REPORT OF WORKSHOP

I. Organization of the Workshop

1. The Regional Training Workshop on Transfer of Agricultural Technology with Specific Focus on "Application of ICT for Resilient Agriculture" was organized at Putrajaya, Malaysia from 18-20 July 2017, jointly by the Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA) and the Malaysian Agricultural Research and Development Institute (MARDI), and hosted by MARDI.

2. The workshop aimed at the enhancement of national policymaking capacities in dealing with multidimensional challenges of 1) promoting technological innovation and transfer, 2) national enhancing resilience of agriculture and food system to natural disasters and climate change, and 3) expanding the application of information and communication technology (ICT), that are commonly faced by Asia Pacific developing countries.

3. To achieve this goal the programme was designed to effectively facilitate the knowledge sharing on available policy options, national-level experiences and lessons learned, through a series of expert presentations, country reporting, interactive discussions and group work, as attached in Appendix I.

4. The workshop was organized back to back with a one-day Technical Workshop on Distributional Effects of Disasters and Climate Change on Food Security in ASEAN, which was organized by the Economic Research Institute for ASEAN and East Asia (ERIA) held on 17 July 2017, for which CAPSA-MARDI supported the organization with view to maximizing synergy in facilitating knowledge exchange among a broader range of participants.

II. Attendance

5. The workshop was attended by mid-to senior-level officials from the ministry of agriculture, and national agricultural research and development bodies from 13 Asia Pacific countries.

6. A resource person was invited from the Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries, in addition to those from

CAPSA and ERIA, based on the recommendation from the Asian and Pacific Training Centre for ICT for Development (APCICT-ESCAP).

7. Other representatives and experts from the following entities attended the workshop: MARDI, World Health Organization (WHO), United States Department of Agriculture (USDA), etc. The full list of participants is attached as Appendix II.

III. Proceedings of the Sessions

A. Opening Session

8. Datuk Dr. Sharif bin Haron, Director General of MARDI, officially opened the workshop. In his opening remark, he highlighted the key roles of technology innovation for agricultural sector to effectively respond to challenges of sustainably supporting its productivity and food supply in face of population growth, high economic demand, intensifying natural disasters and emerging climate change impacts, and pointed out the importance of technology transfer to smallholders. He emphasized his hope that the workshop would give great enlightment to all relevant parties as well as Malaysia's commitment to promoting further regional cooperation and information sharing among countries in the Asia Pacific region.

9. Mr. Masakazu Ichimura, Head of CAPSA, in his welcome remark, echoed on the importance of technological innovation as key means of implementation in achieving the 2030 Agenda for Sustainable Development Goals. He emphasized that transition of sustainable and resilient agriculture brings about more benefits in many aspects of economic, social and environmentally sound development of Asia Pacific region beyond SDG#2 on food security alone. Reiterating CAPSA commitment to continue acting as Asia Pacific Regional hub for policy research, capacity-building and knowledge sharing on sustainable agriculture, food security and inclusive rural development, he thanked the co-organizers to join hand for enhanced synergy.

10. Mr. Venkatachalam Anbumozhi, Senior Economist of ERIA, in his congratulating remarks, alerted that food security is increasingly compromised by the growing frequency of disaster events in Asia, which in addition, pushes food prices to above the incomes of many low-income households. He further highlighted that more collective efforts are needed to examine whether the current levels of investment in agriculture and technology will be able to develop resilient food production systems to the levels needed to feed a growing population, and how no regret adaptation measures are developed and shred to build a more resilient food value chains. He thus joined other speakers to commend the synergy among co-organizers, and shared his conviction about enhanced impacts from the series of the events.

