

THE FFTC
STRATEGIC ACTION PLAN
FOCUSING ON HOLDING
WORKSHOPS AND SEMINARS FOR 2021-2024

Supplementary Material for the
25th FFTC-TAC Meeting



Food and Fertilizer Technology Center
for the Asian and Pacific Region

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The FFTC Strategic Action Plan Focusing on Holding Workshops and Seminars in 2021-2024

This Strategic Action Plan for 2021-2024 was drafted and finalized during the pre-COVID-19 pandemic. The FFTC management, therefore, made the necessary adjustments to adapt to the pandemic situation especially since countries imposed travel bans and restrictions. This means FFTC's face to face workshops and seminars will have to take a backseat for a while and the Center has to make that online transition to videoconferences and online meetings. To replace face-to-face interactions, FFTC will hold and organize webinars, and produce infomercials, vlogs and other publications. FFTC will also maximize the use of its website and the social media to disseminate information

I. Executive summary

This document traces the whole process in the making of the FFTC Strategic Action Plan Focusing on Holding Workshops and Seminars in 2021-2024. Starting with the creation of a task force, the crafting of the said plan began with a review of the Center's activities for 2019 and 2020, doing library research and conducting monthly meetings. It also discusses the series of caravan tours which went on for five months in which the Center management visited, met and discussed with agricultural leaders of Taiwan's agricultural institutes, agencies, universities and government organizations to learn and collect information from their ongoing research work and their directions and vision about their relevant research fields. The caravan tours culminated in the conduct of a final consultation meeting with Taiwan's agricultural experts. The document also provides a summary of the analysis and results of the said caravan tours and consultation meeting which led to the creation of an operational strategy and the listing of the Center's five-program themes. This formed the basis of a blueprint on how FFTC's workshops and seminars are to be conceptualized, planned and operationalized. The FFTC Strategic Action Plan Focusing on Holding Workshops and Seminars in 2021-2024 gives the Center management a clear guide to help prioritize goals, maximize resources, increase the organization's effectiveness and make better decisions. Part of the inspiration for its crafting is the groundwork done by the United Nations in its plan to achieve food security and improve nutrition for the growing world population and sustainable management of natural resources.

II. Preamble (Introduction)

Since its inception in 1970, the Food and Fertilizer Technology Center (FFTC) for the Asian and Pacific Region has organized and sponsored various international workshops, seminars, symposia, training courses, study tours and field demonstrations as part of its mandate to collect and disseminate information on agricultural technologies and policies. To date, a total of 414 seminars, workshops and training courses have been organized and conducted by the Center in different parts of the Asian Pacific Region. They were all carried out and conducted in

cooperation with international, regional or national agricultural agencies. Results and recommendations, as well as important information tackled in FFTC's workshops, seminars and training courses have been disseminated to various forms of media through technical reports, the Center's various websites (in English, Chinese, the FFTC-AP Platform and the DFNet website) and the social media like Facebook. As a consequence, FFTC has helped in contributing towards solving



The workshop on “The Satoyama Initiative” is one of the eight international workshops that the Center organized in 2019. To date, a total of 414 seminars, workshops and training courses have been organized and conducted by FFTC in different parts of the Asian Pacific Region.

problems encountered in such fields as crop production, fishery, livestock farming, disease and pest control, environmental protection, agricultural policy, etc.

The preparations for organizing FFTC's workshops, seminars and training courses is based on a Strategic Action Plan which gives the management a clear guide to help prioritize goals, maximize resources, increase the organization's effectiveness and make better decisions. In crafting the FFTC Strategic Action Plan, the Center



The FFTC management makes sure that the Strategic Action Plan focusing on workshops and seminars is aligned and attuned to the needs of the current environment. Part of the inspiration is the groundwork done by the United Nations in its plan to achieve food security and improve nutrition for the growing world population and sustainable management of natural resources.

management makes sure that its activities are aligned and attuned to the needs of the current environment, particularly those of the Asian and Pacific Region. Part of the inspiration for the crafting of the new Strategic Action Plan is the groundwork done by the United Nations in its plan to achieve food security and improve nutrition for the growing world population and sustainable management of natural resources.

According to the Asia Food Challenge Report which was released in November 20, 2019, Asia is facing a food crisis and needs another US\$800 billion in the next 10 years to produce more food, and meet the region's needs. The report also said the population in Asia is growing and that consumers are demanding safer, healthier and more sustainable food.

It is in this context that the FFTC management has recently created a task force to craft the new Strategic Action Plan to improve the quality of its workshops, seminars and training courses in 2021-2024.

III. Review of FFTC's Activities for 2019-2020



At the last 104th Executive Board Meeting held on December 11, 2019, the Director and Deputy Director of FFTC presented the main achievements of the Center for 2019 and their proposed activities for 2020. The management rose up to the challenge of improving the quality of FFTC's workshops and websites.

The year 2019 has been a busy year for FFTC in which the management rose up to the challenge of improving the quality of its workshops and websites. As recommended by the TAC members, the management also made a lot of efforts to be more visible by being active in social media, attending agricultural events and engaging in other activities like visiting farmers, meeting with people from the private sector and government agencies, attending international agricultural exhibitions and

conferences, etc. These activities created new opportunities for partnership. Last December 11, 2019, the FFTC management, headed by its Director and Deputy Director, presented to its Executive Board its main achievements for 2019. These are as follows:

