 up till now, he resumed working again for Gret Myanmar as Technical coordinator in Dry Zone project, as Country Representative for Gret-Myanmar, project management advisor for Gret-MSN Bogale project and for two years as national network coordinator for Myanmar in part-time basis for Gret's ALiSEA project. He is also agriculture adviser to Myanmar Fruit Flower and Vegetable Producer and Exporter Association.

## **Norsida MAN**

Associate Professor Dr. Norsida Man currently is the Head Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia (UPM), Malaysia. She has 14 years experience as lecturer and 2 years as shipping officer at private Japanese company Hitachi Transport System, Malaysia (TSM). She also responsible to form the Institute of Agriculture Extension, UPM in 2005 with the team and become as Deputy Director of Centre for Extension, Entrepreneurship and Professional Advancement (APEEC) from 2007 until 2012. Her expertise area are Agriculture Extension, Agriculture Economics & Management and Agribusiness. She enrolled her bachelor science degree in in Agricultural System Engineering, Kagoshima University, JAPAN in 1994 then continue pursue her master in Agricultural Economics and Management at Kagoshima University, JAPAN (1996) and finished her PhD in 2003 in same university. She published 60 journal papers, 3 chapters of book and 2 books. Her research interest are Agriculture Extension, Agriculture Contract Farming, Custom Farming in Agriculture, Agriculture Value Chain, Social Adaptation of Climate Change, Agriculture Postharvest Practices and Traceability, Agriculture Development, Off Farm Employment, Women in Agriculture, Community and Rural Development, Urban Farming and Community Support Agriculture. She involved in many projects especially in transferring the knowledge, technology and information to smallholder farmers, native people (Orang Asli) and agriculture extension officers.

## **Teodoro C. MENDOZA**

Dr. Mendoza, is a Full Professor of Crop Science , College of Agriculture, University of the Philippines-Los Baños and a UP scientist 2 under the U.P. science productivity systems. He is an advocate and practitioner of Organic agriculture in the Philippines. Born in a farming family , he pursued a professional career in Agriculture ( PhD in Agronomy,1985). He was one of the core scientists that constituted MASIPAG – The Farmer-Scientist Partnerships for Research and Development that spearheaded organic rice culture in the Philippines together with several civil society organizations in 1985. In 2002, he served as Plenary Speaker of IFOAM held at Victoria, Canada, Representing Asia. Currently, Dr. Mendoza is an *Agricultural Excellent Leader Awardee* for 2015 conferred by the Association of Agricultural Technology in Southeast Asia (AATSEA) for his excellent activities in instruction, research and extension done in the related fields of agriculture. A *SEARCA Regional Professorial Chair Grantee* for AY 2015/2016 for his lecture on “Reducing the High Energy Bill and Carbon footprint for an Energy and Climate Change-Compliant Sugarcane Production Systems. A Plenary speaker during the 5th ICIST 2016 . An accomplished educator, he has designed and introduced courses which are currently offered at UPLB (Introduction to Farming Systems , Design and Assessment in Farming Systems, Introduction to Ecological Agriculture, Advanced Ecological Agriculture, and recently , the Energetics of Crop Agriculture ). The courses in Farming systems

and ecological agriculture are now being taught in the state colleges and universities (131 SCUs) in the Philippines. He served as an advisee to more than 50 BSA students, 10 MSc's ,11 Phds.

Dr. Mendoza is an accomplished and well-recognized academic for his contributions in agronomic researches authored and co-authored 78 technical papers (28 in ISI and 50 in Non-ISI refereed journals), 2 chapters in a book, 6 books, presented more than 100 papers in technical conferences , and several Power point presentations discussed in conferences, trainings, seminars, and symposiums.

### **Wayne NELLES**

Dr. Wayne Nelles is a Canadian Visiting Scholar at CUSAR in Thailand. He has a PhD in Education, has lectured at various universities, and consulted with international agencies such as the ADB, CIDA, IDRC, UNESCO and UNICEF. From 2008-2011, he held a professional staff position in Peru as Head of the Capacity Strengthening Department, International Potato Center (CIP), a member organization of the Consultative Group on Agricultural Research (CGIAR). Earlier he was Senior Associate and founding Program Director for an international (Asia-focused) youth internship program (1996-2001) hosted by the Sustainable Development Research Institute (SDRI), at University of British Columbia (UBC). He has published over academic 35 articles, working papers or edited books on education, environment, sustainability, human security, conflict analysis, peace-building, agriculture and food security as well as various learning materials. His most recent edited book is Nelles, Wayne, Annop Kunavongkrit, and Surichai Wun'gao Eds. 2014. *ASEAN Food Security and Sustainable Agriculture in a Green Economy: Cross-Sectoral and Interdisciplinary Perspectives*. Bangkok: Chulalongkorn University Press.

### **Chun NIMUL**

Mr. Chun Nimul holds Master Degree in the field of Water Management from University of South Australia, Australia while his Bachelor Degree is Agricultural Engineering. His interests are related to water management in rural context of Cambodia. His career began with Royal University of Agriculture since 2004 as the Head of Planning and International Cooperation Office and then he has moved to serve various Non-Governmental Organization (NGO) in Cambodia. In 2009, he has become lecturer at Svay Rieng University and that is the place where he continues his work until the present. A part from this work, he has provided consultancy services to a number of Non-Governmental Organization (NGOs) mainly related to water, sanitation and climate change for more than 10 years. His ambition is to become a key contributor to his country in a more scientific way so that a systematic decision making can made to assist in policy development of the country and relatively to the regional perspective.

### **Khin OO**

**Dr Khin Oo**, Professor (Retd) from Yezin Agricultural University, Myanmar completed her bachelor's degree from the Institute of Agriculture, Mandalay in 1973. From 1978 to 1981, she was a tutor in Agricultural department of the Meiktilar Regional College and transferred to the University of Agriculture, Yezin. She graduated with Master Degrees specializing in Agricultural Extension from the Faculty of Agriculture, Queensland University, Australia in 1987. Onward 1981, she continuously employed in the Department of Agronomy from a position of tutor to Associate Professor. She studied in the Department of Agricultural Extension and Communication, University of Hohenheim, Germany for the partial Ph.D thesis research in 2004 June-August under the Study Visit/Research Program sponsored by the DAAD. By 2007, she finished Ph. D. degree (Agricultural Extension) from the Yezin Agricultural University. In 2008, she was promoted to a Professor at the Rice Specialization Campus of YAU, Hmawbi township in Yangon Region. She had retired in 2010 April and then served as an Advisor in the University for 8 months. After finishing the Advisor post, she was awarded Visiting Research Fellowship in the Center for Southeast Asian Studies (CSEAS), Kyoto University, Japan for 6 months. The agricultural extension research and publications of Dr. Khin Oo have included:

1. Study on Post-harvest and Storage Practices in Kayah State, Myanmar, The Consultancy Report for Action Contre La Faim (ACF), Mission in Myanmar, 2013 March.
2. Oo, K. and Ando, K. (2012). Improving Myanmar Agricultural Extension Services: Empirical Study on Views and Perception of Field Extension Agents in Mandalay Division of Myanmar. Kyoto Working Papers of Area Studies No.123, (G-COE Series 121).
3. Impact of the Cyclone Nargis on Livelihoods, Food Security and Agricultural Sector in Myanmar, SEARCA Agriculture & Development Discussion Paper Series No. 1010-1, SEAMEO SEARCA.
4. Improving the Agricultural Extension Services: Empirical Study on Prospect and Perception of Field Extension Agents in Mandalay Division, Myanmar, 2007 (Ph. D thesis).

### **Martina SPISIAKOVA**

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### **Tran Thi Thien THU**

*Ms Tran Thi Thien Thu* has experienced in different positions from commune to national level. In the period of 2004-2011 she worked at Thoi An Dong ward, Binh Thuy district, Can Tho city as an agricultural extension staff then became a Vice-president and President of People Committee in Thoi An Dong ward. Since April 2011, she was a Vice-head of Agricultural Extension Station in Binh Thuy district. Later on, she was appointed to the President of Farmer's Union in Binh Thuy district (2012-2015). Currently, Ms Thu is a Member of the Central Executive Committee of the Vietnam Farmer's Union and Vice-President of Farmer's Union in Can Tho city. Her educational background includes a Bachelor in Crop Sciences from the Faculty of Agriculture, Can Tho University; and Master in Rural Development from the Mekong Delta Development Research Institute, Can Tho University, Vietnam.

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## **\*\*PAPER ABSTRACTS\*\***

### **A. ABSTRACTS FOR NATIONAL CASE STUDIES**

#### **1. CAMBODIA**

##### **Sustainable Agricultural Research and Extension in Cambodian Higher Education Institutions**

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**KEYWORDS:** Higher Education Institutions, Agro-Ecological Research, Agricultural Extension, Agricultural Research.

The article describes the extent to which higher education institutions (HEIs) has contributed to agricultural research and extension (ARE) of the country. The institutions' prospect toward roles and services in the field is also determined to understand the arrangement and setting for the sake of agricultural technology and application improvement. The study involved the collection of information being provided by agricultural department or faculty of each HEI across the country to obtain what they are currently doing and their prospects in expanding the roles of agricultural extension. Six HEIs were interviewed and questionnaire survey was used. Policy documents and strategies of institutions and related research articles were reviewed to support the primary data. The findings indicated that current scopes and impacts of HEIs in providing ARE is minimal. This is due to the limited strategic guidance and financial allocation for the activities. Additionally, agro-ecological research is very limited and not fully known in those institutions but most research topics contain some criteria. The tendency is relation to ARE is, of course, promising in contribution as the need of social, political, and environmental context in the field. Leveraging resources in all related stakeholders including students, donors, institutions and government would be an effective and efficient solution to the current setback.

#### **2. INDONESIA (a)**

##### **Integrating Sustainability Factor into University-based Agriculture Extension Services: A case study from Indonesia.**

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**KEYWORDS:** sustainable agriculture; sustainability science; agriculture extension; co-production of knowledge and innovations; multistakeholders synergy; healthy livelihood and welfare.

Sustainable agriculture is one of the global priority agenda and it is included in the Sustainable Development Goals (SDGs). Unsustainability is one of the agriculture development problems faced by countries and region with the agricultural-based economy, including Indonesia and ASEAN Region. It is directly related to the livelihood of the farmers, security of foods supply, and the safety of the foods consumed. Therefore, there is an urgent need to put attention to the unsustainability issues in agriculture. One of the important root of

the unsustainability problem was that related to knowledge and technology generation which tended to be monodisciplinary, fragmented, and non participatory in the process. It resulted in the inability of the available knowledge and technology to help solve problems related to unsustainable agriculture. Research to generate knowledge and technology were oriented more toward critical rather than problem solving research to produce innovative solutions to the problems faced. In addition, the absent of synergies among researchers from different related disciplines themselves, between researchers and other major public agricultural development institutions as well as with private sector related to their corporate social responsibility. This is where the need for sustainability science arised which emphasize the co-production of knowledge and innovations (through inter/trans-disciplinary approach), oriented toward solutions of sustainable development problems, multistakeholders synergy and partnership in implementation, aim at improving healthy livelihood and well-being for all. Universities play an important role to deal with the unsustainable agriculture as this institutions has both mandate to do research to generate knowledge and technology as well as helping to put agriculture technologies and innovations in practices through provision of extension services to the farmers by engaging community. Therefore, it is very important to integrate sustainability factor into university-based agriculture extension services. This paper will explore and assess the agriculture extension frameworks and practices currently in place including synergies among actors and identify strategies to integrate sustainability factor into them.

### **3. INDONESIA (b)**

#### **Challenges and Opportunities for Universities-based Agricultural Extension Services from an Agro-ecological/Organic Perspective: the Case of Indonesia**

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**KEYWORDS:** university-based extension, agro-ecological perspective, training and education.

Education, research and community services are three pillar of higher education in Indonesia. The Law Number 16 Year 2006 about agricultural, fisheries, and forestry extension system states that extension services providers are the government, community, and private sectors. Extension service on organic farming can also be provided by the university and this is a concrete action of the three pillar of higher education. A number of research and extension related to agro-ecological practices conducted by researchers from universities in Indonesia. Also, a number of experts in ecological background have promoted organic agriculture, however, majority of farmers practice less and partially organic farming. Thus, the research objectives are two folds. The first is to gather information about the scope of university-based agro-ecological extension services; and the second is to analyze strengths, weaknesses, threats, and opportunities for universities managed agro-ecological extension services. A survey was conducted to collect information about perception from graduates, faculty staff, and university managers to agro-ecological extension services. The questionnaire consists of ten closed-ended questions and five opened questions was used to collect data from university teacher, graduates and manager of university. Closed-ended questions were designed to gather information about knowledge, perceptions and experiences of the respondents to the agro-ecological

principle and practices. Whilst, the opened-ended questions were used to explore the type of extension services, quality and effectiveness of agricultural extension system in Indonesia, involvement in agricultural extensions, and supporting and inhibiting factors in agro-ecological extension services. In-person interviews and google form were used in survey. From 112 universities that have agriculture study program, 56 respondents took part in the surveys. Following the survey, a focused group discussion with 20 participants from 16 different universities was held to discuss challenges and opportunity for the university-based extension services from agro-ecology perspective. Data were analyzed using descriptive statistic and Kendal Tau Correlation test. Strengths, Weaknesses, Opportunity, and Threats (SWOT) analysis were used to analyze challenges and opportunity of university- based extension services. Research results show that more than 55.4% faculty staff have involved in university-based extension services addressing agro-ecological principles, and 94.6% respondents have positive perceptions to agro-ecology. The respondents perceived that university-based extension services should be strengthened due to the lack of financial support.

Support from all stakeholders has significant positive correlations to the perception that agro-ecology/organic farming is the best solution for ecosystem sustainability and human welfare. SWOT identification shows that the most strength for university-based extension services is the numerous students body that are potentials to engage in the services; the weakest is limited financial support; the most threat is that agrochemicals products from industries attract farmers to postpone the organic farming practice; the most possible opportunity is to strengthen collaboration between universities and related stakeholders to promote, conduct joint research and development in extension services and organic farming. The strategy formulated for university based extension services to respond the challenges is to focus on SO, meaning to better manage the strengths and take opportunities; at the same time threats and weaknesses should be overcome.

#### 4. LAOS

##### **Mapping and Assessing University-based Farmer Extension Services in Laos through an Agro-ecological/Organic Lens**

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**KEY WORDS:** Agro ecology, Laos, Organic Agriculture, Extension Services, Farmers, University

This research aims to understand the role of university-based farmer extension services in inhibiting or enabling agro-ecological transitions in Laos. The quantitative empirical evidence and critical interdisciplinary study with good qualitative analysis, how, why and to what degrees Lao universities either inhibit or support agro-ecological and organic approaches in academic teaching, research and extension services were made in 2016-2017. In addition, the SWOT analysis table was made to integrate the data synthesis at the end. The results found that there is a linkage between the Ministry of Agriculture and Forestry (MAF) and university in support of agro ecology/organic agriculture in Laos. The main actors in agriculture extension and rural advisory services are the Department of Agriculture and Cooperative under the MAF, private sectors, and some local and international development organizations in Laos. In the past decades (before 2010) in Laos, MAF promoted agricultural production to farmers and rural advisory services through the approach of **Laos Extension Approach (LEA)** with a focus on capacity building for local villagers in terms of agricultural production, agricultural processing, and marketing. However, due to policy implementation the “Market Oriented Economy” coupled with the influence of high market demand from the neighboring countries today they try to integrate both of the **LEA and Agriculture Cooperative** approaches based on Producer Group. MAF has been responsible for capacity building for local communities by providing the trainings on agricultural production techniques, management and marketing. On the other hand, the educational institutes (universities and colleges) play a role on designing and developing the curriculum of agriculture extension and teaching the students with the fundamental principles, theories, techniques,

knowledge and empirical experiences of agriculture extension for crop and animal production in the multiple environment, culture and economic conditions. The universities have focused on research and development for agriculture innovation, and provided academic services for community development. So far, the Faculty of Agriculture (Nabong Campus), National University of Laos (NUOL) is the oldest and highest experience in developing of agriculture extension curriculum, teaching and research in agro ecology/organic agriculture in Laos. Moreover, NUOL offers bachelor and master degrees for students, and improves the laboratory facilities for research support. However, the main problem for supporting agro ecology in Laos is regarded a low cooperation between the university and MAF in agro ecology support. In addition, the promotion of organic agriculture in Laos is facing with a high production cost, limited market, and certification system. On the other hand, under a number of existing problems of agro ecology/organic agriculture support, some potential are considered as there is a clear policy for research support and high research potential at the university level. In addition, MAF generated a clear strategy and vision for support the agro ecology promotion until to 2030.