B. Keynote and Expert Presentations

11. Mr. Mohamad Roff Bin Mohd Noor, Deputy Director General, MARDI, delivered a keynote presentation, entitled "Role of technology transfer in agriculture to achieve Sustainable Development Goals (SDGs)". With firm recognition that achieving zero hunger and sustainable agriculture provides indispensable foundation for achieving other socioeconomic goals, he shared Malaysia's experience in promoting people-centered development agenda through its national plan (11th Malaysia Plan), under which Malaysia's agriculture maintained growth of 3.5 per cent per annum, and 8.2 per cent contribution to GDP, despite rapid industrialization during the same period. MARDI

supported such success in leading agricultural technology innovation, dissemination, and commercialization, as well as business incubation and upscaling through a range of programmes e.g. capacity-building, grants and consultations

12. Mr. Masakazu Ichimura, Head of CAPSA, presented a regional overview entitled "Technological innovation for enhancing agricultural resilience to natural disasters and climate change in Asia and the Pacific", by which he outlined the regional trend and national approaches on how to accelerate technology innovation to support transition to resilient agriculture. By sharing the technology and issue mapping in the related area, he analysed that the current efforts mostly focus in strengthening early warning methods and prevention and mitigation options, while post-disaster response and recovery attracts less attention. Measures to enhance disaster resilience throughout product value chain, and highlight on combination of high-tech and indigenous approaches may be the areas of emerging interests.

13. Mr. Sanghun Lee, Director of the International Trade and Cooperation Department, Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (EPIS) delivered a presentation on "Application of ICT for resilient agriculture", highlighting the ongoing trend in the Republic of Korea. He shared the current trend of booming of 'Smart Agriculture' in his country, with intensive use of ICT and other high-tech equipment to monitor and control the farm condition on real time basis. He presented that this type of technology/farming practices are increasingly adopted by Korean famers for enhanced productivity and product quality with enhanced market access and price competitiveness, reflecting consumers' preference, thus resulting in higher economic returns. The products may also be with high resilience to natural disasters and climate change impacts as they are grown in more controlled environment, free from whether variation, etc. The application of ICT technologies is also promoted in developing the Agricultural Information System to assist farmers access to real-time information to weather, market and resource related information. International transfer of such technologies is actively promoted by the government of the Republic of Korea, through bilateral and multilateral ODA.

14. Mr. Venkatachalam Anbumozhi of ERIA, presented "Regional cooperation on application of ICT for promoting food security and resilience to disasters and climate change". He underlined the regional cooperation is essential in enhancing resilience of food systems, especially when mega disasters and climate change affect other countries through supply chain and economic integration shifts disaster and climate damages from local to regional level threats. He identified the improvement in early warning system, as an area that regional cooperation will be particularly important, together with other areas such as operating relief and assistance through a regional protocol. Outlining progress areas in ASEAN (sub) regional cooperation, he recommended that building up wide range of capacities at regional level in short time need expanding ongoing regional cooperation efforts to include creation of Trans border Information Platform (TIP), that can harness the potential benefits of ICT and inbuilt early warning systems. He concluded that the Proposed TIP of ASEAN region would help making "ASEAN responding as one" a reality.

C. Open and Interactive Discussion

Open and interactive discussion was conducted based on the keynote and expert presentations, and facilitated by Mr. Tapsir bin Serin, Director, Economic and Social Science Research Centre of MARDI. The discussion involved all the participants including the experts who acted as presenters in the previous day workshop. Some of the main points aired during deliberations included:

15. There is a need of a wider role of the public sector in designing, promoting and sustaining effective national programmes for technological innovation and transfer in agriculture. Enhancing awareness and strengthening capacities of relevant official, as well as development of mechanisms for policy coordination at inter-ministry and inter-department levels are among the priority at the government level. Partnership with other stakeholders, including policymakers, the private sector, consumers and farmers group, and cooperatives and extension workers, are also to be enhanced for ensuring public acceptance and supports; mobilizing political buy-ins, resources and investments; and facilitating smooth technology diffusion down to the farm level.

16. Urgent actions are needed for accelerating including the expanded application of ICT, adaptation to climate change, extreme weather, drought, flooding and other disasters to maintain healthy agriculture ecosystems and productivity for sustained food security. Technological innovation should essentially be promoted for enhancing the preparedness and resistance to anticipated climate variations. Application of ICT is regarded most promising in areas of early warning as well as for promoting efficiency of selected resource use while needing close examination of their advantages in achieving specific objectives under specific socioeconomic, cultural and climatic conditions.