- (1) Successfully completed 8 international workshop/symposium/training courses. Feedbacks from the co-organizers, speakers and participants were all rated good.
- (2) Signed Memorandum of Understanding (MOU) with Vietnam Academy of Agricultural Sciences (VAAS) as well as a Memorandum of Agreement with the University of the Philippines Los Baños (UPLB).
- (3) Invited Indonesia to be a member in the Executive Board (EB) of FFTC.
- (4) Invited Australia, Malaysia and Thailand to be an observer in the Executive Board (EB) of FFTC.
- (5) Invited Australia, Malaysia and Thailand to join the FFTC Working Group.
- (6) Requested member country Japan to restore the donation to FFTC.
- (7) Strengthened ties with partners including the increase of contacts and interaction and the significant increase of financial support from the co-organizers of workshop/symposium/training courses.
- (8) Built up the momentum of the Agricultural Policy Platform to serve the AP community with a significant increase in registered members and a significant increase in the number of hits from users in the AP platform website.
- (9) Set up the four groups of researchers, government officials and extension workers of the Center's Dragon Fruit Network.
- (10) Formulated taskforce on FFTC 50th anniversary activities, 2021-2024 Strategic Action Plan and call for 2020 proposal. The taskforce was carried out smoothly and efficiently according to the set up schedule.
- (11) Selected and visited 18 major agricultural research institutes and universities to facilitate the drafting of the Strategic Action Plan. After all the visits are finalized a consultation meeting with the leading agricultural experts and research institute administrators was held to discuss the future plan of the Center and the 50th Anniversary Symposium proposal.
- (12) Made institutional reforms to improve the welfare of the staff. All the FFTC staff are now members of the National Health Insurance Program and all the local staff are enrolled in the Labor Insurance Program with additional retirement pension.
- (13) Paid courtesy calls to various representative offices in Taiwan to extend and strengthen relationships with FFTC and explore the opportunities for corporation.

- (14) Visited Vietnam, Korea, Japan, Philippines, Indonesia and US to extend and strengthen relationships with FFTC and explored the opportunities for cooperation.
- (15) Received a US congressional staff delegation visit.
- (16) Improved the quality of FFTC publications, websites and its Facebook page. These have significantly improved the visibility of FFTC.
- (17) Improved the quality and overall look of FFTC's three websites including the English and Chinese websites, AP platform and the dragon fruit website. These websites, which are all undergoing renovations, are envisioned to be more friendly and accessible.
- (18) Published a book on climate smart agriculture and three more books are being produced, including the 50th anniversary memorial book.
- (19) Conducted a successful Soil Proficiency Test Project which has gained popularity. The number of laboratories participated in this project has doubled this year.
- (20) Conducted the Working Group Meeting on November 13, 2019. The Agenda Document of the Working Group Meeting was approved with minor revision.
- (21) Paid courtesy calls to Indonesia to strengthen the collaboration and relationship between Indonesia and FFTC. The draft preparation of MOU with Indonesian Agency for Agricultural Research and Development (IAARD) and IPB University in Bogor will be co-organized by both sides.
- (22) Invited Dr. Fadry Djufry, Director General of IAARD, to be TAC committee member.

For 2020, the Executive Board has approved its proposed work program and budget which includes 11 projects and one special project event which is the celebration of the Center's 50th anniversary. Of the 11 projects, four are workshops, three are seminars, two are networks, one is a collection of information and the other is the 25th TAC Meeting.

In 2020, the Center plans to further strengthen its existing tie-ups with member countries and network, engage and invite more members of the private sector, organize a big symposium for FFTC's 50th anniversary, re-establish tie-ups with its original partners like Australia, New Zealand, build more connections with other Asian partners and explore more opportunities for mutual cooperation.

Table 1 summarizes the Center's projects for 2019-2020 together with their matching program themes based on the Strategic Action Plan for the same years as follows:

Table 1: FFTC projects for 2019-2020 vis-à-vis program themes based on Strategic Action Plan for 2019-2020

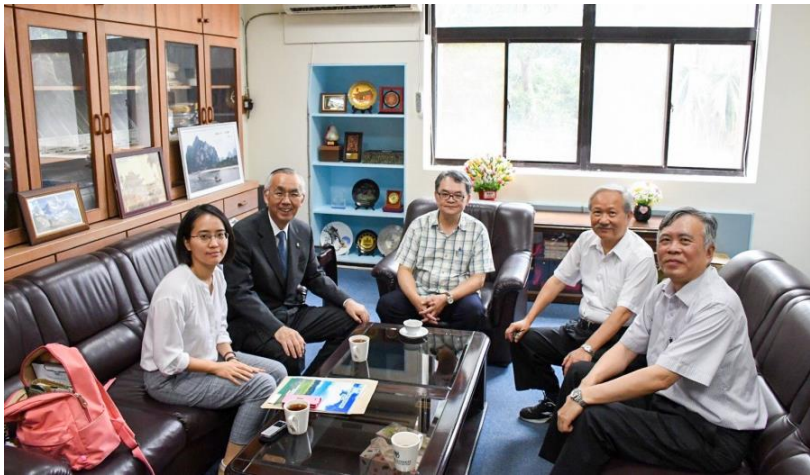
FFTC 2019-2020 Action Plan	Theme 1 Intelligent agriculture by ICT	Theme 2 Value-added agriculture	Theme 3 Climate-smart agriculture	Theme 4 Environmentally friendly technologies	Theme 5 Rural resource management
2019 FFTC Program	IoT/AI in livestock (NARO)	Environmentally and consumer friendly food production (NPUST, TARI)		Ecosystem approach to fisheries management (PCAARRD)	
	ICTs for precision agriculture (MARDI)	Dragon fruit regional network, (VAAS)		Implementing the Satoyama initiative for the benefit of biodiversity and human well-being (HDARES)	
	Data driven Agriculture (RDA)			Biopesticides and biofertilizers for soil borne disease control (VAAS)	
				FFTC 2019 Proficiency testing program	
	FFTC-Agricultural Policy Platform (FFTC-AP) ¹				

FFTC 2019-2020 Action Plan	Theme 1 Intelligent agriculture by ICT	Theme 2 Value-added agriculture	Theme 3 Climate-smart agriculture	Theme 4 Environmentally friendly technologies	Theme 5 Rural resource management
2020 FFTC Program	Smart food value chain—the solution to Asia’s food distribution		Crop resilience for adaptation to climate change:rice	Applicable solutions against rice blast in Asia	Harnessing the economic and socio-cultural opportunities of agri-tourism
		Dragon fruit regional network	Crop resilience for adaptation to climate change: rice		
				The practice and benefits of circular agriculture in waste reduction and recycling	
		Fostering passion fruit industry in Asia Pacific region		FFTC 2020 Proficiency testing program	
	FFTC-Agricultural Policy Platform (FFTC-AP) ¹ FFTC 50 th Anniversary Event The 25 th Meeting of the Technical Advisory Committee (TAC)				

¹ The FFTC-AP project is an eight-year old online website featuring scholarly articles on agricultural policies written by FFTC contracted partners who are respected agri-economists from different counties in the Asian Pacific Region.