## **5. MALAYSIA**

### **University-based Agriculture Extension Services in ASEAN through an Agro-ecological/Organic Lens: Malaysian Case**

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**KEYWORDS:** university extension services, agro-ecology, organic farming, agricultural extension, rural advisory services (RAS), Universiti Putra Malaysia, Malaysia

Malaysian higher educational institutions particularly universities have taken good initiatives to not only provide education to the students but also involved in research, development and extension services pertaining to agro-ecology or organic farming. Universiti Putra Malaysia (UPM) is forefront and one of the pioneers at the national level in providing agricultural education, conducting research and advising farming community on adoption of novel agricultural technologies through direct or indirect consultations. Additionally, UPM is having expertise in training, module development and also offering short courses (on demand) to the public and private officials or even farming communities (esp adult) on the basis of their interest. Realizing the importance of organic farming from the future lens, the university is having quite relevant initiatives particularly PUTRA Outreach Clinic and PUTRA outreach bus. The popular extension methods being used in these activities are demonstration and campaigns. Moreover, UPM is also encouraging students to conduct empirical researches on various aspects of organic farming ranging from production to adoption behavior. These efforts are being made to sensitize students to help address farmers in their localities for safe and healthy food. So, there is no doubt on subject strength of the academia at the university level and research being conducted or completed in the past by the students. However, there are some standing challenges which hinder the university extension services. These include shortage of extension specialists, financial constraints, time limitations and personal interests of the academic staff at the university level. Last but not the least, agro-ecology is capturing attention of academia, extension agents, farmers and all other interested players in Malaysia on account of climatic changes, realization of safe, healthy and quality oriented food, environment conservation practices to maintain health of agro-ecosystem. UPM is doing well in its best capacity through education, research, policy development, identification of best practices and need based rural advisory services for past, present and future of the country.

## **6. MYANMAR (a)**

### **Overview of Sources of Agriculture Knowledge for Myanmar Farmers**

Dr Htet Kyu & Pierre Ferrand

A quick desk review on sources of agriculture knowledge for Myanmar farmers in the past and current situation was conducted through secondary data and references available in the reliable internet websites. Being the earliest to get its country independence and earliest to establish its agriculture college among the CLMV countries, Myanmar has fostered a large number of agriculture graduates engaging in government departments, private companies, private farms and private agri-business. Thanks to Buddhist monasteries in informal education and government literacy campaigns in the past, the adult literacy rate achieved is 93%. Thus many agri-knowledgeable persons managed to publish several technical books and write articles in journals and magazines in Myanmar language, and share their knowledge widely in several means of information channels. However as influenced originally by the global green revolution movement in a half century of the past, the main disciplines and curriculum of Yezin Agriculture University (YAU) and State Agriculture Institutes (SAI), the knowledge and planting materials supported by the extension service and seed farms of Department of Agriculture (DoA) and the sale promotion of the chemical inputs suppliers and the purchase of farmers' produce by traders and exporters in the private sector, have always fostered Myanmar farmers to focus on a few exportable crops and varieties with the objective of getting high yields. This has shaped the mindset of Myanmar farmers to be stereotypic in production techniques that concentrate on High Yielding Varieties (HYV) and chemical inputs despite the increasing experiences in crop losses due to pest and disease incidence and climate change effect, and alarming signs of environmental degradation and health hazards. A strategic extension approach for the paradigm shift in the mindset of Myanmar farmers and educators towards AE is urgently needed.

## **7. MYANMAR (b)**

### **Myanmar Agricultural Extension in Agricultural Development**

**Dr. Khin Oo**

Initially, Myanmar introduced agricultural extension system as an instrument to increase production of paddy due to the prospect of paddy for export during the colonial period. Agricultural Cooperative Societies (ACS) and Agricultural Units (AU) were organized to carry out agricultural productivity. Myanmar Land Records and Agriculture Department (LRAD) were set up in 1888. Department of Agriculture (DA) was established after establishment of DLRA at 15 October 1906. To fulfill the requirement of agricultural technicians, agricultural college and institute were established in 1924 accordingly. The traditional extension system was started to establish and conducted for the development of agricultural commodity production.

Myanmar government established another organization called Agricultural and Rural Development Corporation (ARDC) for diversification of crops after independence in 1952. According to the expansion of DA, three divisions, namely extension, marketing and research were created for better performance. The extension strategy employed by both DA and ARDC was the traditional trickle-down or transfer of technology (TOT) system. After 1962, Myanmar adopted socialist system and pursued so-called the inward-looking import substitution policy of industrialization. In 1972, the DA and ARDC were merged into Agriculture Corporation (AC) which was established with seven divisions. One of the functions of AC was to produce sufficient quantities of raw-materials for the state-owned agro-industries. The function of the Extension Division under the AC was also aimed to increase production of industrial crops for import substitution and for export. During the Green Revolution period, the Socialist government tried to improve

the agricultural production system by introducing “Training and Visit System (T&V)” in 1974. This approach was not considered as appropriate for Myanmar conditions because of the insufficient number of subject matter specialists (SMS) and mobile facilities. Moreover, the T&V system was not suitable with the Burmese Socialist system. It was stopped after the completion of the World Bank assisted projects. Therefore, the “Selected Concentrative Strategy (SCS)” was laid down in a special high yielding (SHY) rice production program in 1975. SCS was successful during the period 1978-79 to 1985-86. The whole township crop production programs (WTCPP) under the SCS approach were further launched for other crops such as maize, groundnut, sunflower, cotton, wheat, sorghum, jute, potato, and pulses. These programs produced significant increases in yields- two to three times than that of the national average yields of these crops at that time. As the economic policy during the socialist period was self-sufficiency and isolationism, the procurement system at below market price, the planned cropping system and the state ownership of farmland were practiced continuously. The procurement system was formulated for rice, cotton, sugarcane, rubber and jute until 2003-04. This system was a heavy burden for farmers. These WTCPPs were terminated in 1988 with the political changes.

In September 1988, the extension activities under Myanmar Agriculture Service (MAS) which was renamed from AC in 1989 remained unified until 1992. In 1994, certain crop functions from MAS were distributed to the newly established crop-wise separate enterprises such as Myanma Cotton and Sericulture Enterprise (MCSE) for cotton and mulberry, Myanma Sugarcane Enterprise (MSE) for sugarcane, Myanma Jute Enterprise (MJI) for jute and kenaf, and Myanma Perennial Crops Enterprise (MPCE) for rubber, oil palm, and other perennial crop with an aim to strengthen the State-owned economic enterprises (SEEs). By reforming agricultural marketing system in 1987, commodity prices started to rise sharply and Myanmar’s agricultural growth was observed up to the mid-1990s and apparently slowed down from 1996-97. The agricultural growth mainly relied on the expansion of cropped land area with no apparent productivity growth. The summer paddy program was initiated in 1992-93. The extension activities used in summer paddy program was similar to the WTRPP program and provided more efforts on availability of irrigation water, timely finishing land preparation and distribution of adequate rice seed in time. These SEEs were combined to the Myanma Industrial crops Development Enterprise (MICDE) in 2006. The extension system under different agricultural organizations was still more or less the same. The special crop production zone, block-wise crop production program practiced at both entrances of each town according to the localities, participatory technology development approach, Farmer’s Field School Model extension activities were performed for agricultural development throughout that time

In 2012, MAS and MICDE which had been the economic institutions were reformed as the departmental institutions, namely, Department of Agriculture (DOA) and Department of Industrial Crops Development (DICD) respectively according to the agricultural development policy. DICD was also combined again with DOA in current new set up. During 2011-2015, one of the missions of the MOAI was adoption of good agricultural practices (GAP) and a number of hybrid rice varieties, Palathawe were introduced from the neighbouring countries for hybrid rice production program together with GAP. In GAP approach, large scale demonstration trials on rice were conducted. Following the market-oriented policy, the new government amended the agricultural policy to more environment conscious directions in September, 2015.

The overview of the agricultural extension found that extension budget was considerably increased to 29.5 % of MAS/DOA total budget during 1987 to 2007. With the existing strength of the extension staff, one extension staff was required to supervise about 500 farm families or about 733 ha in MAS, about 290ha in MSE, about 217 ha in MCSE and 157 ha of fibre crop (jute) in MJI. The serious shortage of SMS has been found in Myanma AED since 1988. By examining the qualification of Myanmar’s extension personnel, the Bachelor holders also increased from 13.23% to 27% in 2010. In Myanmar, MAS/DOA was a major crop production related organization equipped with sufficient training facilities. The trainings were generally conducted regularly at CARTC located in Yangon division. Moreover a number of training programmes were also conducted in DAR and other regional research farms and specialized institutes.

## **8. MYANMAR (c)**

### **University-based Farmer Extension Service in Myanmar**

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**KEY WORDS:** Myanmar, Yezin Agricultural University, Agricultural Extension Education

There have been two separate public extension services in Myanmar conducted by the Department of Agriculture (DoA) and the Livestock Breeding and Veterinary Department (LBVD) under Ministry of Agriculture, Livestock and Irrigation. The agricultural extension service is mainly organized by DoA and follows the national administration format. Therefore, the Agricultural Extension Division (AED) under the DoA plans the extension programs from state or regional to district, district to township, and township to village tract levels, having 7516 staff members. As DoA is mainly conducted the traditional extension approach, however, UNDP and NGO projects use participatory extension approach besides the traditional approach. LBVD is mainly focus on animal disease surveillance and control whereas extension activities are still limited.

The private sector, mainly the suppliers of fertilizers, agro-chemicals, small farm machineries and improved seed are important providers of information and advice to farmers. Their staffs arrange farmers meetings and field-days for product promotion. The international or bilateral development organizations such as IRRI, FAO, JICA and ACIAR have been implementing agricultural projects including extension education since a long time as well.

Yezin Agricultural University (YAU), only one agricultural university in Myanmar, is the main producer of human resources for the agriculture and relevant sectors. Since YAU was founded on 22<sup>nd</sup> December 1924 as “Burma Agricultural Collage & Research Institute”, she could not able to offer extension education subject for 60 years. The agriculture extension was taken by Agronomy Department as part of the Agronomy subject at those years. Around 1985, Agricultural Extension was promoted as a separate subject for teaching under and post-graduate classes within the Agronomy subject areas. In the near future, the Department of Agricultural Extension will be established to take responsibility of teaching and production of agriculturists with extension education background. One of three main pillars of YAU is education outreach; therefore, YAU is involved in doing extension education with farmers by giving training, conducting on-farm trials and demonstration plots related to crop management, and broadcasting farmer channel.

In collaboration program with international organizations, YAU is currently doing extension research with ACIAR and mainly focused on institutional analysis of Agricultural Extension Division of DoA and crop benchmarking in Central Dry Zone of Myanmar with trained staff and working with farmers.

Institutionally, for the development and improvement of the academic aspects, the current curriculum is revising to be in line with other agricultural universities. Therefore, the curriculum development is also focused on food science & technology and agricultural extension. YAU provides the knowledge and technical support for agro-ecology and organic farming or food systems in its respective departmental curriculum. However, a few researches on agro- ecology, organic farming and food systems are conducted by the faculty and students in the specific areas of organic fertilizers, systematic rice intensification (SRI), alternative wet & dry system (AWD) and integrated pest management (IPM).

## **9. PHILIPPINES**

### **Mapping and Assessing University Based Farmer Extension Services in the Philippines through Agro-Ecological /Organic Lens\***

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In the Philippines, extension services to the farmers had weakened. It is being suggested that the state universities and colleges (SUCs) assume the role not fulfilled by the LGU's agricultural extension work. As mandated, SUCs perform a trilogy of functions – instruction, research and extension (RDE), plus production in their respective lands. But faculty members have heavy academic teaching load, and while they do extension, it is only up to piloting stage as they have no staff to go to the villages. Government research centers and SUCs Research and development (R&D) infrastructures are built and the technologies generated are supportive of green revolution technologies. Henceforth, extension services are for conventional agriculture/chemical agriculture.

“Time has changed!” In 2004, Benguet State University (BSU) through its President declared that BSU is a pro- Organic Agriculture University. The Central Bicol State University of Agriculture followed suit in 2009. The Commission on Higher Education (CHED) had mandated that all HEIs offering agriculture should include the teaching of Ecological Agriculture in the BSA curriculum. In 2008, the Organic Agriculture Act (R.A. 10068) ended the era illegal organic agriculture. Moreover, through the Act, 1billion peso funding was included in the General Appropriations Act (GAA). Since then, it is claimed that increasing number of farmers do organic agriculture (30,000 ha in 2007 and about 50,000ha by 2012). But considering the 10million ha agricultural area in the country, 50,000 ha is only 0.5%, meaning 99.5% are still in Conventional/modern/chemical agriculture. If the adoption is perfectly linear, it will take 2,375 years before the 9.5 M ha will all be converted into organic agriculture.

To sum it up, most Philippine SUCs are still in the promotion of agro-chemical dependent development model despite the organic agriculture Act (R.A. 10068) of 2008. SUCs involvement is weak in terms of providing knowledge, learning resources, research and technology support for agro-ecology (AE) and organic farming if adoption rate and area covered are concerned . University-based extension agents have insufficient knowledge, scientific expertise and technical support for farmers about organic agriculture (OA) alternatives except for a few who are initiating the organic movement. Strength, Weaknesses, Opportunities and Constraints (SWOC) Analysis of Agro ecology/ Organic Agriculture Extension is provided. Recommendations are included ( CHED policies on curriculum development , research and development ,extension, sustainable agriculture practitioners ,agricultural industries ,budgetary support, legal matters, monitoring and evaluation ) to strengthen University based extension services for AE/O.

## **10. THAILAND**

### **Higher Education and agricultural extension services in Thailand: Current situation and future recommendations.**

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With Unchalee Sanguanpong, Pradtana Yossuck, Kanyanat Sirithunya, Budsara Limnirankul and

Higher Education Institutes such as universities are a major source of intellectual development and knowledge production that play a central role in many aspects of national development and the agricultural sector in Thailand has long been known to have a significant role. Data from the World Bank indicated in 2015 that the Thai agricultural sector accounted for 9.1% of its GDP. Although, this does not contribute much in term of economics compare to other sector, but it does has significant impact in a social dimension such as number of its population engaged in this sector (approximately 38% of the total population). The majority of Thailand's farmers are mostly in rural areas scattered throughout the country, where high incidences of poverty are found among Thai farmers. One contributing factor to rural poverty is a lack of appropriate knowledge to make efficient production and farming. Therefore, an adequate and proper farmers' agricultural extension system and services (AESS) is needed in order to meet the farmers' needs and strengthen the Thai farmer community, environmental sustainability and their economic and social livelihood.