17. Application of ICT is also promising in areas of product value chain. Apart from building resilience to climatic variation and disaster damages, it provides additional benefits e.g. facilitating farmers access to real time market information, help planning farming timetables, improving product quality to gain more market values, reflecting consumer preference, ICT will also help promoting the transfer/dissemination of emerging farming practices / technologies to smallholders.

D. Country Report Presentations

18. Country reports were presented by representative from each of the participating countries, namely Bangladesh, Cambodia, Fiji, Indonesia, India, Lao People's Democratic Republic (PDR), Malaysia, Myanmar, Nepal, Papua New Guinea, the Philippines, Sri Lanka and Viet Nam. Based on the prior request, the presentations covered the broad subjects of a) technological innovation in agricultural research and development ensuring sustainable and resilient food production, b) application of ICT in agriculture, and c) technology transfer and regional cooperation. The participants effectively shared the latest trends in each country, and exchanged ideas on key progress, success stories, emerging challenges and lessons learned.

19. **Presentation 1: Bangladesh**
    Bangladesh was represented by Dr. A.S.M. Anwarul Huq, Member Director of Agricultural Economics and Rural Sociology Division, Bangladesh Agricultural Research Council (BARC), Dhaka. The presentation describes the major ICT activity in BARC focusing on the development of ICT infrastructure (hardware, software, and network).

Training on ICT is also a regular programme for BARC. It also informs Bangladesh's major government initiatives in ICT, mainly to establish a community Rural Radio, providing information through SMS to farmers, internet coverage up to the field, and the introduction of the Agricultural Information and Communication Centre (AICC).

20. **Presentation 2: Cambodia**

Cambodia was represented by Mr. Meach Yady, Chief of Agricultural Marketing Office (AMO), Department of Planning and Statistics, Ministry of Agriculture, Forestry and Environment, Cambodia. The presentation focused on Cambodia's policy for food sustainability. Around 75 per cent of Cambodia's cultivated land is for rice, and the rest is used for cassava, maize, vegetables, sugar cane, soybean and fruits. The country's policies are mainly focused on rice but impressive growth can also be seen in cassava, maize, sugar cane, mung beans and aquaculture. Cambodia's overall policy goal is to increase agricultural growth at around 5 per cent per annum through enhancement of the agriculture productivity, diversification and commercialization and livestock and aquaculture farming, by taking into account sustainable forestry and fisheries resource management. The Agricultural Strategic Development Plan (ASDP), and the National Strategy for Food Security and Nutrition 2014-2018 are among the policies developed by Cambodia.

21. **Presentation 3: Fiji**

Fiji was represented by Mr. Jese Gade, Economic Planning Officer (Budget), Acting Chief Economist, Economic Planning and Statistic Division, Ministry of Agriculture of Fiji. The presentation by Fiji describes current ICT applied in Fiji's agricultural sector. Fiji is currently practising the use of GIS technology. There is also a project to enhance the use of phone applications, for example the farmers-oriented SMS Mobile Phone services. Although there is an increase in the access to market analysis and trade information, the challenge remains whereby farmers do not have access to the internet, besides bearing in mind the cost of text messages. Another interesting use of ICT in Fiji is the Agromet Information and Online Assessment Tool to help forecast the weather. Mr. Gade further explained Fiji's future plan to look into precision agriculture and climate smart agriculture among others.

22. **Presentation 4: Indonesia**

Indonesia was represented by Mr. Dani Medionovianto from the Indonesian Center for Agricultural Technology Assessment and Development (ICATAD), Indonesian Ministry of Agriculture. In his presentation, Mr. Medionovianto gave an interesting overview of the percentage of device usage among Indonesian adult population. Around 92 per cent of the people have television, 91 per cent use mobile phones, 47 per cent specifically use smart phones, and 21 per cent own a laptop or desktop computer. Hence, ICT can be used as a strategic tool to support agricultural development. The presenter shared the case of Farmers Empowerment through Agricultural Technological Information (FEATI) conducted from 2007-2013. Improvements were also done on staff capabilities (audio visual trainings, scientific writing trainings, information via internet). Indonesia has also developed the Cropping Calendar Information System which gives information on season and rainfall prediction, plant area potential, endemic areas, drought and flood to name a few. There are still much more rooms for improvement through intensive training, improving capability of extension workers and enhancing the skills of farmers through capacity-building programmes.