IV. Preparing the FFTC Strategic Action Plan for 2021-2024

Last July 23-26, 2018, FFTC conducted its 24th Technical Advisory Committee (TAC) Meeting. Of the seven recommendations of the TAC members, the first one is a recommendation to develop a four-year rolling strategic action plan instead of a two-year cycle. The management replied to this recommendation and promised to formulate a four-year strategic action plan. A task force was then formed headed by the Center's Deputy Director. In April, 2019, the FFTC management decided to conduct a series of "Caravan Tours," the objective of which is basically to visit agricultural research institutes, universities and government organizations all over Taiwan to meet and



From April to August, 2019, the FFTC management embarked on a series of "Caravan Tours," the objective of which is basically to visit agricultural research institutes, universities and government organizations all over Taiwan and collect information about their vision, mission, research topics and other issues in agriculture most especially those pertaining to what's happening in the Asian Pacific Region.

discuss with their leaders and learn and collect from their ongoing research topics or new directions and vision concerning their relevant research fields. In the said visits, open discussions take place between the FFTC management and heads of Taiwan's agricultural institutes and agencies, with topics mostly focusing on the burning issues in today's agricultural landscape, most especially those pertaining to what's happening in the Asian Pacific Region.

From April to August, the following 18 organizations from Taipei to Pingtung were visited by the FFTC Director, Deputy Director, Information Officer and two Assistant Researchers:

1. April 11 Taiwan Livestock Research Institute, COA
2. April 24 Department of Agricultural Chemistry, NTU
3. April 30 Taiwan Animal Health Research Institute, COA
4. May 15 Taiwan Tea Research and Extension Station, COA
5. May 21 Taiwan Fisheries Research Institute, COA
6. May 21 National Taiwan Ocean University
7. May 23 Academia Sinica
8. June 05 Taiwan Forestry Research Institute, COA

- | | | |
|-----|-----------|--|
| 9. | June 06 | Pingtung Agricultural Biotechnology Park, COA |
| 10. | June 17 | College of Bio-resources and Agriculture, NTU |
| 11. | June 18 | Agricultural Technology Research Institute |
| 12. | July 02 | World Vegetable Center |
| 13. | July 09 | Miaoli District Agricultural Research and Extension Station, COA |
| 14. | July 12 | Taiwan Seed Improvement and Propagation Station, COA |
| 15. | July 15 | Taiwan Agricultural Research Institute, COA |
| 16. | June 15 | Taiwan Agri Chemicals and Toxic Substances Research Institute, COA |
| 17. | August 12 | Department of Science and Technology, COA |
| 18. | August 14 | Soil and Water Conservation Bureau, COA |

Based on data mined from the caravan tours, the following summary table was created (Table 2). Issues raised and future trends in relevant research as discussed by heads of agricultural research institutes were grouped according to the current five program themes of FFTC's Strategic Action Plan for 2019-2020.

Table 2. Summary of issues raised from the FFTC caravan tour grouped under different program themes

Program Themes for 2019-2020	Issues raised based on the caravan tours	Agricultural research institutes visited by FFTC
1. Intelligent agriculture by ICT	<ul style="list-style-type: none"> • 3D scanning technology on breeding pigs 	Taiwan Livestock Research Institute
	<ul style="list-style-type: none"> • Rapid diagnosis and monitoring of animal epidemic diseases 	Taiwan Animal Health Research Institute
	<ul style="list-style-type: none"> • Smart tea plantation and breeding techniques 	Taiwan Tea Research and Extension Station
	<ul style="list-style-type: none"> • Innovating forest industry 	Taiwan Forestry Research Institute
	<ul style="list-style-type: none"> • Indoor system establishment, Smart Ai greenhouse 	Pingtung Agricultural Biotechnology Park, Agricultural Technology Research Institute
	<ul style="list-style-type: none"> • Precision horticulture 	World Vegetable Center
	<ul style="list-style-type: none"> • Consumer study related to big data collection and analysis from resources such as e-market 	College of Bio-resources and Agriculture, NTU
	<ul style="list-style-type: none"> • Bio-informatics study, crop modeling to make more accurate field management 	College of Bio-resources and Agriculture, NTU
	<ul style="list-style-type: none"> • Develop of intelligent seed and seedling production system 	Taiwan Seed Improvement and Propagation Station
	<ul style="list-style-type: none"> • Develop “I Plant system” 	Taiwan Agricultural Research Institute
	<ul style="list-style-type: none"> • Develop small agricultural machines for slopeland agriculture 	Department of Science and Technology, COA
2. Value-added agriculture	<ul style="list-style-type: none"> • Innovation processing techniques on value-added/development of new tea products/marketing development 	Taiwan Tea Research Extension Station
	<ul style="list-style-type: none"> • Gene editing/herbal medicine/nutraceutical 	Academia Sinica
	<ul style="list-style-type: none"> • Development of special forest products like mushrooms, honey and herbs 	Taiwan Forestry Research Institute
	<ul style="list-style-type: none"> • Natural products for health and beauty/reinforce the function of export/import platform/cold chain facilities/ combining the local industrial chain/promote cold chain processing research 	Pingtung Agricultural Biotechnology Park, Taiwan Agricultural Research Institute