In year 2015, Chulalongkorn University School of Agricultural Resources (CUSAR) began a small initiative supported by Swedish International Agricultural Network initiative (SIANI) in addressing some issues on Higher Education for Sustainable Agriculture (HESA) and food security in 3 ASEAN countries. The project tried to better understand the underlying problems on teaching and research in sustainable agriculture (SA) among Southeast Asian universities. The policy brief of the Thai case from this project stressed the need to enhance of academic services on SA from universities. Also, it suggested that provision of training for government extension officials, since precise and up-to-date information and knowledge is necessary to help farmers.

Our follow-up project in 2016 supported by Chulalongkorn University (Chula Unisearch) focuses on investigation of issues and improvement of university-based farmer extension. Findings from one of our national research consultation and workshop pointed to various issues and problems concerning linkage in cooperation between universities and the government's Department of Agricultural Extension (DOAE). In addition, the problems include conflicts between and within governmental units in regarding it structures and implementing system. Education institutes are also facing a problem in producing university graduates and experts to work in the field of agricultural extension, both, in terms of course contents and training. In sum, this paper reviews some historical problems and current issues on AESS in Thailand as well as Thai education system, especially in the areas of agricultural extension and services study. Future recommendation and suggestions in terms of policy and implementation include; Promotion of community or area-based research and participatory action research (PAR), enhancement of community engagement research, setting up a national center of excellence for sustainable agriculture to gather experts and scholars for accumulation of knowledge for farmers and the promotion of AESS to cover the whole value chain.

## **11. VIET NAM (a)**

### **University-based agroecological extension services in Vietnam**

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Pham Van Hoi, Director CARES,

The paper aims to uncover some profiles related to extension education and services provided by agroforestry universities in Vietnam, especially those related to agroecological farming practices. There are 16 universities and colleges are identified of having extension education program in Vietnam. Despite a fact that extension education program is newly set up in these universities and high demand of the public for extensioners, there has been a reduction of students enrolling this program because graduated students face

more difficulty in finding jobs of good payment. In addition, universities are not officially included in the government extension system, funding for extension researches and services is very limited, mainly come from other channels of governments and international NGOs. Our initial conclusion is that more linkage to funding for research and extension services will likely help strengthen practical knowledge for university lecturers and researchers, making their lecturers to students more interesting and effective. In addition, with well educated, multi-disciplined human resources and stronger network among university lecturers and researchers, university extension services are thus likely more powerful and effective as compared to government extension, in addressing various farmer's farming problems and needs. However, more in depth and systematic studies on university extension education and services are needed for better overviews as well as proposals for possible changes in improvement of extension education and services as well as farming practices.

## **12. VIET NAM (b)**

### **Agricultural Extension in VietNam: Current Status and Challenges**

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and  
Tran Thi Thien Thu Provincial Farmer's Union, Can Tho City, Vietnam

Vietnam is an agricultural country with the population about 91.7 million, of which 66% are living in the rural area based mainly on crops, fishery, and livestock. Even the government try to reduce agricultural sector but it is still dominated as agriculture employed 44.0% of the labor force, contributed 17.0% of the GDP and 15.6% of total export values in the year 2015 (GSO, 2016a). Therefore, development of scientific research and the application of innovations in the agricultural sector is an importance policy in the country. Since 1993, the agricultural extension system was created by the Prime Minister's Decree No. 13/CP. Under this Decree, the agricultural extension network has been spread out from national to provincial and district levels. Establishment of extension services has contributed to food security, agricultural development and poverty reduction during the last some decades. However, under socio-economic and environmental changes presently the agricultural extension system is required to improve. The objective of this paper is to study the current status of agricultural system in Vietnam and its challenges through desk study and analyzing of available data and information such as institutional arrangement, human resource, financial investment, activities and related policies in order to develop suitable recommendations for further development in agricultural extension services in particular and agricultural sector in general.

### **B. ABSTRACTS FOR REGIONAL PAPERS**

## **13. REGIONAL (a)**

### **Comparative analysis of the policy frameworks in place in each country of the Mekong region (Cambodia, Laos, Myanmar and Vietnam) in regards to support to agroecology**

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Levard Head of Programme - Food and Rural Economy Department GRET, France  
Dr Htet Kyu Myanmar ALiSEA/Gret Myanmar,

This comparative analysis of the policy frameworks in place in each country of the Mekong region has been carried out in the framework of the Agroecology Learning alliance in South East Asia (ALiSEA), a component of a wider program supporting Agroecological Transition in the Mekong Region (ACTAE) funded by the French Agency for Development (AFD). It builds upon 4 national studies that were conducted

between October 2015 and February 2016 in Cambodia, Laos, Myanmar and Vietnam that aimed at mapping agroecology stakeholders and reviewing national agriculture policy framework. This article provides an analysis of the general trend across the Mekong region when it comes to policies supporting agroecology as well as some recommendations to move towards an agroecological transition.

First, it points out an evolution in the region from subsistence and agro-ecologically based farming to Green Revolution led agriculture policies, followed by a late shift back towards more sustainable agriculture and agroecology. Then, it intends highlighting different levels of agroecology inclusion in public policies across the region. Finally, it singles out several common hindrances to promoting agroecology across the Mekong region and provides some recommendations to move forwards.

#### **14. REGIONAL (b)**

##### **Mapping and Assessing University-Based Farmer Extension Services: Perspective from the Global Forum For Rural Advisory Services (GFRAS):**

**Virginia R. Cardenas, PhD**

Dean, College of Public Affairs and Development

University of the Philippines Los Banos,

and

Focal Person for Asia-Pacific Islands, and

Member Steering Committee, GFRAS

Many stakeholders realize the lack of an organized system of delivery of agricultural extension and advisory service worldwide. The Global Forum for Rural Advisory Services (GFRAS) was initiated in 2010 to provide advocacy and leadership on pluralistic and demand-driven rural advisory services for sustainable development. GFRAS operates with strategically organized 15 regional networks globally. In the Region, the Asia-Pacific Islands Rural Advisory Services (APIRAS) serves as its regional network and voice of extension and advisory service providers to the international level. While GFRAS is not directly involved in agro/ecological organic agriculture, it adheres to the principles of sustainable and inclusive agricultural development. These are observed in GFRAS's main activities which are organized into three strategic fields of action whose outputs could be adopted/adapted by University-based extension systems in order to achieve excellence and leadership in advancing both the science and practice of extension and advisory services. These activities include development of tools, methods/approaches on a) advocacy and support for an enabling policy environment and appropriate investment in rural advisory services, b) Professionalisation of rural advisory services, and 3) facilitation and enhancement of effective and continuous knowledge generation and exchange. These tools, approaches when used can facilitate the promotion of organic agriculture at the national, regional and international level through partner networks.

In the Asia-Pacific Region, APIRAS is poised to strengthen organizational capacities of its Regional and sub-regional Networks in Fiji, Bangladesh and the Philippines through capacity building, knowledge management, and policy dialogues as its main thrusts, with a grant from the International Fund for Agriculture and Development through the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). These are the same areas in need of attention as recommended by a policy research group on organic agriculture in the Philippines. Higher education institutions are identified stakeholders under the project. Looking forward, GFRAS through its regional networks (APIRAS) and sub-networks need to strengthen partnership with higher education institutions in the Region to sharpen the focus of collaborative efforts in addressing specific issues related to organic agriculture and further this mapping exercise. Not much data is available on the subject. Testing and adaptation of the tools and approaches advocated by GFRAS with University-based Extension systems is an opportunity to start with (e.g., The New Extension Learning Kit). Network is a form of governance. However it encounters some issues and there are debates related to its focus on network structures, firm strategies and thus, sustainability

## 15. REGIONAL (c)

### **Reducing Research-Extension Gap for Sustainable Agricultural Development: The Role of Regional Networks**

Martina Spisiakova, Knowledge Management, Coordinator  
Asia-Pacific Association of Agricultural Institutions (APAARI) Bangkok, Thailand

The Asia-Pacific region faces increasing demand for diverse and quality food. Emerging and growing middle class, climate change, diminishing natural resources, increasing urbanization and global economic uncertainty are pressuring agri-food systems that need to produce more food on a sustainable basis to reduce poverty and hunger. Sustainable intensification of agricultural production requires efficient education, research and extension systems that support development and adoption of agricultural innovations. To create such an enabling environment, the Asia-Pacific Association of Agricultural Research Institutions (APAARI) works as a multi-stakeholder regional forum to promote and strengthen agri-food research and innovation systems through knowledge management, partnership and networking, capacity development and advocacy for sustainable agricultural development in the region. APAARI realizes that the research and extension model has changed over time and it is no longer a one-way communication from the education/research centre to the extension agency, followed by knowledge transfer to the beneficiary. It is a complicated system with interactive communication among many actors, including national agricultural research institutions (NARIs) and organizations (NAROs), higher education institutions – universities, civil society organizations (CSOs) including non-governmental (NGOs) and farmer organizations (FOs), youth and women groups, inter-governmental organizations, the private sector, international research and development agencies, and regional and international fora. However, individual and institutional research and extension capacities of these organizations vary, making it difficult to provide adequate assistance to farmers, support adaptation to environmental and economic risks, coordinate extension activities and advocate for enabling policy changes. APAARI has created a network involving these organizations that brings them closer together to help them learn, share good practices, and collaborate, thereby speeding up technology transfer and adoption by farmers. Through the collective action and academic excellence of its members, partners and other stakeholders, APAARI works to promote investment in research and education, incorporation of good practices, integration with the work of farmers, CSOs, and the private sector, as well as application of agricultural innovations to national and regional agri-food problems.

At the regional level, APAARI helped establish the Asia Pacific Agricultural Extension and Outreach Network (APAEON), to enhance the linkages between agricultural research and extension to promote sustainable food systems and improve the productivity in the region. At the global level, the Association leads the discussions on the mobilization of investment in agri-food research and innovations with the Global Forum on Agricultural Research (GFAR) and addresses issues of mutual interest that a single country in the Asia-Pacific region cannot do at the global level, such as underfunding of agricultural education and research. APAARI has also connected with other regional and sub-regional bodies, such as the Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC), and South-Pacific Communities (SPC), that all have an important role to play in facilitating collaboration and partnership across regions, countries and actors to share agricultural technologies for the benefits of both farmers and consumers. Regional networks are playing an active role in advocacy and knowledge management to support extension services and enhance south-south cooperation in this area. To create an enabling environment for extension and advisory services to become more effective, such networks are also promoting enhanced technical and managerial capacities at individual and institutional levels; strengthened data base on investments and human resources; assessment of the return from investment in agricultural education, research and outreach systems; development of advisory services and extension policies; sustainability of agri-food research and innovation system by attracting youth to agriculture..

## 16. REGIONAL (c)

### *“Challenges and Opportunities for an ASEAN Research Network on University-based Agro-ecological/Organic Farmer Extension Services*

Wayne Nelles, Ph.D. Visiting Scholar,  
Chulalongkorn University School of Agricultural Resources (CUSAR), Thailand

**Key words:** Extension Research, Universities, Agro-ecology, Organic Agriculture, Networks

Modern industrial-scale mono-crop agriculture is one of the world’s greatest contributors to global environmental problems: pollution, desertification, deforestation, drought, depleting aquifers, water diversion, biodiversity loss, land degradation, and climate change. Moreover, this agrochemical-dependent market-driven agri-food system has still not provided food or nutritional security for almost 60 million in Southeast Asia. What roles have universities played in exacerbating or mitigating such problems through teaching, research and extension services? What are the alternatives? This paper reviews results of recent studies and the evolution of a network which aimed to address such challenges. The idea for a network emerged from a Swedish Sida funded Higher Education for Sustainable Agriculture (HESA) and Food Security in Southeast Asia project in 2015, piloted in three countries: Laos, Philippines and Thailand. This was followed in 2016-2017 by a Chulalongkorn University School of Agricultural Resources (CUSAR) led research project, called: *“Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens”* to study five countries. Additional support from partners has allowed national workshops or case studies for all eight ASEAN countries (Cambodia, Laos, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam) with large agriculture-based economies and rural populations. The work has essentially piloted the beginning of an informal but de facto ASEAN agri-food research and extension network. Some discussions and research results from CUSAR and other partners in this network have revealed some common challenges. Among these, the ASEAN agri-food system still seems largely based on agrochemical-dependent production requiring farmers to purchase expensive and environmentally harmful inputs from profit making companies increasingly supported by public extension systems with institutionalized connections to universities. The ASEAN region is typical of a world-wide trend in “pluralist” extension approaches which has increasingly allowed private sector advice, interests and partnerships to problematically influence public educational priorities and research goals. Reflecting on informal discussions, empirical evidence reviewed and policy recommendations made by network partners engaged in CUSAR led projects over the past two years, this paper argues that universities must better support teaching, research and service with farmers about alternatives to an agrochemical-dependent agri-food system. Suggested next steps are to: 1) Co-design and secure better funding with partners multi-year regional projects to study barriers and enabling factors for adoption, strengthening and mainstreaming of Organic Agriculture (OA) and Agro-ecology (AE) in university teaching, research and service. 2) Facilitate more science and evidence-based research about multiple values of OA/AE combined with academic-government-farmer policy dialogue to inform individual university reforms as well as national education, science and agriculture and rural development planning priorities; 3) Establish and formalize an institutionalized regional university network of academics, farmers and others, not dependent on projects alone, to study and apply OA/AE in extension services. Finally the paper suggests that strengthening and broadening university-based agro-ecological/organic farmer extension services can strategically support implementation, monitoring and evaluation of global *Sustainable Development Goals (SDGs)* already agreed to by ASEAN member states. Sustainable agriculture (SA) is mentioned in the SDG 2 but, problematically, not defined. Moreover, OA and AE are not discussed anywhere in the SDG policy framework intended to guide ASEAN government priorities and programs for 15 years, until 2030. A new research and capacity strengthening network could help to mainstream OA/AE education and extension into SDG targeting and reporting in cooperation with universities to serve poor rural farming communities and the environment.

## **\*\*RAPPORTEUR's MEETING SUMMARY\*\***

Of

***“Mapping and Assessing University-based Farmer Extension Services in ASEAN  
through an Agro-ecological/Organic Lens”***

### **REGIONAL SYMPOSIUM**

**Chulalongkorn University, Bangkok, Main Auditorium 2<sup>nd</sup> Floor**

**Thursday, 23 February 23, 2017, 8:30 AM to 5:00 PM**

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### **WELCOMING & OPENING HOST REMARKS**

**Associate Professor, Dr. Kanisak Oraveerakul, DVM, Ph.D., Dean, Chulalongkorn University School of Agricultural Resources (CUSAR), THAILAND**

Dr. Kanisak opened the Regional Symposium by welcoming the 40 participants representing Thai ministries, various organizations, and academic institutions, gathered at Chulalongkorn University on February 23, 2017. Dr. Kanisak articulated the objective of the symposium: to document and analyze the structures, outputs, and effectiveness of Southeast Asian universities, colleges and affiliated agricultural resource organizations in their farmer extension services through an agro-ecological and organic lens. As an opportunity for various stakeholders to share their knowledge and experiences, the symposium's main outcome will be an edited book of the national case studies presented throughout the day.