23. **Presentation 5: Nepal**

Nepal was represented by Mr. Manoj Kumar Thakur, Senior Scientist, Nepal Agricultural Research Council (NARC). The presenter shared major success stories in transferring technologies. For example, the low-cost plastic house technologies for off-season vegetable cultivation, cold water fish farming, crop calendar of different crops, market price information on different agro products, as well as a 24-hour transmission of agriculture television channel for different entrepreneurs. He highlighted the needs and gaps in focusing on ICT-based technology transfer, whereby sufficient budget is needed to be provided by the government. Massive awareness campaigns need to be conducted on the benefits of ICT via a top-down approach, weather forecast and agro-advisory.

24. **Presentation 6: Lao People's Democratic Republic (PDR)**

Lao PDR was represented by Mr Chanseng Phongphachith, Deputy Director, Agricultural Research Centre for Climate Change Resilience (ARCR), National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry. Lao was also represented by Ms. Sonephet Phosalath, Director of Division, Department of Climate Change Management, Ministry of Natural Resources and Environment. The presenter shared the status of climate change adaptation and agricultural technology in Lao PDR. Natural disaster and climate change events are natural flood and drought, typical typhoon, epidemics and other land slide change. However, there are new extreme events happened which was snow on 24 to 26 Jan 2016 and *Thalas* typhoon in July 2017. Rate of flooding increase and there is uncertain flooding event which makes it difficult to handle and prepare. According to research, agriculture land affected by flood were highest in 2005 and 2011 while for drought event happened more frequently in 2009 and 2011. The presenter informed that Lao's climate change technical working group has been established and working in mainstreaming the 8th NSEDP and the 2016-2025 MoNRE's strategy into government policy. This technical working group will also continue implementing climate change, mitigation and adaptation activities approved in Lao's 2nd national climate change action plan. Among successful case studies by the country are: Rice seed development, Sensor for soil moisture, Promotion application of technology in private sector, Drip irrigation and hydroponic, SWOT analysis for the agriculture sector and In situ transfer technology between border countries.

25. **Presentation 7: Malaysia**

Malaysia was represented by Mdm Faizah Patahol Rahman, Deputy Director of Agri-ICT Development Programme, Information Management Centre, MARDI. She delivered a presentation on the "Application of ICT in Agriculture". Among other ICT initiatives are Government set up broadband coverage in rural areas (mostly farmers and agriculture community) and Malaysia develops smart farming but still at initial stage. Each agency has its own ICT initiative, for example, Department of fisheries – Vessel Management Tracking System, MARDI - Ruminant Feed Formulation, precision farming and from private company establish Intelligence Aquaculture Management. Ministry of Agriculture and Agro-Based Industry (MOA) are collaborating with MIMOS in setting up edible bird nest traceability system. MOA developed MyTRACE Agrobazar Online System, service and business environment and other various online systems. Malaysia's upcoming initiatives such as One stop centre for agriculture database and M-agri is an opportunity to empower farmers to improve their livelihood by providing connectivity and farmers-centric apps.

26. **Presentation 8: Myanmar**

Myanmar was represented by Dr. Theingi Myint from Yezin Agricultural University, Department of Agricultural Economics, Ministry of Agriculture, Livestock, and Irrigation. The presenter delivered a presentation on the “Investment for long-term productivity growth and sustainability of Myanmar agriculture”. General overviews of the country showed overall low investment-based agriculture, less R&D, facing huge challenge related to climate change and threats to food security. The presenter also shared the country’s current investment strategies in agriculture sector five years plan which involves irrigation and flood protection, conventional farming conversion to mechanized farming, improvement of crop production, developing agro-based industries and strengthening of market through innovation, human resource development and agricultural research and dissemination of information. The presenter concluded that the agriculture innovation is important to have a better farm management practices, help improve sustainable use of natural resources, reduce losses along the food chain, improve nutritional attributes of food and ensure food traceability and safety.