Program Themes for 2019-2020	Issues raised based on the caravan tours	Agricultural research institutes visited by FFTC
	<ul style="list-style-type: none"> Breeding ornamental fish and high value cold water fish/fermentation pilot plant for commercialization/ provide swine semen and SPF swine 	Agricultural Technology Research Institute
3. Climate smart agriculture	<ul style="list-style-type: none"> Climate-resilient animal genetic resources 	Taiwan Livestock Research Institute
	<ul style="list-style-type: none"> Heavy rain can change the salinity of water, temperature, currency and fish migration/Develop solar panel aquaculture/Develop indoor circulators for water systems to cope with climate change 	Taiwan Fisheries Research Institute
	<ul style="list-style-type: none"> Adaptation of forestry to climate change 	Taiwan Forestry Research Institute
	<ul style="list-style-type: none"> Develop early warning system 	Taiwan Agricultural Research Institute
	<ul style="list-style-type: none"> Improvement of quality seeds/develop phenotyping technology/partnerships with private seed companies/collection of genetic resources/promote food science (postharvest technology)/ 	World Vegetable Center, Department of Science and Technology, COA
	<ul style="list-style-type: none"> Improve breeding methods (molecular testing of seedling disease detection to evaluate seed quality)/Internationalization of seed testing system/Internationalization of Plant Variety Protection (PVP) system/Improvement of the seedling industry 	Taiwan Seed Improvement and Propagation Station
4. Environmentally friendly technologies	<ul style="list-style-type: none"> Alternative feed resources for environmentally friendly feeding system/Organic livestock farming/Prevent water and air pollution derived from livestock waste/Livestock farming waste recycling 	Taiwan Livestock Research Institute, Department of Agricultural Chemistry, NTU
	<ul style="list-style-type: none"> Develop Indoor aquatic system to prevent environmental pollution/Reduce continuous discharge of waste products in seas and oceans 	Taiwan Fisheries Research Institute

Program Themes for 2019-2020	Issues raised based on the caravan tours	Agricultural research institutes visited by FFTC
	<ul style="list-style-type: none"> • Agro-bio materials/Energy saving & Ecological agroproduction system 	Pingtung Agricultural Biotechnology Park, Taiwan Agricultural Research Institute
	<ul style="list-style-type: none"> • Develop biopesticides and biofertilizers 	Agricultural Technology Research Institute, Taiwan Agricultural Chemicals and Toxic Substances Research Institute
	<ul style="list-style-type: none"> • Promote pests and diseases research in vegetable production 	World Vegetable Center
	<ul style="list-style-type: none"> • Application of natural enemies for field crop protection 	Miaoli District of Agricultural Research and Extension Station
	<ul style="list-style-type: none"> • Prevent transboundary diseases and invasive diseases/Prevent fall army worm, / Develop resistance gene from crops 	Taiwan Agricultural Research Institute
	<ul style="list-style-type: none"> • Develop rapid detection for pesticide residues 	Taiwan Agricultural Chemicals and Toxic Substances Research Institute
	<ul style="list-style-type: none"> • Probiotics for enhancing livestock health preventing usage of antibiotics/meat processing techniques for farmer friendly/animal welfare 	Taiwan Livestock Research Institute
	<ul style="list-style-type: none"> • Heavy metal soil pollution (Cd, As)/cadmium free rice 	Department of Agricultural Chemistry, NTU, Academia Sinica
	<ul style="list-style-type: none"> • Transboundary veterinary diseases 	Taiwan Animal Health Research Institute
5. Rural resources management	<ul style="list-style-type: none"> • Promoting forest ecosystem services and their values/Satoyama and aboriginal people affairs /Forest therapy 	Taiwan Forestry Research Institute
	<ul style="list-style-type: none"> • Therapy study in horticulture and forestry related research to obtain human's heart beat data to prove the good environment 	College of Bio-resources and Agriculture, NTU

Program Themes for 2019-2020	Issues raised based on the caravan tours	Agricultural research institutes visited by FFTC
	<ul style="list-style-type: none"> • Social science dimension (youth employment and women empowerment) 	World Vegetable Center
	<ul style="list-style-type: none"> • Promote Apiculture in the mountainous area 	Miaoli District of Agricultural Research and Extension Station
	<ul style="list-style-type: none"> • Prevent Land Slide 	Soil and Water Conservation Bureau, COA

The series of caravan tours provided FFTC with insights on the current research topics that are considered relevant in Asian agriculture. The new directions and visions as discussed by the leaders of the various agricultural research agencies, bureaus and institutes also provided FFTC with inputs as to how the topics and themes of agricultural research can be grouped together (Table 3). Keywords like circular agriculture, waste management, smart food chain, cold chain, animal welfare, artificial intelligence learning system to analyze consumer's preferences, therapy study, transboundary diseases, phenotyping, nutrition studies, honeybee farming were picked up from the discussions.



On August 20, 2019, the FFTC management held a consultation meeting with six of Taiwan's agricultural experts. In the three-hour session, the experts commented on the current strategic action plan and made suggestions on how to revise it.

On August 20, 2019, the FFTC management held a consultation meeting with six of Taiwan's agricultural experts. They were Dr. Shih-Torng Ding, VP for Academic Affairs, National Taiwan University (NTU), Dr. Dar Yuan Lee, Associate Dean, College of Bio Resources and Agriculture, NTU, Dr. Hsueh-Shih Lin, Director General of Taiwan Agricultural Research Institute (TARI), Dr. Jeng-Fang Huang, Director General of Taiwan Livestock Research Institute (TLRI), Dr. Fuh-Jyh Jan, Dean, College of Agriculture and Natural Resources, National Chung Hsing University (NCHU), and Dr. Marco Wopereis, Director General of the World Vegetable Center. During the three-hour discussion, the experts made many comments on the current strategic action plan and made suggestions on how to revise it. Their comments are summarized in Table 3.

Table 3: Summary of issues/themes in the FFTC consultation meeting

	Dr. Marco Wopereis	Dr. Shih-Torng Ding	Dr. Hsueh-Shih Lin	Dr. Jeng-Fang Huang	Dr. Fuh-Jyh Jan	Dr. Dar-Yuan Lee
No. 1 Digital/Bio Economy		Precision animal breeding		Animal welfare		
No. 2 Consumer Economy	Consumer behavior			Food security and food safety		Food safety
No. 3 Climate Economy		Heat stress	Climate change			
No. 4 Circular Economy			Environmental disasters		Agricultural and industrial wastes.	Overuse of pesticides in plants and antibiotics in animals
No. 5 Rural Economy	Attracting the youth to venture into agriculture	Agricultural businesses	Labor shortage	Labor shortage rural development biodiversity		
General Comments	Food systems could be Merged to the present themes				Two or three themes can be extended or re-worded	

Other notable points which can be drawn based on the comments and feedbacks of the six invited experts in the August 20 consultation meeting include the following:

- The current five program themes of the 2019-2020 Strategic Action Plan are still relevant. The themes of climate smart agriculture and intelligent agriculture can be merged into one;
- The themes pertaining to socio economics and the environment are focused on the supply side. Consumer behavior, on the other hand, is lacking;
- ICTs are important new technologies which are useful for smart agriculture. These technologies can be used to enhance agricultural productivity;
- Climate risk or climate emergency is an urgent problem that needs resilient solutions. This should be given importance;
- Circular economy, which delves on how to reduce or recycle agricultural wastes, is a very essential theme;
- Rural economy, human resource issues such as labor shortage, the aging population, attracting the youth to engage in agricultural activities should be tackled and discussed more.