**Professor Kiat Ruxrungham, M.D., Vice President of Research Innovation, Chulalongkorn University**

Dr. Kiat remarked that this symposium was impressive in bringing together academics from different Southeast Asian universities to reflect upon their research. According to Professor Kiat, this type of collaboration could help make a difference in terms of the impact of large-scale industry on agriculture and the environment, which has yet to solve the issue of equity in food supply amidst economic growth across the region. As it approaches its 100<sup>th</sup> year anniversary, Chulalongkorn University shares a strong commitment to finance research with its own resources, as well as through joint funding with the Thai government and international funding agencies, for conducting more real-impact research, not only for the sole purpose of publication. Professor Kiat encouraged participants to focus their efforts not only to present their research findings, but also to formulate the next steps in order to make a real impact. Through generating more information, evidence, and strategic research proposals, the symposium can provide a fruitful environment for participants to develop good research questions and projects, which Chulalongkorn University would consider for joint-funding.

**Assistant Professor Dr. Jakkrit Sangkhamanee, PhD. Department of Sociology & Anthropology and Member, Executive Committee, ASEAN Studies Center (ASC) Chulalongkorn University**

Dr. Jakkrit emphasized that as ASEAN moves to a new phase towards sustainable development in the region, it must address the reality of mainstream industrialized monocrop agriculture, and its environment and social impacts, such as pollution, desertification, land degradation, deforestation, biodiversity loss, conflict over water and other natural resources, and forced migration. As such, agriculture may be the single greatest

contributor to climate change. Built around market-driven, large-scale industrial production and agro-chemical dependency, the current agro-food system has still not provided sufficient food and nutritional security for an estimated 800 million of the world's poor, who are mostly rural people, and of which 60 million are in Southeast Asia. In light of the many problems derived from unsustainable agricultural practices, Dr. Jakkrit highlighted the university as an important social institution in promoting an alternative framework and to encourage more ecological and sociologically friendly practices in agriculture. Through university-based extension services to promote agro-ecological and organic practices, universities and farming communities across national borders can create knowledge through productive engagement and contribute to social and rural transformation at large. Dr. Jakkrit further hoped that the symposium would produce policy recommendations for future education, research, extension services, and rural development planning in response to existing knowledge and capacity gaps. In concluding, Dr. Jakkrit showed optimism in regards to the recent agro-ecological ASEAN Code of Conduct, which has helped to harmonize regional regulations and policies on agriculture, an achievement that can potentially be repeated in other fields within ASEAN.

**Mr. Somchai Charnarongkul**, Director General, Department of Agriculture Extension (DOAE), Ministry of Agriculture and Cooperatives (MOAC), Kingdom of Thailand

In this presentation, titled “Organic and Sustainable Agriculture Extension system in Small-scale Farmers,” a detailed overview was provided of Thailand’s Department of Agricultural Extension (DOAE), DOAE’s agricultural extension system, DOAE’s sustainable agricultural extension, and DOAE’s organic agriculture extension. The purpose of the DOAE is to transfer appropriate technology and knowledge, and to provide services on crops and economic insects production and management. In Thailand, the DOAE also serves as the national focal point of the ASEAN Sectoral Working Group on Agricultural and Training and Extension (AWGATE).

From 2017 to 2021, the DOAE aims to develop and promote sustainable well-being among farmers with four key objectives: first, to empower farmers to become self-reliant; second, to increase capacity building among farmers in production and management of agricultural products to be in line with market demand; third, to provide agricultural services and farm inputs to farmers and relevant agencies; and fourth, to conduct agricultural extension research and development while working with all stakeholders in an integrated manner. In the year 2017, the DOAE has formulated its policies around the Philosophy of Sufficiency Economy of His Majesty King Bhumibol Adulyadej. These activities are based on the New Theory Agriculture and Sustainable Agriculture Promotion, and include the promotion of Large Collaborative Agriculture, Agricultural Learning Center for Increasing Production Efficiency, Agri-Map, and organic agriculture.

The core of the DOAE’s Agricultural Extension System is its Training and Visiting System, which consists of 5 components: training, visiting, supporting, supervision, and data management. The main mechanism for the provision of extension services to farmers is the “Smart Extension Officer,” who oversees the effective transfer of technology and transfer to farmers. The key outputs of the extension program are to produce what the DOAE defines as “smart officers,” “smart farmers” and “smart agriculture.” The extension process itself consists of five activities: group setting, learning forum, farming action, marketing, and monitoring and evaluation. Among these, marketing was the main focus in this process, as an existing market for farmers’ products must exist in order for the extension process to be feasible. Marketing activities in the extension process entails selling farm produce at markets, public relations, seeking available markets, quality development, and processing.

In its promotion of organic agriculture, the DOAE has structured its extension services around producing agricultural commodities that are of good quality, meet standards, and are market competitive, as well as assisting farmers to have a better quality of life and to become empowered and self-reliant. Approximately

45,585 hectares in Thailand are currently certified as organic agriculture, with major exports being rice, fruits (such as bananas, pineapple, mango, durian, rambutan, and mangosteen), and vegetables. The major export markets for Thailand's organic agriculture are the EU, USA, Japan, China, and ASEAN. The DOAE's project in 2017 is to increase its organic agricultural production by at least 10% per year, using the Yasothon Model from a pilot study in Yasothon Province as a national model to increase the production of organic rice. The extension project's activities will include training staffs and farmers, promoting large-scale collaborative farming, agricultural learning centers, potential crops, and organic agricultural villages, and implementing public relations activities. Of importance among these activities is providing farmers with information to aid in their decision-making in regards to meeting standards, as they will have to identify their intended market and the relevant organic standards before producing their agricultural products. The conclusion of presentation drew attention back to the DOAE's two core mechanisms, namely the Training and Visiting System and the Smart Extension Officer, in implementing the agency's extension activities and achieving its targets for the production of sustainable and organic agriculture in Thailand.

## **SESSION ONE:**

### **Project Contexts, Theoretical Issues and ASEAN/MEKONG Regional Perspectives on Agriculture Education and Extension Networks**

**MODERATOR & RESPONDENT: Mr. Aziz Ayra**, Policy and Programme Officer, Food and Agriculture Organization of the United Nations (FAO), Principal Regional Office for Asia and the Pacific (PROAP), Bangkok

Mr. Aziz Ayra began the session by noting an unfortunate trend in agriculture over the past decade, in which there has been a neglect in bridging the gap between university-knowledge development and introducing this knowledge to farmers. Although there was a heavy emphasis in the literature during the 1980s and 1990s in addressing this gap, the international agenda has lagged behind, in large part due to the impact of structural adjustment on public institutions. This regional symposium thus serves a timely purpose.

In the ASEAN region, the agricultural sector confronts many challenges, as it carries a double-burden due to the needs to provide food to feed a growing population, as well as to address a rising demand for more diversified, nutritious, and safe food. The latter issue—food security—has become an especially pertinent issue in the region. Furthermore, while agriculture has been identified as a source of greenhouse gas emissions, there has also been acknowledgement and pressure on the agricultural sector as a possible solution, by improving its capacity to reduce and mitigate greenhouse gas emissions. With these expectations, agriculture faces many challenges in the region. First, climate change has, and continues, to affect the capacity for those in the agricultural sector to perform its services. Second, the aging farming population in ASEAN means that most agricultural work is done by the older generation, while the young generation generally have shown less interest and incentive to rise up to tackle the challenges in the agriculture. Third, the levels of malnutrition in the region remain at an unacceptable level.

According to Mr. Aziz, there are certain limitations one must also recognize, including that the frontiers of agricultural technology have by and far been reached with current knowledge, and that increasing agricultural area is no longer an option for the region. Despite this somewhat Malthusian perspective, Mr. Aziz Ayra argues that one must not neglect the role of human ingenuity, but that the emphasis in the field should not be solely on technological solutions. Instead, he encouraged the audience to push these technological boundaries by focusing their efforts on how to push these agricultural technologies all the way down to the farmer level. The regional symposium can thus provide an important forum to examine the types of enabling environments that will help to bridge the gap in research and knowledge between universities and farmers, and to prevent this gap from further widening.

**Dr. Wayne Nelles**, Visiting Scholar, Chulalongkorn University School of Agricultural Resources (CUSAR), Bangkok, Thailand

In his presentation, Dr. Wayne Nelles focused his topic on networks, a topic that was explored through a previous SIANI- Sida Project, titled “Higher Education of Sustainable Agriculture (HESA) and Food Security in Southeast Asia.” This project, led by Chulalongkorn University School of Agricultural Resources (CUSAR), was a response to previous research indicating a problem among universities, namely that they not provide adequate support for rural communities and smallholder farmers. This project assessed the greater contribution that universities could make in sustainable agriculture, food security, and food systems through curriculum reform, teaching, and research-extension. Following this previous project, which also provided policy recommendations for improving extension systems, this regional symposium looks more deeply into the side of extension with more case studies from ASEAN. Referring to Mr. Aziz’s previous point about the lack of a link in research between universities and farmers, Dr. Nelles also emphasized the need to respond to

questions such as: What issues should extension address? What types of knowledge is being transferred from universities to farmers and rural communities? Is it the old system of agriculture that extension should try to change? Or, as the DOAE presentation showed, should extension be focused on extending the organic side of agriculture? Ultimately, Dr. Nelles encouraged the audience to think more concretely about *what* should be extended, and whether extension is (and should be) extending old knowledge that has created so many problems. Dr. Nelles further emphasized that agriculture must change given its major contribution to climate change and issues such as pollution, desertification, and deforestation among many others.

The New Chula ASEAN Extension Research Project (June 2016—May 2017) aims to grow existing networks on university-based extension in ASEAN countries. Along with ALiSEA, UNESCO and ASC supplementary support, including various types of matching support from national partners, the UNISEARCH Fund “ASEAN Cluster” Project approved this project, “Mapping and Assessing University-based Farmer Extension Services in ASEAN through an Agro-ecological/Organic Lens,” which resulted in research workshops carried out in 8 countries (Indonesia, Laos, Philippines, Thailand Viet Nam in the first tier, followed by Cambodia, Malaysia and Myanmar in the second tier and with additional funding). Following the completed workshops, the planned outputs include an edited book of eight national case studies with other regional and/or theoretical papers, a policy brief summarizing key themes and recommendations from the case studies, and a peer-reviewed journal article. The targeted outcomes and results that the project aims to produce are preliminary baseline data on university-based extension services in ASEAN countries, useable knowledge and empirical evidence to better inform policy, creating potential for practical reforms, planning larger national and regional projects, and producing institutional and knowledge reforms leading to development impacts.

Within this context, Dr. Nelles emphasized the importance of making network linkages with other movements, which have similar interests and goals, and with different types of expertise. Through finding synergies and forming networks, Dr. Nelles further encouraged participants to link their current work to existing and ongoing ASEAN political processes. As one such example, Dr. Nelles mentioned the ASEAN Workplan on Education as one such opportunity to enter agricultural education and extension into these policies, and bringing together ministers on education and agriculture together in dialogue. Another possibility for building networks and linkages is the ASEAN Scholars network, which will take place in the near future. Lastly, Dr. Nelles encouraged the audience to link their activities to the SDGs, noting that there are many lots of crosscutting opportunities for integrating agriculture into the goals. While SDG 2 may be the most relevant goal given its explicit commitment to extension services, Dr. Nelles noted the SDGs related to education do not mention farmers and rural communities, indicating that there remains a weak link between agriculture and the SDGs. As such, Dr. Nelles called upon those in the field to make the link happen and to work actively with relevant stakeholders in order to do so. Lastly, Dr. Nelles encouraged scape-up efforts in organic agriculture not only with the DOAE, but also the FAO and other agencies.

**Mr. Pierre Ferrand**, Regional Coordinator, Agroecology Learn Alliance in South East Asia (ALiSEA) and Mekong, Regional Office, Vientiane, LAOS

Mr. Pierre Ferrand, who works for GRET, a French NGO GRET while based in Laos, coordinates the regional initiative called the Agroecology Learning Alliance in South East Asia (ALiSEA). This platform aims to combine all knowledge and support the generation of knowledge in regards to agroecology, and to increase the credibility and viability of the agroecological movement across the region. Mr. Ferrand discussed the findings from a comparative analysis of the four CLMV countries (Cambodia, Laos, Myanmar and Vietnam), which was conducted between 2015 and 2016 and intended to map agroecology stakeholders and review the agricultural policy frameworks in the four national studies. The findings indicated changes in agroecology frameworks could be characterized into three periods over the past 30 to 40 years. The first period was an early phase of subsistence-based integrated farming, which combined crops, livestock and trees in complex landscape mosaics. These agricultural practices relied on strong ecological knowledge built

over many generations. However, starting from the 1980s, shifting cultivation largely vanished due to increased population pressure and government policies, in which temporary land use was converted to permanent use and focused on increasing production and productivity for food security and export to the world market.

In the second stage, all four countries have engaged in a process of “modernization” of agriculture by applying Green Revolution agricultural practices, including mono-cropping, the use of hybrid seeds, and the intensive use of chemical inputs. These practices have been promoted through public policies, while private fertilizer and pesticide companies were established to and connected to farmers. These practices have led to substantial impacts on the environment, long-term sustainability, and human health. Beginning in the early 2000s, the transition to the third stage reflected a move towards sustainable agriculture and modern agroecology. These initiatives were largely pushed by national and international NGOs as part of a global movement that spread across the region. Since then, sustainability has been climbing up the political agenda and agroecological principles have been progressively included into public policies in the CLMV countries to varying degrees and paces. Vietnam was the first country of the four to adopt agroecological policies in the late 1990s after confronting consequences from the Green Revolution and the end of subsidized chemical input supplies. Myanmar was the latest among the four to address sustainable farming in the 2010s following the country’s opening. In a response to the growing awareness of policymakers about the negative impacts of the Green Revolution model, the third stage emerged as a shift towards sustainable agriculture and agroecology. Other salient factors facilitated this shift in the third stage, including the influence of international organizations (like the FAO), research centers, donors, CSOs and the private sector, the impact of climate change and the need for adaptation (which became a priority for the CLMV countries), and the rising market opportunities for safer and organic products combined with consumers’ growing concern over food safety.

The project also identified the different levels of agroecological inclusion in public policies across the region. The first level (as evident in the case of Cambodia and Lao PDR) is the inclusion of sustainable agriculture principles in the framework documents outlining national strategies and policies for agriculture. These documents showed an awareness of negative impacts and the limitations of conventional agricultural model based on the Green Revolution packages, and a willingness to promote a more sustainable form of agriculture. The second level is the implementation of projects and programs for specific territories, mostly led by public institutions with technical and financial support from international institutions and donors. These projects have contributed to greater government awareness about the need for more conducive policies for sustainable agriculture. This development has been the case in Myanmar, Cambodia and Vietnam (where the FAO has widely supported IPM) and in Lao PDR and Cambodia (with CA supported by the French government and CIRAD). The third and last level is the effective integration of sustainable issues and agroecological principles in specific policies and regulations. These include OA standards in Laos, SRI policy in Cambodia, IMP or VAC in Vietnam, and Community forestry and AF in Myanmar. However, the policies show limited impact due to the often limited and weak implementation. In some cases, more engagement and more efficiency was found at the sub-national level than the national level, such as in Vietnam where the SRI has been mostly promoted through provincial level authorities.

The project also found several common hindrances to promoting agroecology across the region. The challenges include conventional intensification practices, which are based on intensive use of chemical inputs and specialization, and are still the preferred method for governments to increase production and exports. In addition, agroecology is hindered by the lack of regulation and control over chemical pesticides, owing to intensive advertising campaigns from agrochemical companies and the illegal importation of prohibited pesticides that are sold at low cost to farmers. Laws on foreign investments, such as in the case of Lao PDR, and on land concessions as in the case of Cambodia, largely promote cash crops and other practices that are contradictory to agroecological principles. Lastly, a major hindrance remains silo government structures, in

which multiple ministries oversee the crosscutting issues related to agroecology, which consequently disfavors coordination and effective policymaking.