27. **Presentation 9: India**

India was represented by Mr Elanchezhian Arul from the Ministry of Environment and Forest. He shared the national agricultural innovation projects and various ICT initiatives in Indian agriculture. Further, he also shared about e-Choupal, a successful application of ICT in Indian agriculture. The application was provided with internet connectivity using solar panel battery back-up and VSAT equipment. ICT initiative in Indian agriculture is categorized into web-based, Sachalak (facilitator between the user and service provider) and mobile/mix approach. He concluded that assessment of farmer information needs and appropriate mode of reaching them as per local conditions is crucial before developing an ICT model. The information dissemination model should be viable and user-friendly while integration of agencies under one roof for providing information on agriculture should be developed. It is essential to create the requisite ICT infrastructure in rural areas for effective dissemination of information. Creating awareness among farmers and other stakeholders on the importance of information and its optimum utilization will help in the development of agriculture and overall well-being of the farming community.

28. **Presentation 10: Papua New Guinea (PNG)**

Papua New Guinea was represented by Mr. James Laraki from National Agricultural Research Institute who delivered a presentation on the application of ICT for resilient agriculture in PNG. The presentation shows rural farmers in PNG are faced with many challenges: such as changing climate, demographic changes, declining natural resources, market forces, etc. Agricultural technologies are usually generated by R&D institutions, universities, private sector, NGOs and innovative farmers, while the technology transfer is commonly disseminated through conventional approach. Extension system non-existence due to decentralization of function. However, health sector has made significant progress in ICT application in PNG and mobile network coverage has been improved. Development of e-agriculture strategy, training on mobile apps development (ComCare), Mobile Market Information Service, VSAT – resource centre concept, Institutional ICT strategies are the progress to date ICT. For the future, PNG will explore ICT opportunities, institutional ICT strategies, networking, capacity development, monitoring and regulatory functions with ICT, investment in user

awareness and training, cost subsidy, improvement of regulatory functions and investment in infrastructure.

29. **Presentation 11: The Philippines**

Ms. Digna Lopez Sandoval from Institutional Development Division, Bureau of Agricultural Research, Philippines presented her country presentation on the Climate Change Resilience on Agriculture and Fisheries Sector. The presenter shared the country's adaptation and mitigation initiative in agriculture to provide an efficient yet resilient agriculture support services to enable the country's agriculture sector to effectively address climate change as it pursues its goals of development. She also shared the completed climate change-related R&D Projects funded by DA-BAR and R&D technology transfer for climate change. A large part of the problem lies in the lack of institutional resources and human capacity to execute the policies. There is therefore the need to build the capacities of these executing agencies. Lack of financing also becomes a gap as development and transfer of technologies is heavily dependent on financing.

30. **Presentation 12: Sri Lanka**

Sri Lanka was represented by Mr. Ranpati Dewage Siripala from National Agriculture Information & Communication Center. The country uses cutting edge technologies such as Bio-technology, Geographical Information System (GIS) technology, pre- and post-harvest technology, nanotechnology for efficient agricultural production and environmental conservation. Interactive multimedia CDs on agriculture, simple design and user-friendly website/e-Services, agriculture videos in National TV, agriculture radio programmes, online agriculture radio, agriculture call center, use of social media (Facebook, Twitter) are the examples of the application of ICT in agriculture by the country. Lack of real time information and availability of market information for farmers and experts, no spatial database, inadequate use of GPS/ GIS technology in agriculture and mobile phone based services [SMS / Mobile Apps] are the gaps in the implementation of ICT. Sri Lanka E-agriculture strategy, a centralized database on farmers, ICT enabled agriculture advisory system, real-time information availability, E-Soil report and fertilizer recommendation information system and electronic pest surveillance system, E-Phyto system are the initiatives developed to address the problems.