V. FFTC's five program themes for 2021-2024

Based on the new inputs as collected, organized and analyzed by the Center management, the new FFTC 2021-2024 Strategic Action Plan focusing on holding Workshops and Seminars are underpinned based on the following five program themes:

- V-1 Increasing productivity by strengthening agricultural R&D and investments;
- V-2 Enhancing food value chains and consumer oriented production;
- V-3 Promoting climate-smart and resilient agriculture;
- V-4 Fostering circular agriculture; and
- V-5 Strengthening resource management and rural development

V-1 Increasing productivity by strengthening agricultural R&D and investments

Investments in agricultural Research and Development (R&D) have been mentioned by the leaders of various research institutes during the FFTC caravan tour. The agriculture leaders explained that most of their investments on climate change technologies, cold-chain system, Country Soil Planning Geographic Information System are actually aimed at increasing productivity. The Science and Technology Department of the Council of Agriculture is closely working with the World Vegetable Center and Academia Sinica in their research on plant phenotyping, smart agriculture and value-adding. Investments have been made to develop their R&D efforts in those areas. Meanwhile, to further increase agricultural productivity, the S&T Department is

likewise working closely with the Asian Productivity Organization in the development of biofertilizers and biopesticides.

A 2017 report by the Global Harvest Initiative (GHI) in Washington DC states that global agricultural productivity is not accelerating fast enough to sustainably feed the world in 2050 (https://www.agri-pulse.com/ext/resources/AgSummit/GHI_2017-GAP-Report_FINAL.pdf). GHI's 8th Annual Global Agricultural Productivity Report: A World of Productive Sustainable Agriculture warns that unless this trend is reversed, the world may not be able to sustainably provide the food, feed, fiber and biofuels needed for a growing, more affluent global population.

According to the 2018 GAP Report, global agricultural productivity must increase by 1.75% annually to meet the demands of nearly 10 billion people in 2050. GHI's annual assessment of global productivity growth – the GAP Index – shows the current rate of growth is only 1.66%. This is well below the productivity growth rate needed to achieve the Sustainable Development Goal 2 target of doubling productivity for small-scale farmers in low-income countries and achieving Zero Hunger by 2050. The said article quoted Doyle Karr, the Biotechnology Public Policy Director of DuPont and Chair of the GHI Board of Directors, who said: "We must prioritize public and private agricultural research and development (R&D) and improvements to regulatory systems to stimulate innovations that improve productivity, with a particular emphasis on the needs of farmers."



FFTC intends to pursue activities that will strengthen agricultural productivity through R&D and investments.

FFTC intends to pursue activities that will enhance or improve agricultural productivity through R&D and investments. It hopes to carry out projects and programs that can improve and develop agricultural transport, marketing and irrigation facilities, supply of quality inputs, provision of better manure seeds, cooperative farming, land

reforms, agricultural education, institutional credit to name a few. The following could be the focus of this particular theme:

1. Organize and conduct workshops and seminars along the lines of policy analysis to improve sustainable agricultural productivity, R&D investments in agriculture, fostering agricultural productivity growth, etc.;
2. Collect information on the best practices to enhance agricultural productivity;
3. Disseminate information on agricultural productivity-enhancing technologies;

4. Support activities related to R&D investments and agricultural productivity; and
5. Related Possible Workshops/Seminar Topics:
 - (1) Accelerating regional agricultural productivity through fostering intelligent healthy seeds and seedling production;
 - (2) Trends in agriculture R&D investments and productivity; and
 - (3) Enhancing agricultural productivity and research innovation by harnessing Artificial Intelligence (AI), ICTs and biotechnologies

V-2 Enhancing food value chains and consumer oriented production

Food value chains and consumer preferences, demand and consumer behavior are basic words and phrases which were repeatedly verbalized by the leaders of agricultural institutes and agencies during the caravan tours. In the FFTC consultation meeting on August 20, the experts mentioned to pay close attention to the issues of the consumers including food security and food safety, noting that every country has a different way of addressing the problem. They also said that there is a need to go beyond nutrition as we need to study consumer behavior and consumer demand and work with different food producers and consumer groups in order to emphasize the concepts of consuming functional foods.

A food value chain, as traditionally defined, consists of all the stakeholders who participate in the coordinated production and value-adding activities that are needed to make food products. The FAO added the word “sustainable” to the term saying that a sustainable food value chain is supposed to be profitable at all stages, has broad based benefit to society and has positive or neutral impact on the natural environment.

FFTC believes that enhancing food value chains and consumer oriented production should be one of its strategic themes for 2020-2024. The Center will spearhead and support the collection of information on food production, and will organize activities towards finding smarter ways to produce food and operate food businesses. Emphasis would be on the following:

1. Gather experts on agri-food markets and consumer behavior and ask for their support in organizing workshops and seminars revolving around food value chains;
2. Facilitate the exchange of knowledge and experiences in food value chains and consumer



The Center aims to gather experts on agri-food markets and consumer behavior and ask for their support in organizing workshops and seminars revolving around food value chains.

- research and help disseminate the information in various forms of media;
3. Continue the past theme of “Value-added agriculture” and dovetail this to the present food value chain emphasizing the learnings and recommendations from the workshops of previous years;
 4. Design and prepare materials on smarter ways to produce food and operate food businesses and disseminate this on the Center’s website.
 5. Related possible Workshop/Seminar Topics:
 - (1) The role of consumers in the food value chain;
 - (2) The changing dynamics of the Asian agri-food market;
 - (3) Trends and innovations in the agri-food systems such as functional foods and probiotics;
 - (4) Food safety and improving traceability in food value chains through technology innovations such as cold chain and block chain technologies; and
 - (5) Consumer behavior and the Asian food market

V-3 Promoting climate-smart and resilient agriculture



FFTC aims to design and organize workshops, seminars and training courses which will enable scientists to share their knowledge and experiences in climate smart and resilient agriculture.