In concluding, Mr. Ferrand synthesized the study's findings for the region, and the CLMV countries in particular. Agricultural policies in the region have increasingly integrated some agroecological principles over the past decade, but public policies and regulations continue to mainly promote Green Revolution packages. In order to more efficiently promote agroecological principles in agricultural policies, a coordinated and regional approach is needed to transition the whole agricultural sector towards agroecological policies at the ASEAN level. In order to build capacities to enable a transition to occur, agroecological principles should be fully integrated in relevant curriculums in basic educational systems, technical vocational education and trainings, agriculture universities and technical colleges. It also entails reviewing the National Extension Approach to support the shift from Green Revolution packages to agroecological principles. Furthermore, consumers' involvement needs to increase its influence on public policies, in light of the growing concern among consumers over the safety of agriculture products. Lastly, more emphasis should be placed on the "green economy" and on the market opportunities offered by organic products and safer agroecological products at the regional level.

**Dr. Virginia Cardenas**, Global Forum of Rural Advisory Services (CFRAS), Coordinator, Asia-Pacific; and Dean of College of Public Affairs, University of the Philippines Los Bãnos

Dr. Virginia Cardenas presented on extension and rural services from the perspective of the Global Forum of Rural Advisor Services (CFRAS), and the role of universities, local and national governments, NGOs, and other extension service providers in facilitating rapid inclusive rural development in the region. According to Dr. Cardenas, a certain reality that must be taken into account in the region, as family farms dominate the agricultural landscape and small farmers in particular hold much of the responsibility for food supply. Furthermore, growing urbanization has resulted in changing eating patterns, placing new pressures on the agricultural sector's ability to respond and will require new strategies in extension. Extension services must also be evaluated in light of the reality that the provision of pluralistic, demand-driven, and market-oriented agriculture in a decentralized system was found to be weak and unable to demonstrate that it has a sufficient impact. This finding has resulted in the decline of extension, particularly in terms of financial support. However, extension is currently back on the agenda of international donors and organizations. As a response to this change, the GFRAS was established in 2010 (after a meeting of international extension efforts) to provide advocacy and leadership on pluralistic and demand-driven rural advisory services for sustainable development. It consists of 15 regional extension networks, serviced by APIRAS; however, there is currently no organized group to represent Southeast Asia, although there is an effort currently underway to organize Southeast Asia; however, this absence means that some countries like Malaysia, Singapore, and Brunei are less visible in GFRAS' extension networks.

While it does not work directly on organic agriculture, GFRAS is an advocate of sustainable development and promotes advisory services in organic agriculture. APIRAS is also working to strengthen extension and rural advisory services support for small-hold farmers, focusing on capacity development, knowledge management, and policy dialogue (currently three countries, Bangladesh, Fiji, and the Philippines). Among its initiatives, GFRAS has developed the New Extensionist, which aims to adapt extension services to new problems and to respond to pluralistic, market-driven agriculture. The New Extensionist has created a new learning kit that universities can utilize and that are aimed at enhancing extension in training programs. The New Extensionist Learning Kit consists of 15 modules with various learning materials and is currently in its pre-test stage, which she hopes ASEAN countries can contribute to in its development.

Dr. Cardenas concluded by emphasizing the need for an extension research agenda that would dispel outdated notions related to technology transfer. She contended that extension-research should focus on the management of information and institutions involved in extension, with attention to organizational forms,

structures, and methods. Dr. Cardenas also acknowledged the reality in which extension can be financially supported by different sources, such as local or national governments, or through international donors. As such, there is a particular need for more comprehensive understanding of governance in order to lead for greater integration of local, national, and global institutions. In concluding, Dr. Cardenas wanted to address the issue of networking as an ongoing challenge. Given that networking has been accepted as a form of governance, issues and debates remain in relation to networks as structures, firms' strategies to apply, as well as financing and sustainability. As such, these are the current issues that GRFAS and APIRAS have encountered and must address.

**Ms. Martina Spisiakova**, Knowledge Management Coordinator, Asia-Pacific Association of Agricultural Research Institutions (APAARI), Bangkok, Thailand

Ms. Martina Spisiakova discussed the role of networks in reducing the research-extension gap for sustainable agricultural development. These gaps in research-extension occurred in part because the research-extension model is no longer a one-way communication from the research center to the extension agency, followed by knowledge transfer to the beneficiary. The current model is much more complicated, requiring interactive communication among multiple actors, such as the private sector, NGOs and consumers. An environment of engagement is needed to build trust in relationships. Moreover, there remains a challenge in translating research outcomes into higher productivity and improved food security, as technologies should not only be cost-effective, but also easily understood by farmers. Compounding this challenge, there remains a lack of understanding among extension agents. The efficiency and cost-effectiveness of the delivery of extension services needs to be examined more closely, as ICT does not benefit everyone. There also continues to be a lack of data and especially of quality data, and huge gaps remains in capacity. Additional challenges include budget deficits, privatization of agricultural extension, decentralization, and limited collaboration. Amidst these challenges are also opportunities to reduce the research-extension gaps. These opportunities include:

- 1) Adapting to a new research-extension environment
  - Paradigm shift from input-intensive to knowledge-intensive agriculture, agriculture as an industry not an issue of subsistence, treating farmers as clients
- 2) Creating space for research-extension interface
  - Extension and outreach can be built into research projects to ensure a research-to-adoption continuum instead of research and extension working as separate entities.
- 3) Engaging in farmers' fields
  - Researchers/students to be extension agents, better assess farmers' needs and socioeconomic constraints, and to undertake adaptive and applied research.
- 4) Enhancing quality of extension services
  - Capacity development - the knowledge of extension agents must keep ahead of that of their clientele
  - Focus on knowledge brokering
- 5) Mobilizing resources
  - Innovative funding mechanisms
  - Advocacy for increased public and private investment in research and extension
- 6) Engaging with other stakeholders
  - Private sector, NGOs
  - Advocacy, sharing of knowledge and new ideas, market analysis
- 7) Improving the efficiency and cost-effectiveness of the delivery of extension services through ICT
  - Participation in developing and using ICT tools and models
  - Training farmers in the use of ICT, thereby improving farmers' access to information, collection of data, communication
- 8) Supporting transformative learning and youth leadership development
  - Not just academic skills, but intellectual, spiritual and emotional development to meet the needs of youth today

- Integration of agricultural education at all levels incl. school
  - Making research profession gender affirmative
- 9) Engaging in policy advocacy
- Help governments understand the needs of the research-extension system
- 10) Documenting evidence
- Initiate studies on the impact of research and extension on agricultural growth
- 11) Participating in networks (regional, global)
- Opportunities for collaboration, knowledge sharing, learning

In light of Dr. Nelles's previous comment on the importance of linking up to existing networks, Ms. Spisiakova introduced the Asia Pacific Agricultural Extension and Outreach Network (APEON), founded in 2014 by UNCAPSA, FAO, and APAARI. It aims to enhance agricultural research-extension linkages to harness research results for the benefit of small farmers. This network includes diverse stakeholders, including government, international/regional organizations, CSOs (NGOs) and the private sector involved in rural advisory services, regulatory actions, ICT application and other extension services (as well as universities). There are still opportunities to link APEON with existing networks, including FRAS, GFAR, APAARI, and FARA. Ms. Spisiakova then introduced the Asia-Pacific Association of Agricultural Research Institutions (APAARI), which aims to strengthen research and innovations for sustainable development in Asia and the Pacific. In its membership of 68 members, only 6 are currently from Southeast Asia, which APAARI is currently working to include more in its regional outreach. Asian Institute of Technology (Thailand), and the University Putra Malaysia (Malaysia) are the two higher education institutions currently members in APAARI. In its role of supporting university-based education and research extension system, APPARI is focused on the four key areas: knowledge management, partnership and networking, capacity development, and advocacy. Activities in these four areas include:

- 1) Knowledge Management
  - Dissemination of research findings
  - Access and improved data for analysis and knowledge creation (e.g. IFPRI-ASTI project)
  - Access to knowledge-sharing and learning opportunities (through network resources)
  - Facilitation of university participation/engagement in policy dialogue and expert consultations
  - Access to ICT tools for young researchers for knowledge sharing and peer assistance
- 2) Partnership and Networking
  - Facilitation of technical cooperation for knowledge generation and technology transfer
  - Facilitation of engagement of universities in existing agri-food networks of APAARI partners
  - Facilitation of networking and collaboration between universities and other national, regional and global development partners
  - Inclusion of university talents in the databases on human capacity to enhance the sharing of talent pool in the region
  - Capacity development of university leaders and research managers in monitoring, evaluation and impact pathway analysis
  - Development of skills and capacities of researchers in knowledge management, 'translational development', advocacy
  - Inclusion of university representatives in other regional and global capacity development programmes, including technical areas
- 3) Advocacy
  - Assessment of return from investment in education, research and extension to inform policy
  - Using the data to attract investment in agricultural education
  - Improvement of the recognition of the role of agri-food research and innovation as a major driver of socio-economic development
  - Improvement of the voice and engagement of young researchers (women especially) in innovation processes, utilizing their ideas

## Question & Answer

Dr. Helmi observed that across the presentations, a key point being made is that there exists a learning-action gap at the ground level. However, without real action at the field level, the objectives of organic farming and agroecological farming are difficult to achieve. Dr. Helmi asked how extension practitioners, academics, and others engaged in resource production could move beyond discourse and frameworks and facilitate real action at the local level. Dr. Aziz asked a similar question following Dr. Helmi's, asking "How do we make it happen at the farmer field level?"

Mr. Ferrand responded by providing some contextualization for the AliSEA project, whose purpose was to create a regional platform to document agroecological practices after finding there in practice, there were thousands of initiatives happening at the field level. According to Mr. Ferrand, the problem was not that there were not initiatives occurring, but that there was no connection between these initiatives and that there was a lack of knowledge from policymakers in regards to what was happening at the field level. The purpose of the project was thus to map all these initiatives, give them visibility, and create a critical mass effect, such that policymakers could not overlook the reality of there being an alternative way to produce food, and to recognize and see those small-holders who have already engaged in the shift to new practices. According to Mr. Ferrand, the problem is that there needs to be more support to mainstream these agroecological movements and to render them more visible and credible. It is precisely this need for more support that highlights the important role of science and researchers to produce evidence-based reports in order to create enough credibility such that they can engage effectively with policymakers.

In response to the question of "how to make real action happen," Dr. Cardenas said that we first needed to look at the policy issues that govern the implementation of these programs. From the experience in the Philippines, the issues of institutions and governance are an important constraint on extension activities and their impact in the field. These issues include that of cost-sharing between local and national governments, as well as defining the roles and responsibilities to ensure a smooth implementation of extension programs. Upscaling extension programs is also another issue, but there is currently not the policy or framework available on how to do so, again underscoring the need to tackle policy issues related to the implementation of these programs among local governments.

Dr. Nelles also agreed with Dr. Helmi on the challenges at the field level. However, he noted that Dr. Helmi is an example of a researcher with good projects already in place at the field level, not just at an action level, but also with local buy-in from stakeholders like the local government as well. Dr. Nelles says the bigger question at stake is not just about policy, but policy coherence. As his work with Dr. Supawan on the extension system in Thailand revealed, the issue of agro-chemical dependency and the use of pesticides exemplifies this problem of coherence, where one department dismisses this agriculture-related issue, saying it is the jurisdiction of another department, and so on. According to Dr. Nelles, the problem is also one of control and monitoring, where one department funds a program that is destructive to another department's activities for organic agriculture, and so forth. Therefore, the problem is about policy coherence, alongside field action as well, in which there is a pressing need for more policy dialogue. Adding to this comment, Ms. Spisiakova noted that APAARI creates space for this policy dialogue to take place, with different change agents together, including policymakers, researchers, extension workers, and especially now, NGOs who work directly with farmers. APAARI aims to bring stakeholders together, as encourages participants to engage with APAARI to enable and facilitate policy dialogue. In concluding the first panel session, Dr. Aziz summarized that agricultural policies need an enabling environment, requiring infrastructure, policy, and institutions governed by rules and regulations, and noted that APAARI, as one such example, has been contributing to these efforts. Dr. Aziz also ended by drawing attention to the role of technology, and the need to capitalize on technology (as it has already been done in the medical industry) in the realm of agriculture and extension services.

## SESSION TWO:

### National Case Studies (1), Focal Point Teams – MALAYASIA, MYANMAR, and THAILAND

**MODERATOR & RESPONDENT:** Dr. Narumon Hinshiranan, Representative of the Director, Chulalongkorn University Social Research Institute (CUSRI)

Dr. Narumon put forth an observation about farming in Thailand, which she says it not a single occupation, but is actually quite diversified in occupations and sub-occupations. From the perspective social science, Dr. Narumon noted that one might hear terms such as “entrepreneurial farmers”, “cosmopolitan farmers,” and “cosmopolitan villages,” as many farmers go abroad to work for a period of time. From this, Dr. Narumon suggests that farmer’s extension is not limited to the form agriculture only, but also has potential to connect to other sectors, such as agro-tourism, where farmers could have a potential involvement in tourism by drawing upon farmers’ livelihoods, occupations and settings to attract tourists.

**MALAYSIA: Dr. Norsida Man,** Associate Professor, Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia (UPM)

As a paddy farmer and academic herself, Dr. Norsida presented on the role of Universiti Putra Malaysia in agroecological and organic agriculture education. In Malaysia, Dr. Norsida mentioned that extension services are usually rendered by various actors (public, private, NGOs and universities) provide extension services and activities, whose scope goes beyond transferring technologies to farmers. As a leading Malaysian higher education institution, UPM is at the forefront of providing agricultural education, conducting research and advising farming communities on adopting novel agricultural technologies through direct or indirect consultations.

Through a month-long project, Dr. Norsida evaluated the current status of Malaysian extension services, with sources of information collected from the internet, UPM library resources, and relevant departments of the university. Further information was generated through detailed discussions with experts. The findings from this project revealed that there are numerous higher educational institutions offering courses related to agro-ecology, organic farming, and agricultural extension. They have generally adapted to the need and demand of various actors at the national and international levels. Furthermore, UPM is not only active in providing education on agro-ecology and organic farming, but it also focuses its efforts on training students about agricultural extension, rural advancement, and community development so that students can become agents of change in their professional lives. Among the relevant departments at UPM, the Department of Agriculture Technology, Faculty of Agriculture was singled out as particularly active in the discipline of agricultural extension and rural advisory services. Other activities in addition to teaching at the university include research conduction, supervision, and the publication of research on topics like organic farming to consumers’ intention to purchase organic foods, adoption factors, marketing aspects, and extension services. There has been a notable trend among academics towards recognizing the importance of agro-ecology and organic farming.

Furthermore, UPM’s agriculture extension services include different research farms and research units to conduct in vivo and in vitro based research. Among its educational programs, there is an organic unit as well. Children education programs were also conducted to introduce youth to organic farming and organic food, and eco-friendly agriculture, and to be equipped with knowledge about chemical and pesticide-free farming. UPM has also been in projects like composting to bolster agro-ecology and organic farming, and on organic production of livestock. These efforts reveal that UPM think tanks are advocates of agro-ecology and organic farming approaches. Among its extension services, one that is of note is the University Community Transformation Center (UCTC), which uses moving vehicles and mobile advisory and consultancy services

to train local and international people. The vehicles are equipped with a mini-lab and diagnosis facility, are staffed by various experts during the field mission. The university is thus transferring knowledge and reaching out to farmers through the PUTRA Outreach Clinic and PUTRA Outreach (Extension) Bus. Lastly, in the SWOT analysis, Dr. Norsida found that the major weakness is the issue of the financial budget. She concluded that to tackle this area, there is a need for government and policymakers to provide financial assistance in order to strengthen the university's extension services. Dr. Norsida also put forth recommendations for research that better quantifies and documents the impact of extension services and its success rates of policy execution, as well making more clear the distinction between extension service providers' advocating versus inhibiting roles.