31. **Presentation 13: Viet Nam**

Viet Nam was represented by Mr. Lai Van Manh from Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE). Vietnam's agriculture faces with fragmented and small field as a result of industrialization and urbanization processes, inadequate planning, environmental pollution, small production and low labour productivity, lack of up-to-date information and knowledge related to agriculture, traders press prices, and fake fertilizer and pesticides. However, the application of ICT in agriculture became a trend in technological innovation of agricultural research and development. SmartAgri is the agricultural Hi-Tech Park of Ho Chi Minh City. Vietnamese government encourages innovation and start-up in agricultural sector and others, Public Private Partnership (PPP) in agricultural innovation and technological development and innovation programmes for agriculture sectors organized at national and provincial levels.

E. Group Discussion

32. The participants discussed in three small groups, about key conclusions and recommendations from the present workshop, reflecting all presentations, knowledge exchange and interactive discussions. The results were presented by the group members and shared in the plenary as key takeaway of this workshop. A synthesis summary is presented in the following page.

F. Closing Session

33. The closing speech was delivered by Mr. Mohamad Roff Bin Mohd Noor, Deputy Director General, MARDI. He thanked all the participants for active participation, and congratulated them for the successful completion of the programme. He also thanked CAPSA, ERIA and MARDIs' secretariat for the effort in making these events a success. He briefly reviewed some of the main points aired during the deliberations:
    i) There is a need of a wider role of the public sector in designing, promoting and sustaining the implementation of technology transfer towards resilient agriculture.
    ii) Technological innovation and ICT application are efforts needed to enhance agriculture resilience.
    iii) Strengthened capacity is needed for adaptation to climate change, extreme weather, drought, flooding and other disasters to maintain healthy agriculture ecosystems.
    iv) Engagements at multiple levels such as regions, countries, corporate, and farm levels are needed to address the issues discussed.

34. He also hoped this workshop becomes an enlightening experience for participants with all the knowledge sharing, stimulating discussion and strategic planning on the major topics in agriculture; climate change, food security, technology transfer and ICT. Mr Masakazu Ichimura of CAPSA and Mr Jeremy Richard Gross, Director of Capacity Building, ERIA joined Mr. Mohamad Roff Bin Mohd Noor, in congratulating the participants, with appreciation to MARDI for hosting the event. Co-organizers shared their commitments to continuing collaboration with member states to assist sustainable and resilient agricultural development in Asia and the Pacific. Certificates of Achievements were presented to all participants.

G. Field Trip

35. The participants were invited to a field visit organized by MARDI on 20 July 2017. The team visited Melaka Halal Hub (MHH), the first halal industrial center in Malaysia, which roles is as halal hub of logistics, research and development (R&D) of halal products, packaging centers and halal labels. The team also visited MARDI Kuala Linggi Melaka, the Technical Services and Technology Commercialization Centre, to see the demonstration on how the technology of essential oils is transferred to producer who involved in commercialization.

Summary of Group Discussion: Suggestion and Recommendation

I. Key areas of further technological innovations

1. Early Warning System
   a. Improved management of climatic information (e.g. integration of scattered data, localized data for present and future climatic variation)
   b. Improvement in data storage, management and access (e.g. GIS data, soil fertility and moisture)
   c. Data interpretation and dissemination to farmers (including big data) e.g. Simple interface for semi-literate farmers.