Practically all the leaders of the agricultural institutes and agencies that were consulted in the FFTC caravan tour agree that climate change still tops the list of very important issues not just in Asian agriculture, but also worldwide. During the consultation meetings, leaders of various agri agencies and institutes said climate change remains a very serious problem. An officer of the Fisheries Research Institute said the number one challenge they are facing is still climate change, particularly coping with the many typhoons that enter Taiwan. In fact, leaders of TARI explained that after all these years, climate change is still the main focus of their research as this is still a top problem.

The UN Intergovernmental Panel on Climate Change issued its latest assessment, in which the world's leading scientists warned that we must have an urgent and quick transformation of our civilization to avert the most dangerous effects of global climate (www.ipcc.ph). From 2010 onwards, humanity has experienced the many negative effects of climate change—extreme weather, rising seas, wildfires, hurricanes, etc. Agriculture becomes one of the first casualties of climate change because by its very nature, most farming activities are done outdoors in open air, and sometimes in flowing natural waters.

Government and development leaders already know that climate-smart and resilient agriculture holds one of the basic keys to mitigate these ill effects of climate change. The answer lies, as the experts explain, in planning intelligently and reducing wasteful damage so that our forests and agricultural lands can serve as a foundation for sustainable development. In crop production for example, climate-smart practices like crop varietal selection, breeding of drought-resistant crops, use of modern greenhouses, modifying cropping patterns, effective ecosystem management including the study of weather patterns and natural disasters as well as emerging infectious plant and animal diseases have been known to enhance the development of resilient agriculture.

FFTC plans to initiate and organize more activities that will promote climate-smart and resilient agriculture. It aims to design and organize workshops, seminars and training courses which will enable scientists and extension workers in the region to share their knowledge and experiences in climate-smart and resilient agriculture. At the same time, it also hopes to collect information on themes related to climate-smart and resilient agriculture and publish these online or in other forms of publications. FFTC therefore plans to establish ties with its partner organizations and/or agencies and do the following:

1. Plan, design and organize symposia, workshops, seminars and training courses on climate-smart and resilient agriculture in different parts of the region;
2. Establish a database of experts in the region and other pertinent information related to climate-smart and resilient agriculture;
3. Produce videos and publications on technologies related to climate-smart and resilient agriculture and promote them through the FFTC website and social media; and
4. Related Possible Workshops/Seminar Topics:
 - (1) Genetic resources for food and agriculture;
 - (2) Climate change adaptation;
 - (3) Mitigation of agricultural GHGs while growing more food;
 - (4) Technologies to support climate-smart and resilient agriculture;
 - (5) Prevention and control of transboundary animal and plant pests and diseases;
 - (6) Integrated Pest Management including the use of biofertilizers and biopesticides, natural enemies and ecological engineering; and
 - (7) Adapting and building resilience in agricultural food systems

V-4 Fostering circular agriculture

Circular agriculture or circular farming has been defined as “a way of agricultural production with inputs from recycling or renewable sources, applied with the highest precision, efficient use of resources, and without negative external impact” (www.circularfarming.nl). According to the Wageningen University website, circular agriculture is based on the principle of optimizing the use of all biomass or organisms. “The waste streams of one supply chain can be the raw materials for another. In this scenario, animals would be fed from food wastes.” In order to achieve this, there



The Center envisions continuing seminars and workshops that deal with waste management and improve on what has been achieved so that circular agriculture technologies can readily be made available to farmers.

should be smart integration between plant-based and animal-based supply chains. Experts say this type of agriculture minimizes environmental pollution, creates better biodiversity, brings added value and thus produces higher income to the farmers, requires less resources and food wastes, and less emissions of greenhouse gases.

Agricultural leaders in Taiwan suggested including circular agriculture as one of the Center’s themes because it is an important worldwide issue. In the past, FFTC has undertaken activities to promote circular agriculture. From 2010 to 2018, the following seminars and workshops dealt with the topic of circular agriculture or waste management:

- Soil carbon sequestration (2010);
- Fertilizer policy (2010);
- Nitrogen circulation (2011);
- Livestock wastes management (2011);
- Remediation of contaminated soils (2014);
- Biomass to biochar (2013);
- Biofuel production (2014); and
- Smart use of fertilizers (2018)

The Center envisions continuing these types of activities and improve on what has been achieved so that circular agriculture technologies can readily be made available to farmers. Through the use of innovative environmentally friendly agricultural technologies, recycling of agricultural byproducts or wastes with value addition is

achieved while at the same time, contributing to the balance of the ecological system. Innovative technologies can turn agricultural byproducts or wastes into value-added products.

FFTC plans to link with old and new organizations and/or agencies and forge partnerships to do the following:

1. Organize and conduct workshops/seminars/trainings on recycling of agricultural resources and wastes and new technologies on circular agriculture;
2. Involve leaders and officers of agri-environmental groups, technicians and extension people to participate in FFTC activities;
3. Continue the past Program Theme No. 4 of the 2019-2020 Strategic Action Plan on “Environmentally Friendly Technologies” and focus more on improved crop and livestock production practices.
4. Forge linkages with experts on circular agriculture and brainstorm on possible ways to disseminate simple technologies to the farmers;
5. Utilize various forms of media (publications, video and social media) to promote the concept of circular agriculture; and
6. Related Possible Workshop/Seminar Topics:
 - (1) Circular solutions for bio-waste and manure;
 - (2) Postharvest losses, food wastage and optimizing the use of agri by-products;
 - (3) Circular approach and the sustainability of agri-food systems;
 - (4) Sustainable management of soil fertility and water resources;
 - (5) Biotechnology for efficient and environmentally friendly waste management; and
 - (6) Regulation and management strategies for circular agriculture

V-5 Strengthening resource management and rural development

According to the Asian Development Bank, the Asian and the Pacific region has achieved spectacular development over the past 50 years transforming from an agrarian, low income region in the 1960s to a global manufacturing powerhouse today. Despite the success, however, developing Asia needs continued efforts to tackle remaining poverty, rising income inequality, narrowing but still larger gender gaps, etc.