**MYANMAR: Dr. Nyein Nyein Htwe**, Agricultural Extension Specialist, Yezin Agricultural Univeristy (YAU), Nay Pyi Taw; **Dr. Htet Kyu**, ALiSEA National Coordinator for Myanmar

Dr. Nyein Nyein Htwe presented on university-based farmer extension service in Myanmar, specifically at Yezin Agricultural University (YAU), which was founded in 1924 as "Burma Agricultural College and Research Institute." Having not offered extension education as a subject for 60 years, YAU began promoting agricultural extension as a subject for teaching in undergraduate and post-graduate classes within agronomy in the year 1985. In the near future, the Agricultural Extension Department will be established to oversee the teaching and production of agriculturists with a background in extension education.

YAU has three main functions: training, research, and extension. Most students start their curriculum engaging in extension activities. Institutionally, the current curriculum is in the process of revision to be in line with other agricultural universities, with a focus on biotechnology application to agriculture, food science, technology and agricultural extension. In 2016, YAU received support through the Crawford fellowship for the development of its agricultural extension curriculum, and the SEARCA for 2016 to 2017. In addition to these fellowships, YAU holds academic-farmer research partnerships with several organizations, including JICA, ACIAR, ACARE, SAPA, and Action Aid. Currently, YAU places more emphasis on teaching and training of YAU graduates as extension agents rather than directly deal with agricultural production and farmers. Extension activities at YAU include training farmers in crop management, conducting on-farm trials and broadcasting the farmers' channel.

In discussing opportunities, challenges, and needs, Dr. Nyein Nyein Htwe noted that one problem facing farmers is that they cannot get a high income from organic farming, as this requires a market and certification for organic products. Other challenges include that there is no agricultural extension department, and an insufficient number of highly qualified experts who specialize in agricultural extension and agroecology. There is also a lack of awareness of university-based farmer extension services by the teaching staff at YAU, as well as a need to improve and upgrade infrastructure, acquire lab equipment and facilities, and organize research team across different disciplines. As for opportunities, these include the set-up of a new organization, the creation of outreach campus across agro-ecology zones, collaboration with international and national organizations, the Broadcasting Farmer Channel as a means to disseminate agro-ecological practices to farmers, and the establishment of village knowledge centers. There is a need for curriculum development in different agro-ecological zones, which incorporates in-country training, short-term trainings, long-term trainings (i.e. post graduate courses), as well as for stronger laboratory equipment and skillful technicians. With the need for upgrading its teaching, research and extension activities and capacity building among YAU staff, YAU thus continues to look for opportunities for further support at both an international and regional level.

Dr. Htet Kyu of AliSEA Myanmar presented a desk review of sources of agricultural knowledge for Myanmar farmers. In his analysis, there are three distinct period of agricultural knowledge that corresponds to the changing governance structure in Myanmar. In the period before 1987, when agricultural inputs were fully subsidized, the main sources of agricultural knowledge came from government extension services. In

the second period from 1988 to 2002, inputs were partially subsidized, and the main stakeholder in agriculture was the military government. During this period, the private sector also became involved. Subsequently, in the third period that began in 2003 and continues to the present, the group of stakeholders expanded to include CSOs, NGOs, and farmers associations in the production of knowledge in agriculture. To show the breadth in the current production of knowledge, Dr. Htet Kyu showed the many publications on the topic of agriculture, such as books, newsletters, and journals, currently being produced in Myanmar.

Dr. Htet Kyu also displayed data on the registered pesticides and fertilizers in Myanmar up until today, the agricultural support NGOs (agricultural development NGOs, capacity building NGOs, and agriculture research NGOs) as of 2017 that are currently operating in Myanmar, and member-based farmers' organizations. Other sources for agricultural knowledge include websites, such as those from the Myanmar government, Green Way Myanmar, and The Farmer Myanmar, as well as Mobile Agri-Apps (including YouTube and Facebook, the latter of which is especially fond among farmers with over 120 Facebook accounts on agricultural production techniques alone). In addition, there are various radio channels and TV stations geared towards distributing agricultural knowledge to farmers.

In conclusion, agricultural knowledge comes from multiple sources, including peer farmers and their ancestors (or ancestral knowledge), extension agents and YAU and SAI graduates working in the Department of Agriculture, NGOs, and farmers' organizations, as well as through the media, in the form of books, journals, TV, radio programs, and social media platforms. According to Dr. Htet Kyu, these sources have shaped farmers' general mindset to hold a positive outlook on modern agriculture, and particularly privileging its corresponding processes of mechanization, HYV, biotechnology, and chemical inputs, as a way to produce higher yields and crop protection from pest and disease. To inform strategy, more attention should thus be paid to the influence these sources of knowledge can have on the farmers' mindset, in addition to other efforts such as improving educational curriculums at the university and primary school levels to promote agroecological practices. Dr. Htet Kyu ended with a note on the trend in the diffusion of agricultural knowledge over time, which has moved from being highly technical to more aesthetically-pleasing (for instance, Rachel Carson's *Silent Spring*), and as a means forward in the knowledge production of agriculture.

**THAILAND: Dr. Supawan Visetnoi**, Lecturer, Chulalongkorn University School of Agricultural Resources (CUSAR), Bangkok; **Dr. Somkid Kaewtip**, Maejo University, Thailand.

Dr. Supawan presented research findings and future recommendations from a SIANI and HESA-supported study on higher education and agricultural extension services in Thailand. During the course of the project, Dr. Supawan found that there was a discussion around definitions, namely how to define agroecology. After national consultations, there was also a discussion that emerged about issues within agricultural extensions services in relation to the university. Her and her team's findings further showed lots of gaps and lack of linkages. As Dr. Nelles mentioned about last year's project with SIANI on higher education on sustainable agriculture, the project found that there was inadequate access on social, ecological, and socioeconomic analyses or equity issues, while much research and teaching tended to focus on crop production. There is also a need not only for adequate documentation of courses and programs taught to students, but also to enhance academic services, especially on sustainable agriculture, and to also provide sufficient tools for universities and communities. Dr. Supawan also highlighted the need to train government extension officials and staff and to provide them with up-to-date information and knowledge that is necessary to help farmers.

As one of the main contributors to the country's GDP, the agricultural sector to Thailand engages approximately 38% of the total population. The majority of Thai farmers live in rural areas, and they are often associated with problems of poverty. One of the contributing factors to farmers' poverty is their lack of appropriate knowledge from an efficient production and farming. Therefore, the Agricultural Extension System and Services (AESS), made up of government (DOAE has officials in every province), the private sector, and higher educational institutes (120 HEIs), is required to help farmers. In the latter, there are

currently more than 120 HEIs in Thailand, which about 52 having a program or curriculum in agriculture, although not all have courses in extension. Given the mandate for extension services, some universities have to do their own extension services, as there is sometimes an existing gap and absence of linkages between higher education institutions and government units in which universities must conduct their own extension services ad hoc.

The findings from the First National consultation in August 2016 showed a gap between educational institutes and the government's agricultural extension department, segregation of knowledge and expertise (for instance, due to discipline divisions that inhibit integration), and a fragmented centralized public sector. There needs a systemic channel between governments and educational institutes, and link for researchers to apply their knowledge or research output to farmers directly. Universities currently perform their own outreach, or area-based agricultural systems, which are usually based on strategy and current projects. Regarding the situation of educational institutes, Dr. Supawan also found that the number of students enrolling in agricultural departments is decreasing, while there is a change in structure and content of agricultural department courses, in which students find it difficult to integrate knowledge and deliver it to farmers. Another problem is the lack of communicative skills. Among its drawbacks, project-driven extension services are largely driven by budgets, and less by farmers' needs, while also lacking continuing and being not sustainable. There is also a tendency for project-driven extension services to lack follow-up and benefit very small groups of beneficiaries. As extension services in Thailand's HEIs also tend to be area-based and dependent on case studies and the policies of the university.

At Chulalongkorn (where extension services are called "academic services"), the main mission is to organize trainings, seminars, and some technology transfer for government and private sectors. It currently has two Center of Learning Network for the Region (CLNR), located in Saraburi and Nan Provinces. These are examples of local, area-based academic services. In the learning center located in Nan Province, the undergraduate program, mostly composed of students from rural areas, is geared towards generating new generation farmers with management skills and volunteer minds. The program focuses on community rural agriculture and entrepreneurship, geared not at industry, but rather at encouraging students and graduates to return to serve in their communities. There is an emphasis on multi-disciplinary education, so that graduates have well-rounded knowledge on areas of production, environment and safety, processing, logistics and packaging, and commercial and trade. Dr. Supawan says the program aims to become problem-based, to meet people's need, to become more sustainable and continuous, and more suitable for the locals.

For future research and recommendations, Dr. Supawan called on the following areas:

- Promotion of community or area-based research and participatory action research (PAR), enhancement of community engagement research.
- Create mean or channel that allow better cooperation between researchers and governmental units to meet the needs of farmers
- Setting up a national center of excellence for sustainable agriculture to gather experts and scholars for accumulation of knowledge for farmers and the promotion of AESS to cover the whole value chain.
- More study is needed to better understand specific programs, courses and extension services Research on re-assessing curriculum, program and training in extension program in Thai universities
- National agricultural, agricultural education and extension services planning should be more evidence-based, small-farmer friendly and supportive of agro-ecological and organic agriculture (OA) alternatives to conventional farming.

### ***Dr. Somkid Kaewtip***

Dr. Somkid Kaewtip noted the problem of the brain drain effect in agriculture, as graduates move from rural communities to cities in order to work for industries. Dr. Somkid says the big question is: How to inspire students after they graduate to go back to their hometowns or villages and be able to live, work, and develop

their communities? Dr. Somkid showed a videoclip of a student who after graduation, returned to his community in Chiang Mai, a video made to inspire the next generation of students to go back home as well. The main concept in the video is that the universities have to educate students' after they graduate, meaning universities must continue to work with graduates to train them.

In a community-based project, Dr. Somkid's university organized and contacted grant agencies and organized NGOs with expertise in training in rural communities and villages. This project provided some support for students to work in their communities. It was a successful case in stopping chemical use on strawberries, by demonstrating that organic strawberries were more profitable, given the significant market price difference between organic strawberries (200 baht) and chemical-use strawberries (50 baht). In regards to definitions and approaches, Dr. Somkid suggested that agro-ecology should be defined as "wisdom ecology," and that an "organic lens" does not only apply to the chemical composition, but also to the development of "organic person" or "organic intellectuals," which are needed in this sector. As agricultural departments were established at universities during the Green Revolution, Dr. Somkid says there must also be a "Yellow Revolution," the color yellow meaning "wise" or "wisdom" or "wealth" that together means a revolution for the well-being for farmers. Dr. Somkid concluded that the approach in extension is insufficient, as it must be accompanied by empowerment. Moreover, university centers are not enough, as there needs to a curriculum or program that is student or farmer-centered. Lastly, the Dr. Somkid argued that the sectoral approach should be replaced by, as Dr. Supawan said, a more area-based, or community-based approach to extension services.

As moderator, Dr. Narumon concluded the panel discussion, noting a similarity in presentations between the indigenous case in northern Thailand and the case of farmers in Malaysia. She contended that it is important to also look at marginalized and populations, not just mainstream farmers, as these targeted populations do not provide an adequate lens of analysis. Instead, researchers should also pay attention to marginalized populations and to see how to they can make extension services accessible and available to different populations.

### **SESSION THREE:**

#### **National Case Studies (2) Focal Point Teams CAMBODIA, LAOS and VIETNAM**

**MODERATOR & RESPONDENT: Prof. Dr. Surichai Wun’Gaeo**, Director, Center for Peace and Conflict Studies (CPCS), Chulalongkorn University and Rural Sociologist.

**CAMBODIA: Dr. Buntong Borarin**, Vice-Dean of Faculty of Agro-Industry, Royal University of Agriculture (RUA) Phnom Penh, CAMBODIA and **Mr. Chun Nimul**, Lecturer, Svay Rieng University

#### **Sustainable Agricultural Research and Extension in Cambodian Higher Education Institutions**

##### General Context

The estimated population of households with agricultural holdings is 8.5 millions out the 15 millions farmers, and the number of households listed with household agricultural holdings is 2.1 millions. The total area of all household agricultural holdings is 3.3 million hectares. The average area for all households is very small which is only 1.55 hectares per household. The support of government on the agricultural extension is quite low which is only 30% of those 2.1 million households. 52% of households reported that they have heard about the agriculture information from the radio. The problem is that the radio broadcasting is not very good. It seems to be more one-way information. We do not have much interaction between the farmers and the media, which is the problem of the radio. However, this source of information covers the majority of the information that the farmers receive. At the time of the survey, 16% of the households face a problem of food insecurity and shortages. 80% of the agricultural households experience food insecurity and shortages because of low crop yields, which is a very high number. Also, nearly 90% to have to find their way to solve the problem from food insecurity such as primary solution of borrowing money, securing food on credit or as advance payment for manual labor to be undertaken at the time of the next harvest of the total households experienced food insecurity.

The contribution of agriculture to the GDP is high, and it accounts to 28% as of 2016. 41% of workers are involved in the agricultural sector. The annual growth for agriculture in the country 6% since 2004 to 2012, but the rate of growth of the sector has been very slow since 2013 only 0.2% which implies that the level of growth seems to be stable now and will soon be decreasing. However, even though Cambodia is an agricultural country, we still import a lot of vegetables and agricultural products from other countries. In the year 2015, we already imported \$100 million vegetables. In 2014, it already imports 200 tons of vegetables from Vietnam per day, but this is not an official statistic. This amount is quite large compared to the size of the country and the fact that Cambodia is also an agricultural country.

##### Agricultural Research and Extension

Looking at the agricultural research and extension in Cambodia, the government recently formulated a new strategy, which was finalized in 2015. The implementation has been recently started, and its policies are based on linkage mechanisms among farmers, agricultural research, and agricultural extension in order to produce strong research-extension-farmer capacities and linkages, make technologies available, accessible, and adaptable to farmers, create strong information flows among research-extension-farmers, improve productivity and farmers’ income, and improve decision-making among farmers.

The government states that to reach the farmers, there need to be organizations working on research which it have, namely the Cambodian Government Development Institute which plays a major important role in agricultural research, especially rice. This also necessitates role for universities to conduct agricultural research. Regarding the extension, this is the role that mainly applied to department of agricultural extension

and also they have to work with provincial department of agriculture in each province. There are also some other actors that provide some agricultural services such as private sector, NGOs, community-based organizations, and farmers to farmers. However, this is only a concept that has started. Regarding the agricultural extension system, it is undermanned and underfunded. One extension worker might work for 300 households. It is almost impossible to make it effective to cover a large area of land with limited resources. Those extension workers at the local level are also volunteers. The government recruits these extension workers, but their incentives/salaries are quite low. Cambodia currently has very little use of ICT in extension services. Lately, there are some organizations that try to use mobile phones providing technical services and knowledge to farmers. Since the project has recently started, the result has not been out yet.

Since 2005 – 2010, the money allocation or the total budget for the whole country in terms of agricultural research funding was \$2 million per annum. This is mainly supported by international organizations such as International Funding for Agriculture and Development (IFAD), which have many projects, one of which is called “ASPIRE” and is mainly about extension service. There are other sources as well, such as USAIDS or World Bank. NGOs also have a very important role, but the tendency of the fund has decreased gradually as Cambodia moved out of the list of low-income country.