2. Information to improve value chain performance
   a. Agro-product information
   b. Product quality assurance / traceability
   c. Information on post-harvest losses

3. Climate Smart Farming
   a. Development of resistant varieties
   b. Experiences of improved farming practices (e.g. smart farming)
   c. Water harvesting technologies
   d. Technology transfer to developing countries (assessing applicability, cost reduction options

II. Key areas of success to be replicated

1. Agricultural Intelligence System - Price / market data dissemination via mobile phone
2. Technical information alert via national network
3. Empowering the extension work via cyber extension/e-learning

III. Key areas for regional cooperation

1. A regional mechanism should be established to maintain the momentum of regional cooperation initiated by the present workshop. Related follow-up action may include the following;
2. At the national level,
   - a focal point may be designated in each country to coordinate and facilitate the establishment of national team for implementation of relevant follow-up activities, and communication among members.
   - The national team is expected to take lead in carrying out a national assessment on the development of climate change adaptation measures in agriculture in each country.
   - The team will also lead in developing a national program for public awareness raising, expert training/education, and promotion of technology transfer for strengthening resilient agriculture, via *inter alia* Public Private Partnership.
3. At the regional level, ERIA and CAPSA could take lead for:
   - establishing a central platform for knowledge sharing at regional scale
   - providing technical support to abovementioned programmes undertaken by national teams, and
   - outreaching to other organizations/donors for mobilizing financial supports

Appendix I

Workshop programme

CAPSA-MARDI Regional Training Workshop on Transfer of Agricultural Technology with Specific Focus on "Application of ICT for Resilient Agriculture"
18-20 July 2017, Putrajaya, Malaysia

Date	Programme	
16 July 2017 Sunday	Arrival of participants/delegates	
	Check-in accommodation	
17 July 2017 Monday	**ERIA Technical Workshop on Distributional Effects of Disasters and Climate Change on Food Security in ASEAN**	
	08.30-09.00	**Registration**
	09.00-17.30	**ERIA workshop agenda** (please refer to Annex)
18 July 2017 Tuesday	**CAPSA-MARDI Regional Training Workshop on Transfer of Agricultural Technology with Specific Focus on Application of ICT for Resilient Agriculture**	
	08.30-09.00	**Registration**
	09.00-10.15	**Opening ceremony** ○ Opening remarks • *Mr. Masakazu Ichimura, CAPSA* • *Mr. Venkatachalam Anbumozhi, ERIA* • *Datuk Dr. Sharif bin Haron, MARDI* ○ Exchange gift ceremony ○ Photo session
	10.15-10.30	**Coffee break**
	10.30-11.10	**Keynote Address –** Role of technology transfer in agriculture for achieving Sustainable Development Goals *Dr. Mohamad Roff bin Mohd Noor, Malaysian Agricultural Research & Development Institute (MARDI)*
	11.10-11.20	**Workshop orientation**
		Presentation
	11.20-11.50	○ Presentation 1 – Technological innovation for enhancing agricultural resilience to natural disasters and climate change *Mr. Masakazu Ichimura, UN Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA)*
	11.50-12.20	○ Presentation 2 – Application of ICT for resilient agriculture *Mr. Sanghun Lee, Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (EPIS)*
	12.20-12.50	○ Presentation 3 – Regional cooperation on application of ICT for promoting food security and resilience to disasters and climate change *Dr. Venkatachalam Anbumozhi, Economic Research Institute for ASEAN and East Asia (ERIA)*
	12.50-14.00	**Lunch**
	14.00-15.00	**Interactive discussion** with keynote and other presenters, to be joined by regional experts and all participants
	15.00-15.15	**Coffee break**