(www.adb.org) Human resources are becoming scarce, labor shortage escalates, there is also the aging population and the challenge of engaging the young generation to venture into

agribusiness. Added to this is the issue of some women who are still grappling with discrimination and inequality issues in farming. This is why eradicating poverty in many poor rural areas is recognized and discussed in the 2030 Agenda for Sustainable Development, which is focused towards rural development and agriculture and food security. Eradicating poverty in these areas is recognized and discussed in the 2030 Agenda for Sustainable Development, which is focused towards rural development and agriculture and food security.

(www.sustainabledevelopment.un.org) Moreover, the Satoyama Initiative, a Japanese concept focusing on people living in harmony with Nature, embraces the principles of biodiversity, conservation, sustainable management, use of natural resources, agricultural technologies, governance and properly functioning systems. To enhance or hasten the process of rural development, leaders and their followers should have a firm grasp of the principles of resource management. Defined as the acquisition, allocation and management of resources such as individuals and their skills, finances, technology, materials, machinery and natural resources, the term resource management is always an essential part of any project management plan (www.ilo.org).

Program theme 5 of the FFTC Strategic Action Plan for 2019-2020 is actually on rural resources management. It recognized that changes in production networks and increased urbanization has also changed the landscape and character of the rural areas, and that tourism and recreation activities have grown and are now considered integral part of rural livelihood. For the Strategic Action Plan for 2021-2024, FFTC



In the next four years, FFTC aims to touch base with rural development and resource management experts to design and plan activities that could help promote the theme of strengthening resource management and rural development.

retains the concept of rural resource management but goes a step further to expand its scope and add rural development in the equation.

In the next four years, the Center aims to touch base with rural development and resource management experts to design and plan activities that could help promote the theme of “strengthening resource management and rural development.”

Emphasis would be on the following:

1. Organize workshops and seminars on agricultural resource allocation, biomass utilization, local renewable energy and slope land farming;
2. Follow-up on the FFTC 2019 Symposium on the “Satoyama Initiative” and brainstorm on possible activities related to the theme;
3. Document and collect information on past activities related to resource management and rural development and develop promotional materials which can be uploaded in the FFTC website;
4. Involve the rural development and extension people in the organization of activities related to the resource management theme; and
5. Related Possible Workshop/Seminar Topics:
 - (1) Best practices for agri and eco-tourism;
 - (2) Rural revitalization: tapping new opportunities;
 - (3) Consultation and provision of technical backup for the young generation’s entry into farming;
 - (4) Optimizing resource utilization in rural development;
 - (5) Enhancing agricultural trade in the rural areas; and
 - (6) Technologies on agricultural land and water management

VI. Operational strategy

Criteria for screening projects

Once the proposed FFTC 2021-2024 Strategic Action Plan has been approved by the TAC, the Working Group and the Executive Board, the Center management will disseminate the approved document to its country partners, agencies and organizations. And as project proposals start to be submitted, the FFTC management will read and discuss the proposals and will screen 8-10 projects based on the following criteria:

- VI-1 Significance and relevance of the proposals based on the five-program themes;
- VI-2 Balance of the projects as they correspond to the five-program themes and the proposed venue. For example, as much as possible, a project proposal for a workshop on waste recycling which is under the program theme on “Fostering circular agriculture,” cannot have two other similar topics under that theme. Similarly, two or three projects held in the same country on the same year should be avoided. The projects have to be spread out across program themes on a more balanced mode;
- VI-3 From the onset, the size of the project venue should be discussed and decided by the FFTC management and its agency and/or country partners. This is going to be based on the nature of the project and the number of speakers and local participants. For example, a symposium with 250 participants would require a large auditorium while a training course with 25-30 participants would be best to be held in a small hotel function room. For other activities like information collection, market surveys and networks, the venue may be flexible and could vary depending on the project requirements and needs.

Standard operating procedure for project management

- VI-4 For many years now, the Center is guided by an operations manual entitled “The Standard Procedures and Timeline for Project Coordinators—How to Prepare, Implement and Report.” In 2019, this manual has been updated to suit the changing times, and has been the standard guide for old and new coordinators who are assigned to handle projects.
- VI-5 Basically, the standard procedure 2020 is made up of four stages. First is the project proposal stage in which call for project proposals for the following year is announced on the first quarter of the year and is written on or before the end of July. Discussion follows, and once the project has been approved by the

Director, it will again be presented to the Working Group members and will be passed on to the Executive Board member for their final approval.

- VI-6 The second stage is the project preparation in which the project coordinators will have to decide on the date of the project and informing the participants about the requirements for paper submission. The project coordinators are also responsible for calling the first organizing committee meeting (which should be held at least 16-20 weeks in advance), sending out letters of invitation to the speakers (at least 10 weeks in advance), promotion of the event through website announcement, receiving and editing of papers, production of workshop or seminar proceedings and collection of power point slide presentations from the speakers. Since climate-related disaster risk is dramatically increasing due to climate change and infection risk by new disease is growing due to rapid spread worldwide by globalization, during this stage, the project coordinators will keep in mind to have contingency plan for implementing FFTC projects.
- VI-7 The third stage is the project operation for the meeting days. These would include preparation of the materials for the meeting, preparation of the venue, payment to invited speakers, writing of director's speech, preparation of discussion, generating feedback and so on. In the case of online videoconferences (during the COVID-19 pandemic), the important things to consider logistically are 1) the software application to be used; 2) the hardware to be used (microphones, etc); 3) test running the connection from the home base to the speakers
- VI-8 The fourth stage is the post activities after the project has been implemented. These would include the sending out of thank you letters, collection and organization of photos, writing of the final report and evaluation, production of workshop video and uploading of the papers, power point presentations and uploading of the said materials/documents in the FFTC website.