### Agriculture Higher Education Institutions (HEIs)

Cambodia has 121 HEIs across the country, supervised by 16 different ministries. 48 of them are public HEIs in which politically affiliated and supervised by the central government. For example, the president is appointed by the government. The agricultural research in the country is usually based on capacity building not the extension service for farmers. It is usually about building capacity for the HEIs itself and not for the farmers. Recently, there are 7 HEIs that work on agricultural-related research and only one that is specialize in the agriculture, which is the Royal University of Agriculture. Cambodia has 220,000 students enrolled in HEIs but only 4% are in agriculture. The country has the lowest number of full-time agricultural researcher compared to other countries in Asia. Many laboratories and equipment are limited as well.

### Research Projects

The projects receive funding for specific activities and serving the purposes of research and development (R&D) from international funding agencies, university, as well as student contribution. No government fund is reported. No agro-ecological research is reported. However, there are some strengths and opportunities. Regarding the strengths; infrastructure, facilities and locations are appropriate for agricultural research extension. There are also free human resources in contribution to fieldwork. Existing and newly qualified graduates are interested to serve the services at university level. There has also been an increase in the number of graduate and undergraduate enrollment, and a strong connection to rural areas via students as agriculture students mainly live in the rural area. Regarding opportunities, the country has international support in terms of developing and implementing agricultural projects. There is also a possibility in requesting for the implementation of large-scale projects from the government donor funded projects, in addition to the possibility in connecting to private companies to operate agriculture technological testing and studies. Moreover, using small amount of budget by contribution of students and allocation of HEIs’ fund could be an option.

### Conclusion and Recommendations

Despite many issues, Cambodia is confident in the future of agricultural research and extension for the farmers with possible options in investment and implementation. However, there should be collaboration among HEIs in the promotion of agriculture sector or more specialized in agriculture related field. A road map should also be developed as well as guidelines in agricultural research and extension, particularly for HEIs. Moreover, the country should strengthen international collaboration and implementation of joint

research projects. It should also allocate or invest more in terms of physical facilities for scientific research and engage more with the policy level of the government to attract more implementation and resource allocation.

**LAOS: Dr. Saythong Vilayvong**, Office of Research and Service, National University of Laos (NUOL)

### **Mapping and Assessing University-based Farmer Extension Services in Laos through an Agro-ecological/organic Lens**

The challenge of the higher education in Laos is that the agricultural sector does not have any support from the higher education institutions in terms of research on sustainable agriculture including knowledge, expertise, and technical support to train students and farmers. This study aims to understand the role of universities for farmer extension services and their contribution to ecologically sustainable agriculture and rural development. In terms of research methodology, the research adopts qualitative method and uses SWOT analysis in which the outputs are (1) policy framework relate to agro-ecology (2) General state of the extension system (3) the role of university in terms of agro-ecology and (4) agro-ecological/organic specific in Lao PDR.

#### Policy Framework related to Agro-Ecology

The policies, strategies, laws and regulations regarding sustainable agriculture are clearly formulated by the Ministry of Agriculture and Forestry (MAF) under the principles of “sustainable resource utilization and land-use planning.” The “Clean, Safe and Sustainable Agriculture” is integrated in the strategy for agriculture sector (2017 – 2025) and the vision of MAF which aims to be reached by 2030.

#### General State of the Agriculture Extension System in Laos

The overall extension system in Laos is implemented by the MAF. Department of Agriculture Extension and Cooperatives (DAEC) under the MAF is the main actor for implementing the extension system in which is distinguished in chronological timeline as follows;

- **1975 – 1985:** Agriculture Cooperative (or Sahakhorn in a local term)
- **1986 – 2001:** New Economic Mechanism. It was impacted to farmers in 10 years later by 1996. But no extension approach in implementing.
- **2002 – Present:** The Laos Extension Approach (LEA). The LEA consists of 2 fundamental systems which are (1) Government Extension Service (GES) = DAEC + PAFO + DAFO (2) Village Extension Service (VES) = Village authorities + Village Extension Workers (VEW).
- **2013 – 2014:** MAF adapted the Agriculture Cooperative (AC)
- **2017:** The LEA and AC will be formed for activities related to market.

#### University Specific in Laos

There is cooperation between MAF and university to support agro ecology/organic agriculture. The university plays a role on (1) Human resource development (2) Curriculum development (3) Research and extension and (4) Academic service. As Laos has 5 public universities, 4 of them have departments related to agro-ecology.

The National University of Laos, which is under the Ministry of Education and Sports, integrates its agricultural extension unit, consisting of laboratories, farmer fields, and experimental sites, and is administered through the Department of Plant Science, Department of Livestock, and the Department of Rural Economics and Food. The teaching programs to support agricultural extension are as follows: 8 BSc

curriculum (crop production, plant protection, livestock, fishery, agricultural economics and food technology, and veterinary); 3 Master programs (sustainable agriculture resources management, crop science, animal science) and 1 Doctoral program in rural development.

### Agro-ecology/Organic Agriculture Specific in Laos

The organic agricultural concept has been introduced in Laos since 2000 by the Swiss NGO called Helvetas. 2005 CIRAD supported the organic coffee production in the south part, which has spread throughout the country nowadays. There are 2 types of organic producers in Laos which are (1) Certified organic producer and (2) Non-certified organic producer.

Regarding the certified organic producer, there are 90 farmer's groups and 27 companies that have received certification, which represent 1,637 famers and 3,240 hectares. Land for organic agriculture increased by 80% from 2008 to 2015, and having at least 70,000 certified organic producers by 2030 according to the MAF strategy. Currently, 5,000 hectares of coffee is certified by IFOAM Asia & Fair Trade. Laos exports its organic coffee, tea, and rice to the EU, while fresh vegetables and fruits are sold in the domestic markets with about 30 tons.

In terms of the non-certified organic producers, they are mostly supported by NPAs, INGOs, and the international agencies. Among 59 stakeholders that were identified, 50 stakeholders are involved in organic agriculture.

### **SWOT Analysis**

According the SWOT analysis of the extension program, the main strengths are that it has a clear vision and strategy, human resource, teaching & learning programs, and laboratory facilitations. Its opportunities include increasing the linkage between MAF & NUOL, making an assessment of impacts of AES to farmers, increasing research support and disseminating findings, researching the perceptions of students, farmers and faculty regarding the university-based system, and improving the marketing system. Weaknesses were identified as the small gap in the price between conventional and organic products, the higher production costs of organic agriculture, and the lack if impacts assessment of agroecology extension at the grassroots level. The threats include the low association between MAF and NUOL, as well as the limited time for research (20%) compared to teaching (80%) and the absence of a specific research fund for support in agroecology/organic agriculture.

### **Conclusion**

The main actors of agro ecology extension/organic agriculture in Laos are the MAF, development organizations and private sectors with the use of LEA and AC approaches. They provide training, hand coaching, and some production initiative inputs to farmers. FAG, NUOL is the only the higher education institute that have been supporting in agro ecology extension through teaching, training, academic services, and research. They also play a role in improvement of curriculum and laboratory facilitations. There are currently 60 agro-ecological initiatives that have been identified and all of them are involved in organic agriculture.

**VIET NAM: Dr. Pham Van Hoi**, Director, Center of Agricultural Research and Ecological Studies (CARES), Hanoi, Vietnam National University of Agriculture (VNUA)

### **University-based Extension Education and Services in Vietnam**

Dr. Pham strongly believes that agro-ecology farming practices are inevitable to agro-chemical dependent culture. In Vietnam, a number of universities have been providing educational research and services for the last two decades. However, agro-forestry has not been studied and synthesized so far. University-based extension education and services has raised some important question publicly. In this study, Dr. Pham adopted two approaches which are (1) Out of 436 universities and colleges in Vietnam, 16 universities and colleges are having extension and education programs, which became the focal points of this research. Regarding the extension research and services, only two Vietnam less-known universities have made the information from 2012-2016 available on the website for public access. (2) 6 universities were contacted for surveys, and 4 universities responded.

Only 15% of human resources are working on the extension and are in university; this means that the university provided the only human resources for the extension system, but the number of people has been reduced over years. Regarding the university extension service, most universities receive funding from local government and NGOs to conduct research on extension services. The university can provide a wide range of extension service from input to farming plus harvest practices and animal raising. All of these activities have been project-based. In some extension services, private actors play for the cost and remain as researchers at the individual level. All researchers can sell their services to private companies or large-scale famers, receiving payment in exchange. Vietnam's less known university has implemented 725 agro-forestry research projects in which less than 6% was selected to agro-ecology, and universities have implemented 192 agro-factory research projects and less than 7% was selected to ecology. Most of the university projects on agro-ecology are on small scale of agricultural practices on bio-products, utilization, and waste recycling. There were no projects or services working on other types of agro-ecology such as conservative agriculture.

There have been a number of good records on the impacts of universities extension projects, which are already listed in the paper. However, the university extension service is at a very small scale compared to the government's extension system. The number of students enrolling in this program has decreased over the years, because it is very challenging for them to get a job, and they are also weak in skills and cannot work with farmers. The extension has been limited in both number and scale. The university's extension service needs to be institutionalized by the government extension system so that it can receive funding to provide better education to human resources, which will be recruited by government's extension service and provide benefits beyond the system.

**VIET NAM: Dr. Nguyen Thanh Binh**, Mekong Delta Development Research Institute, Can Tho University (MDI-CTU)

### **Agricultural Extension in Vietnam: Current Status and Challenges**

Vietnam has two main agricultural areas, which are the Mekong Delta and the Red River delta, but the Mekong Delta is bigger in terms of agriculture. 66% of the Vietnamese population lives in the rural area, and the sharing of agricultural sector is about 44% of labor source and contributes around 17% of the total GDP. Therefore, agriculture is very important. The government is very interested in the sector. Since the Le Dynasty, the King himself plowed the first furrow for every rice crop in order to encourage farmers. The current government does the same.

However, the agricultural extension was created in 1993, and the current extension system in the country is established at the provincial, district, commune, and village level. Beside the formal agricultural system, there is the private sector that does agricultural extension, such as companies, institutes/universities, mass media, mass organizations, and NGOs. The financial budget for the agricultural extension has been growing very fast during the past twenty years. However, currently the budget has been reduced a bit. Beside the central budget, there is also a local budget that has contributed more than the central budget. In 2015, 77% of the total budget is from the local while the rest 23% is from the central. By sector, the central budget is on crop (50%), livestock (22%), aquaculture (16%), forestry (10%), and processing (2%). By regions, it is surprising to know that the rice production in the Mekong River Delta has a share of nearly 60% of the production while the aquaculture production in the area accounts to nearly 70% of the production. However, the central budget allocation is only 17.5%. This shows an unequal budget allocation among regions.

According to the information received in 2010, the principles of extension are based on farmer needs and governmental orientation. It promotes the role of farmers' participation and has better linkages among the "4 houses" (farmers, government, businessmen, and scientists). It is also based on socialization, Public Private Partnership (PPP), democracy, publicity, participatory monitoring and evaluation, contents, and approaches suitable for each of the agro-ecological zones and groups.

In regards to agricultural extension activities, its activities include training and education, information and advertisement, demonstration and adoption, consultation and services, and international collaboration. Because of the rise in agricultural production, the poverty rate has been reduced. However, there are still key challenges for agricultural extension, including the lack of human resources (the ratio of extension workers to farming households is only 1: 1331), the lack of financial investment (\$1.2 per farming household from central budget), poor linkages and weak coordination, a still largely top-down approach, as well as threats to agriculture (small size, lack of marketing strategy, overuse chemicals, and climate change).

In conclusion, research on agro-ecological farming and better linkages among the "4 Houses" (farmers, government, businessmen, and scientists) should enable greater collaboration with each other to work on this issue.

### **Conclusion of the Session**

The words "undermanned" and "underfund" seem to characterize the current situation of agricultural extension. There is also a policy gap to make the situation more relevant in terms of food security in light of environmental degradation. Therefore, more attention should concern the current policy debate and direction of agricultural extension services. Agricultural extension should also not be limited to within the university, but also as encourage a broader scope to see the education system as a part of the challenge. The last concern is about the partnership between different stakeholders, like the 4 Houses in Vietnam. This should be seen an opportunity and for other countries to learn from this example in order to improve extension services.

## **SESSION FOUR:**

### **National Case Studies (3) Focal Point Teams INDONESIA and PHILIPPINES**

**MODERATOR & RESPONDENT: Dr. Chantana Wungaeo**, Faculty of Political Science, Chulalongkorn University

**INDONESIA: Dr. Siti Amanah**, Bogor Agricultural University (IPB) and National Representative GFRAS, with **Ms. Epsi Euriga**, Faculty/Staff Yogyakarta Agricultural Extension College (STPP Yogyakarta), Ministry of Agriculture

#### **Challenges and Opportunities for Universities-based Agricultural Extension Services from an Agro-ecological/Organic Perspective: The Case of Indonesia**

According to the Law Number 16 of 2006 pertaining to agricultural, fisheries, and forestry extension system, extension service providers are the government, community, and private sector. It focuses on improving the livelihood of the community. There is also a law to drive up productivity. Based on this law, the concept of agricultural extension system has been widely practiced by the farmers. Also, regarding the higher education extension system, there is the Law Number 12 in the year 2012 which states universities are responsible for implementing education, research, and commodity services, which are considered as the three pillars. The agro-ecological practices fall in line with the SDG 2, which is to end hunger.

The issues presented are the challenges in adopting agricultural principles. Farmers still must address many issues, including the effectiveness of the organic farming, the massive use of agro-chemical company, and receiving certification for their products. The farmers are still responsive towards adopting the practice of organic farming with a limited use of chemicals. There are opportunities for universities to accelerate the efficient use of organic farming.

The research objective of the study is to gather the information about the scope of university-based agro-ecological extension services and to analyze strengths, weaknesses, threats, and opportunities for universities managed agro-ecological extension services. There are also a lot of literature reviews. The theoretical review concerns university-based extension services. In 1980s, most of the universities in Indonesia conducted farming research and integrated farming management. There are also many research published on academic journals that are cited in their research.

The researchers conducted a survey online and direct participation. The online survey was sent to 30 email addresses to universities that have agricultural extension service programs. The researchers received 30% of responses, or 21 respondents. They had a 35% response rate for direct participation and also conducted a group discussion to analyze strengths, weaknesses, threats, and opportunities. 20 participants from universities in Indonesia attended. The total respondents in the study were 56 participants.

The researchers also completed 15-questions questionnaires. It consisted of ten closed-ended questions and five opened questions that were used to collect data from university lecturers, graduates and manager of universities. Close-ended questions were designed to gather information about knowledge, perceptions and experiences of the respondents. While the five opened questions was used to explore the type of extension services, quality and effectiveness of agricultural extension system, involvement in agricultural extension, and supporting and inhibiting factors in agro-ecological extension services.

The research was divided into three sections. The first is about profile of the respondents, the second is about activities of the university-based extension from agro-ecological perspective, and third is about SWOT

analysis. In the first section about the profiles of the respondents, the researchers found that men were more involved with the farmers in the field. Regarding the perception, the highest perception was found in regards to supporting universities and their agro-ecological aspects in extension. The very low perception concerned the participation from stakeholders in implementing the extension from an agro-ecological perspective compared to the others. Farmers also face challenges in fully implementing the agro-ecological principles in agriculture given the limitations of land practices. People from the city have enough money to purchase the land, and the farmers are there to save the profits from the owner of the land. Therefore, if the harvest fails, they earn less. This type of situation remains a challenge for extension in agro-ecological or organic agriculture to address.