Date	Programme	
18 July 2017 Tuesday		**Country report presentations**
	15.15-15.35	○ Presentation 1: Bangladesh
	15.35-15.55	○ Presentation 2: Cambodia
	15.55-16.15	○ Presentation 3: Fiji
	16.15-16.35	○ Presentation 4: India
	16.35-16.55	○ Presentation 5: Indonesia
	16.55-17.00	○ Recap of day 1
19 July 2017 Wednesday		**Country report presentations (continued)**
	09.00-09.20	○ Presentation 6: Lao PDR
	09.20-09.40	○ Presentation 7: Malaysia
	09.40-10.00	○ Presentation 8: Myanmar
	10.00-10.20	○ Presentation 9: Nepal
	10.20-10.35	**Coffee break**
	10.35-10.55	○ Presentation 10: Papua New Guinea
	10.55-11.15	○ Presentation 11: Philippines
	11.15-11.35	○ Presentation 12: Sri Lanka
	11.35-11.55	○ Presentation 13: Viet Nam
	11.55-12.50	**Group discussion** on specific topics, such as: ○ Identification of success stories in agricultural technology innovation and transfer/defining success factors/challenges, opportunities and enabling conditions ○ Identification of future promising areas for technological innovation and transfer, in particular, in the application of ICT ○ Proposal for future regional mechanisms/programme to facilitate international cooperation in agricultural technology innovation/transfer
	12.50-14.00	**Lunch**
	14.00-14.30	**Group discussion** - *continued*
	14.30-15.30	**Group presentation and recommendations**
	15.30-16.00	**Coffee break**
	16.00-17.00	**Closing** ○ Conclusions and closing remarks *MARDI & CAPSA* ○ Evaluation/Certificates presentation
	20.00-22.00	**Dinner reception hosted by MARDI**
20 July 2017 Thursday	**08.00-17.00**	**Field visit**
	08.00	Depart to Malacca
	10.00-12.00	Food Production Farm, Malacca
	12.00-13.00	Malacca city tour
	13.00-14.30	**Lunch**
	14.30-16.00	MARDI Linggi Station, Malacca
	16.00	Back to hotel
21 July 2017 Friday	Departure	

Appendix II

List of participants

No	Country	Name & Organization	Contact
Government Organizations			
1.	Bangladesh	Dr. A.S.M. Anwarul Huq Member Director Agricultural Economics and Rural Sociology Division Bangladesh Agricultural Research Council (BARC)	Farmgate, Dhaka 1215, Bangladesh P: +88 02 911 906 F: +88 02 912 8061; +88 02 811 0924 E: anwarul.huq09@gmail.com www.barc.gov.bd
2.	Cambodia	H.E. Chuop Paris Deputy Secretary General, National Council for Sustainable Development Ministry of Environment	E: paris.ncgg@gmail.com
3.	Cambodia	Ms. Meas Sotheavy Deputy Director Department of Planning and Statistics	#200, Preah Norodom Blvd; Sangket Tonle Bassac, Khan Cham Kamon, Phnom Penh, Cambodia. F: +855 23 720 527 E: sotheavymeas@gmail.com Maff.gov.kh
4.	Cambodia	Mr. Meach Yady Chief of Agricultural Marketing Office (AMO) Department of Planning and Statistics Ministry of Agriculture, Forestry and Environment	E: meachyady@gmail.com
5.	Fiji	Mr. Jese Gade Economic Planning Officer (Budget), Acting Chief Economist Economic Planning & Statistic Division Ministry of Agriculture, Fiji Islands	Hugh Robinson Complex, Grantham Road, Private Mail Bag, Ralwaqa, Sufa, Republic of Fiji P: +679 728 2323 F: +679 310 0293 E: jese.gade@govnet.gov.fj www.agriculture.org.fj
6.	India	Mr. Elanchezhian Arul Section officer Ministry of environment and forests	B3 Bungalow Forest Campus R S Puram, Coimbatore, Tamil Nadu 641002, India P: +91 996 588 5558 E: mohanachezhian@yahoo.com
7.	Indonesia	Mr. Dani Medionovianto, S.Pt. Senior Extention Worker Indonesia Center for Agricultural Technology Assessment and Development (ICATAD) – Indonesian Agency for Agricultural Research and Development (IAARD)	Jl. Tentara Pelajar No. 10, Bogor 16114, Indonesia F: +62251-8350928 E: danimedio69@gmail.com
8.	Indonesia	Mr. Budi Indra Setiawan Senior Advisor to the Minister of Agriculture Agricultural Infrastructure Ministry of Agriculture, the Republic of Indonesia	Ministry of Agriculture, Rangunan, A Building, 2 Floor, Room 242, Jakarta, Indonesia E: budindra@pertanian.go.id P: +62-812-932-1108
9.	Lao PDR	Mrs. Sonephet Phosalath Director of Division Department of Climate Change Management Ministry of Natural Resources and Environment	E: sonephet.9999@gmail.com
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