Principles of running the FFTC program

- VI-9 There are four guiding principles in running the FFTC program. First is knowledge of program operations which basically is following the guidelines, standard procedures and timelines set when running a project. Second, is to involve the private sector in the project. There should also be a balance of representation between the public and private sector in the Center's activities. Third is to do a follow-up of activities once a project has been finished. This is especially true to those workshops whose speakers specifically recommended doing follow-up activities for the following year. And fourth is the decision whether the activity will be open to the public or to only a few participants. In the bi-annual TAC meetings, for example, the TAC members would ask for a closed door session just so they can deliberate among themselves their recommendations to the FFTC management.

Information dissemination

- VI-10 Dissemination of information is crucial to the Center, it being a repository of information on agricultural technologies and policies in the Asian Pacific Region. Therefore packaging information into palatable forms and making it available using various forms of media is very important. The Center operates an English and Chinese website and so far, this is the fastest way to disseminate information. Another medium is social media through the FFTC Facebook Page. There are also the publications and video productions that the Center also uses to disseminate information to the public.
- VI-11 FFTC Project coordinators should read the proposals carefully and discern how it can also be beneficial to the FFTC-Agricultural Policy Platform. Can some papers be used by the AP project for the AP website? Can some speakers be tapped to write papers for the AP website?

Work Evaluation/Review

- VI-12 Work programs are officially reviewed by the TAC members every two years. The FFTC management prepares and presents the accomplishments of the Center for the past two years and the TAC members react to the presentations and make comments, suggestions and recommendations on the next course of actions. Every six years, FFTC also invites 2-3 prominent people from agriculture to do an external review of the Center, a periodic assessment of the relevance, performance, efficiency and impact of the projects in relation to the Center's objectives. The FFTC management prepares its own Internal Review and presents it to the External Review members. It takes around one to two weeks for the External Review members to conduct interviews, read documents and write and present the final External Review report to the FFTC management. The last FFTC External Review was conducted five years ago in 2015.

VII. CONCLUSION

FFTC intends to make the Strategic Action Plan Focusing on Holding Workshops and Seminars in 2021-2024 as its basic guide in conceptualizing, planning, organizing, and holding of its workshops, seminars and training courses in the next four years. This will be shared among the Center's partner organizations in the region as this is also envisioned to act as a guiding document when the representatives of FFTC's partner organizations prepare their project proposals. FFTC therefore hopes that for the next four years, its workshops and seminars will all be based, aligned and attuned to the five program themes mentioned in this Strategic Action Plan.

VIII. REFERENCES

Asia's Food Crisis, accessed December 30, 2019

<https://www.cnn.com/2019/11/27/asias-food-crisis-a-800-billion-investment-needed-in-next-10-years.html>

Asia's Journey to Prosperity, accessed October 20, 2019 <http://www.adb.org>

Global Harvest Initiative, accessed October 19, 2019, https://www.agripulse.com/ext/resources/AgSummit/GHI_2017-GAP-Report_FINAL.pdf

Definition of Circular Farming, accessed October 19, 2019
<http://www.circularfarming.nl>

Poverty in the Asian Region, accessed October 20, 2019 <http://www.ifad.org>

2030 Agenda for Sustainable Development, accessed October 20, 2019
<http://sustainabledevelopment.un.org>

Definition of Resource Management, accessed October 19, 2019, <http://www.ilo.org>

IX. Appendices

Appendix 1: Preparing the FFTC Strategic Action Plan for 2021-2024

The step-by-step process

1. Formation of task force
2. Conducting monthly meetings
3. Doing library research
4. Going on caravan tour
5. Conducting consultation meeting with Taiwan agri experts
6. Drafting of outline
7. Discussing and brainstorming
8. Writing of the draft
9. Making revisions
10. Writing and printing of final draft

Appendix 2: List of FFTC partner organizations (2017-2020)

Japan

National Agriculture and Food Research Organization (NARO)
Monsoon Asia Agro-environmental Research Consortium (MARCO)¹
Japan International Research Center for Agricultural Science (JIRCAS)

Korea

Rural Development Administration (RDA)
Korea Rural Economic Institute (KREI)

Malaysia

Malaysian Agricultural Research and Development Institute (MARDI)

New Zealand

Plant and Food Research Institute (PFRI)

¹MARCO is an Initiative Project by the Institute for Agro-Environmental Sciences, NARO, Japan

Philippines

Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD)
Department of Agriculture (DA)
Manila Economic and Cultural Office (MECO)
University of the Philippines Visayas (UPV)

Taiwan

Council of Agriculture (COA)
Taiwan Livestock Research Institute (TLRI)
National Pingtung University of Science and Technology (NPUST)
Taiwan Forestry Research Institute (TFRI)
Agricultural Technology Research Institute (ATRI)
World Vegetable Center (WorldVeg)
Hualien District Agricultural Research and Extension Station (HDARES)
Forest Bureau (FB)
Taiwan Seed Improvement and Propagation Station (TSIPS)
Taiwan Agricultural Research Institute (TARI)
Taichung District Agricultural Research and Extension Station (TDARES)
Agricultural Policy Research Center (APRC)
National Taiwan University (NTU)
National Ilan University (NIU)
Yilan Irrigation Association (YIA)
National Training Institute for Farmers' Organization (NTIFO)
Ministry of Foreign Affairs, Republic of China (MOFA)
Rural Development Foundation (RDF)

Switzerland

International Seed Testing Organization (ISTA)

Thailand

Kasetsart University (KU)
Mekong Institute (MI)
Suranaree University of Technology (SUT)

Vietnam

Vietnam Academy of Agricultural Sciences (VAAS)
National Institute of Animal Sciences (NIAS)
Department of Livestock Production (DLP)
Ministry of Agriculture and Rural Development (MARD)
Vietnam National University of Agriculture (VNUA)
Soils and Fertilizers Research Institute (SFRI)
Plant Protection Research Institute (PPRI)
Southern Horticultural Research Institute (SOFRI)

X. List of tables

Table1. FFTC projects for 2019-2020 vis-à-vis program themes based on Strategic Action Plan for 2019-2020

Table2. Summary of issues raised from the FFTC caravan tours grouped under different program themes

Table3. Summary of issues/themes in the FFTC consultation meeting