The researchers also assessed the correlation between extension and agro-ecological farming. There are some correlations, for example, in regards to education. There is also a close group discussion among experts in university extension, which are an important source of strength, as the higher number of exports, the greater number of strengths. The second strength of the university extension is the networks, collaboration, and learning programs. Financial support is still the major limit. In terms of recommendations, the researchers emphasized the need for greater collaboration with each other to promote university-based extension or the students, as they will become the future leaders. There should be more integration between research extension/research and the curriculum. In terms of the threats, chemical industry still plays a dominant role in producing chemicals.

In conclusion, within the scope of the university-based extension services from agro-ecology and organic farmer practices still in Indonesia, most people have built organic farming practices in a way that can be seen as a positive action for conserving the environment as well as improvement quality of human lives. The challenges of farmers are their dependencies on agro-chemicals, market, and climate change. In terms of opportunities, the researchers emphasized the need to collaborate with various organizations in terms of extension, and to provide strategy and infrastructure for farmers to adopt or reviews and adopt principles of agro-ecology in their farming practices. In terms of strategy, the researchers encouraged efforts to recruit students to work in this sector. Lastly, the researchers emphasized the need for financial support to continue positive action at the farmers' level.

**INDONESIA: Dr. Helmi Helmi**, Professor of Agriculture Development, Agribusiness Department, Faculty of Agriculture, Andalas University

## **Integrating Sustainability Factor into University-based Agriculture Extension Services: A Case Study from Indonesia**

### Introduction

In Indonesia, the university is one of the major actors in agricultural extension, in which they associated with three tasks: agricultural education, research and development, and community engagement. Historically, universities have had a significant role in agriculture development in Indonesia, particularly its implementation of rice intensification program, which started in the 1970s. The evolution of the agricultural extension service is that the government continues to provide supports for development and application of technologies and innovation in the context of community development to foster impact of science on society. However, the results in terms of sustainability of benefits were mixed, with some achieving promising results, while others stopped short of expectation. There is consequently a need to look into the sustainability factor in the university-based agriculture extension in Indonesia.

## Agriculture Extension in Indonesia

Law 16/2006 on agriculture extension system is about changing the landscape of agriculture extension in Indonesia. There are 3 types of agriculture extension service provisions, which are:

- (1) by government agencies, bureaucratically driven; tended to be office-based planning; and sectoral/partial approach;
- (2) by private sector-related to marketing of company products such as; extension workers assigned by the companies with target on sales; almost no (or very limited) formal coordination with local government's agriculture/extension agencies (provincial/district/sub-district); and build demonstration plots as part of product promotion;
- (3) by self-help or voluntary by farmers organization, having limited resources to support their activities, and civil society (NGOs) which usually working with farmers organization, project based and involvement has time limitation.

Overall agriculture extension approach is characterized by (1) considering specific crop/product (no or less concern about multi-functionality of agriculture) (2) less consideration on area/resources/clustering management (consider as separate task; limited synergy and concerted efforts among the extension actors).

The university and its researchers, with its mandates, are in a position to develop synergy and complimenting those other three agriculture extension services. The university can contribute in the co-production of technology and innovation generation, co-implementation of solutions for problems related to sustainable agriculture, co-sharing of resources with other extension actors. All aim at solving the problems of sustainable agriculture faced by the farmers and the farming sector. However, this position was not yet well tried and applied in a wider scale.

A rapid assessment of the university-community engagement has been conducted at Andalas University. Rapid assessment was conducted in 45 universities – communities engagement activities from 2014 to 2016.

### Integrating Sustainability Factor into University-based Agriculture Extension: An Experience from Indonesia

Various stakeholders including community, government, university and research and technology development institutes need to provide capacity building, which needs assessment (institutional and individual). The capacity building is needed for sustainable livelihoods and agricultural development. With the assessment for sustainable livelihoods and agriculture, policies can be developed to support sustainable livelihoods and agriculture development, and technologies to support sustainable livelihoods and agriculture development; there will be a community learning and action center for sustainable livelihoods and agricultural development which would be the end result of it. Private sector and social business institutions should also play a role in it.

### Conclusion

In his conclusion, Dr. Helmi discussed the key factors that contribute to the integration of sustainability into university-based extension. The first is a framework for synergy and partnership to be developed and implemented among major sustainable development actors in a Quadruple Helix Approach, and which positions the university as the hub. Furthermore, this requires strengthening local institutions as the prime mover at the field level for the integrated livelihood improvement and the rehabilitation of degraded forest and land, and which play roles as a platform for synergy and partnership.

The second factor is strengthening integrated forest and land based livelihood improvement. The important factor here is livelihoods improvement activities are tailored with rehabilitation of forest and land. By doing

so, activities on livelihood improvement would also enhance rehabilitation forest and land because one is required the other.

The third factor is mobilizing facilitation and support from major stakeholders (in quadruple helix approach): government agencies (national and local through their programs/projects), private sector organizations (through corporate social responsibility/CSR), universities/research institute (through improving application of appropriate technologies and innovations), and the community themselves (local initiatives, participation, local resources mobilization). Mobilizing facilitation and support is framing in the form of local government policy guidelines for synergy in development.

The fourth factor is support from international organizations committed to achievement sustainable development goals to support policy advocacy and piloting innovative model for integrating livelihood improvement and rehabilitation of degraded forest and land. In addition to that, there also needs to be support to develop sustainability science and capacity to implement sustainable development solutions both at community level and government agencies.

**PHILIPPINES: Dr. Ted Mendoza**, Professor, University of the Philippines Los Bãnos (UPLB)

### **An Assessment of University-based Farmer Extension Services in the Philippines through Agro-Ecological/Organic Lens**

#### Overview

The extension service to the farmers in the Philippines had weakened during the past decades due to three reasons: devolution, rationalization, and attrition law that affected the extension services. Regarding the devolution, as the Department of Agricultural officials are assigned to supervise local government officials, its effects are as follows:

- (1) Local government officials are agriculture-oriented, then extension/ support services to the farmers are alive
- (2) If the local officials' interest is not in agriculture, the agriculture staff are given non-agriculture responsibilities; and
- (3) Devolution made the local government units shoulder the salaries and operating expenses of the agriculture staff.

Regarding the attrition law, there is no filling up of vacated position. In terms of the rationalization, there is re-engineering and streamlining of government staffing pattern.

#### Strengths, Weaknesses, Opportunities and Constraints (SWOC) Analysis of Agro-ecology/Organic agriculture Extension, Philippines

##### Strengths

- There are prominent "advocates" and practitioners of AE/Organic Agriculture both in the academe (SUCs) and government
- Law on Organic Agriculture (RA 10068) made many LGU-DA/ Universities start doing researches & promoting Organic Agriculture

##### Weaknesses

- Only two (2) SUCs had declared as pro-Organic Agriculture University (BSU & CBSU)
- Agriculture curriculum is still conventional/chemical agriculture
- No clear/sustained technical and input support to farmers during the conversion period

- Lack of comprehensive, integrated, coherent support mechanisms for AE/OA\*
- Tenure issue: farmers do not own the lands they farm

## Opportunities

### *Demand Side*

- Increasing recognition/demand for AE/organic products
- Health conscious consumers are increasing- Middle class and above are looking for organic products
- Demand is huge considering the Phil. Population-105million

### *Production*

- Organic Agriculture Act (RA 10068) provides legal basis for the support (P 1 Billion)
- AE/OA is perceived to be the “4th wave agricultural revolution”. “systematically greening agriculture”- lessening energy& CO2-GHG emission, less pollution, safe and healthy food

### *Constraints*

- Do not translate to effective/reliable demand
- Narrow demand “niche market” -- those who can afford
- Lack of comprehensive, integrated, coherent support mechanisms for AE/OA
- Tenure issue-many farmers do not own the lands
- Support is inadequate or minimal compared with the promotion of Green Revolution in the 70’s
- Conversion period takes sometime (3-5 ->10 years or more)
- Expensive/difficult certification (3rd party, PGS)
- No clear sustained support from the consumers to patronize organic products. OA products are perceived to be expensive
- CA products are cheap-true costs are not imputed to the price stream
- For the professors/researchers, budgets for research, incentive and rewards systems favor conventional /chemical agriculture

In the Philippines, there are 131 institutions under the National Agriculture and Fisheries Education Systems (NAFES), 31 categorized as National Universities and Colleges of Agriculture and Fisheries (NUCAFs), and 84 Provincial Institutes of Agriculture and Fisheries (PIAFs).

3 million students are enrolled in higher education in the country in which only 2.8% are in the agriculture, forestry, and fisheries degree programs. The reasons for decline in enrollment in agriculture are (a) negative perception of agriculture as a profession (b) insufficient government investment in SUCs (c) rapid urbanization of agricultural areas, and (d) low salaries of agriculture graduates.

University-based extension services should address the requirements across the value chain- farm-to-plate or the full life cycle of the product. The pitfall of conventional agriculture that was promoted earlier simply emphasized field level production: (HYV seeds, inputs, fertilizer, insecticides, fungicides, herbicides). Hardware such as local fabrication of engines-machines, tools, and equipment was not addressed in such a way that they can be imported for a solution.

The recent important development is that Commission on Higher Education (CHED) has mandated that all SCUs should include the teaching of Ecological Agriculture in the BSA curriculum. There are recommendations to improve the University-based agro-ecological/organic agriculture farmer extension services as follows:

### *CHED Policies on Curriculum Development*

Revisit CHED policies for instituting curricular amendments and enhancements geared towards offering a BSA major in Sustainable/organic Agriculture and a BS in Sustainable/organic Agriculture in the long term

### *Research and Development*

Promote more participatory R&D projects (farmer-led, scientists supported, community wide) on Sustainable Agriculture must be conducted.

### *Extension services*

Following the value chain and capitalizing on ones' strength and recognizing each weakness, professors/instructors/researchers/scientists on a "doing and learning mode" work with the farmers.

### *Sustainable Agriculture Practitioners*

Awarding of equivalent degrees to SA farmer practitioners to give them credibility and prestige, so that other farmers may follow their examples; their farms credited or recognized as SA learning centers; and consider giving monetary reward such as lifetime pension

### *Agricultural Industries*

Instruction, research and extension must match or supply the manpower needs of the agro-based industries, not to mention the cost-efficient techniques, prototyping tools and machine requirements from raw material production to processing.

### *Budgetary Support*

Philippines budget for education ranged from 2.5% to 2.8% of GDP during the last decade (2006- 2016). UNESCO recommends 6% of GDP be invested on education. In 2012, the Philippines allocates only 0.14% of its GDP to R&D. UNESCO suggests 1 % GDP. Our ASEAN neighbors have exceeded the UNESCO's 1% recommended allocation for GERD. South Korea, Japan and Singapore have more than 3.0% GERD.

### *Monitoring and Evaluation*

The Technical Panel for Agriculture Education (TPAE) must include the evaluation of teaching and RDE Programs of HEIs on AE/OA

### *Legal matters*

Amend the Local Government Code and the AFMA or a new law on agriculture and fisheries extension in the Philippines be enacted

## FINAL Wrap-up Session - CLOSING REMARKS

**Comment from Dr. Cardenas:** Dr. Virginia Cardenas commented that she had three points that came out of the discussion today, which will have to be addressed. She thinks Dr. Helmi emphasized a number of times that the extension make impacts on the society but the question is that how do we show impacts? This is an important question, as there is a need to create impacts and encourage more funding support for extension and this seems to be challenging. The investment on the extension has been very low because of the inability of some institutions to really support extension. A study that Dr. Cardenas did previously covered 5 countries in Southeast Asia and found that most extension in Asia is dependent on international funding. One example is Laos where the government has provided only 15% of the total agriculture budget. That seems very scary. How can the situation be improved? There is a need for a more innovative financial scheme that would make the organization even more sustainable, which is indeed a challenge.

Second, the SWOT analysis in the University-based presentation presents a lot of opportunities. Dr. Cardenas contends that the questions at hand are, “How ready are we to grab these opportunities? Are the institutions ready? Are the policy encouraging?” These issues are important to address as they could otherwise lead to the failure of the institutions.

Third, referring to the presentation this morning about the emergence of the networks, Dr. Cardenas mentioned that the network is the form of governance, but right now it faces a lot of issues. Her concerns are that there are a lot of new networks that seem to be covering the same old things, which are capacity building, knowledge management, etc. However, how does one put their collective efforts together to find a common direction and impact society? Dr. Cardenas notes her fear that several networks have developed and without working together, these networks will end up as failures. Dr. Cardenas thinks in this case, it would be a waste for the very limited amount of resources for extension. Dr. Cardenas questions whether the international community would be able handle this, as she does not see the regional forum that would bring everybody together. These are the questions that must be looked further as they provide solutions to hers and others’ questions.

**Comment from Dr. Helmi:** Dr. Helmi expressed concern with two issues. Dr. Helmi noted that if we would like to see the existence of this group of scientists and initiatives, there must be a real action. How do we relate these initiatives with SDGs? If we do concrete actions on the field, then we will see how could we deliver SDGs regarding sustainable agriculture. In terms of how we can impacts, Dr. Helmi shared his experience, in which the communities and agricultural center that he developed were not financed by the government. He and his team did research and invited various stakeholders to participate and asked for research funding. As result, they were able to secure some of equipment that they needed. They have a nursery for Arabica coffee and forestry for example, which creates income. People who work in the community learning and extension center can earn income, which is probably higher than a new graduate working for the government. This can be used as an incentive for them because they can earn higher. Therefore, Dr. Helmi and his team saw the impacts and thus able provide opportunities. This center became an engine for local economy. This is how science impacts on society, and how they were able deliver the SDGs. In Dr. Helmi’s field, less worry is given to financing. In this case, they receive financial support from various stakeholders. They made their project as an investment like raising cattle in which those who invest in it and those who take care of the cattle have a fair share of income. This is what Dr. Helmi would like to propose. According to Dr. Helmi, bringing stakeholders to work together is a very important issue. The concern is that how does one engage them at all levels. Next, Dr. Helmi thinks that there are a lot of opportunities available after the Paris agreement. Also, farmers should be invited to participate in these kinds of forums. Policy makers are also equally important Farmers are often considered as underprivileged, and that is not fair because they should not be facing all burdens alone.

Dr. Helmi recommended two points. He thinks that the problem with the agricultural university is the way of thinking, because the political science has a separate mechanism that is not ecology. Because of this way of thinking, it determines the system/subject of the matter, a division that creates specialization. This creates a very hard structure that cannot be redesigned. Therefore, Dr. Helmi called upon international network like UNESCO to break down these structures and redesign them. The second point from Dr. Helmi concerns the global organic farmers. He thinks that if UNESCO or international network set up some conditions that are more socially recognizable, perhaps using some media as a learning medium, it should stimulate change towards achieving the SDGs.

**Mr. Pierre Ferrand's Comments.** Mr. Ferrand provided two recommendations. First, from the country's point of view, the question is what would be the common trend of what happenings in each country in the region and how should they engage it in a dialogue? Regarding the youth, most of the countries, children in agricultural sector are not interested in the sector. The average age of farmers these days are over 60 years old, which puts an enormous threat on food security on the entire region. There is an urgent need for us to reform the agricultural sector, as it is the future of the entire region. It is important to have creative thinking on how to address the issue, and too give the inspiration for the youth to come in and have decent income in the rural area so that they can live at home instead of migrating into the city. The curriculum should seriously rethink about this issue.

**Comment from Dr. Abha Mishra:** At AIT, the focus is on the agro-ecological approach, but then there are also organic clients. Dr. Mishra noted that sometimes it is difficult to define these two things together, as they seem to be two growing different subjects in which agro-ecological is more like a post-modern concept that provides lots of biological resources. However, when the talk concerns the topic of "organic", it became more commercialized. Sometimes, it is complimentary, but also conflicting as well.

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