出國報告（出國類別：考察）

出席亞洲生產力組織(APO)舉辦之「食物價值創新研習會」出國報告

服務機關：行政院農業委員會
姓名職稱： 邱奕璇 技士
許萌芳 技士
派赴國家： 柬埔寨金邊
出國期間：107 年 11 月 26 日至 11 月 30 日
報告日期：108 年 2 月 11 日

摘　要

食品價值鏈係指涵蓋農地到餐桌，從生產、種植、採收、加工、運輸、銷售至消費，所有的流程環環相扣，如何在每個階段皆有良好的操作模式，增進食品價值鏈是一項非常重要之概念。參加本次亞洲生產力組織舉辦之食品價值鏈創新研習會，可瞭解各會員國政府單位於增進食品價值鏈之推動方式及困難點，進行經驗交流，亦經由各國目前發展及有關食品價值鏈之案例分享，了解各國農產業發展趨勢。另透過研討會講者之專題內容、案例分享及參訪行程，就食品價值鏈創新概念及如何增進食品價值，經過一系列討論，針對各面向綜整建議如下：

(一) 栽培面向—重視種子品質、良好栽培環境及技術；利用契作建構良好合作模式；安全用藥、朝向有機栽培前進有機3.0；進行GAP生產追溯、有機、地理標示(Geographical Indication)認證，提供消費者信賴之認證產品。

(二)加工技術面向—導入GHP、GMP、HACCP及ISO等食品安全衛生國際認證；研發機能性食品；充分運用產品以減少食物浪費；建立創新食品包裝技術及良好標示；開發可生物分解之永續性包裝媒材，更具規模之加工產業可以導入自動化或智慧機械。

(三) 行銷面向—進行消費者需求研究；周全的市場策略及測試；建立消費者導向之創新包裝；創造新商品開拓新市場；結合不同通路之行銷策略，為產品創造最大之銷售可能性。

(四) 政策面向—建立公部門及私人企業合作關係(Public Private Partnerships,PPP)；建立公私及生產者合作關係(Public-Private-Producers Partnership, 4P)；發展休閒農業(agri-tourism)，利用農業旅遊帶動地方社區經濟。

農產品食品價值鏈之提升，將可增加產品利潤及生產者收益、創造更多就業機會、拓展國內外市場、增加國家稅收、減少耗損、建立穩定供需關係，並維持環境永續性，在經濟、環境及社會利益皆有正面之影響，透過教育、研發、行銷，產官學三方相互配合方可見到良好成效。上市前及上市後各項政策、輔導及管制分別由農委會及衛福部食藥署負責，因此更應建立良好的合作關係，透過與農民、企業及消費者持續溝通協調與輔導，讓食品價值鏈不僅能夠創造越來越多收益，也能符合社會期待促進健康，達到真正多贏局面創造正向循環之食品價值鏈。藉由本次出國參與研習經驗，有助於未來辦理我國農產品或農產加工從生產端到上市過程中，相關業務推動或政策草擬之參考。

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壹、背景與目標

食品產業供應鏈的上游以原料為主，常見如大麥、小麥、糖、咖啡、可可、玉米、黃豆、油菜籽、高梁、牛、羊、豬、雞等動植物及水產的原物料；中游主要為經過加工後製成穀類、澱粉製品（如麥片、麵粉、米、玉米粉）、食用油脂、果糖、麥芽糖、冷凍肉品、冷凍蔬菜、豆類加工品（如豆腐、豆皮）等中間食品；下游為再製成冷凍、罐頭、脫水、醃漬食品、乳製品、營養食品等等可供消費者直接使用之食品。再者，餐飲連鎖通路則屬於食品產業鏈的下游。

食品價值鏈係指涵蓋農地到餐桌，從生產、種植、採收、加工、運輸、銷售至消費，所有的流程環環相扣，透過各階段的策略擬定與實際運作，使產品最終以符合消費者期待之樣貌送上餐桌，如何在此過程同時兼顧生產者或提供者之商業利潤，又能促進社會福利與符合需求，達到增進產業鏈整體價值，是各國間皆持續關注且投注心力之重要議題。

為了提供消費者安心的產品，透過農委會、環保署、衛福部、經濟部及教育部等部會共同提出「食安五環」改革方案，精進食品安全管理，就「源頭控管」、「重建生產管理」、「加強查驗」、「加重惡意黑心廠商責任」及「全民監督食安」等五大面向，確保食物從農場到餐桌的每一個環節皆符合環保、安全標準，以落實食的安心的訴求。此外農委會於食品生產端亦推動多項政策，包含推動產銷履歷，係以提供農產品安全性、可追溯性、農業環境永續性、資訊公開透明等核心價值，將風險管理、批次管理、履歷記錄與系統登載等要求，定為驗證基準，據以輔導農產品經營業者遵行適用；推動散裝生雞蛋溯源標示；持續維護及提升已受消費者歡迎及肯定的優良品質驗證制度（如 CAS 及 TAP ）之公信力，並推廣與教育消費者選購驗證產品，藉此提供消費者安心且具有保障的產品，促進食品價值鏈之健全發展。

本次亞洲生產力組織(Asian Productivity Organization, APO)於107年11月26日至11月30日在柬埔寨金邊舉辦「Workshop on Innovations in Food Value Chains」，透過食品價值鏈基本概念及食品價值鏈之加值與創新議題探討、成功發展食品價值鏈之企業分析與柬埔寨當地成功經營且具規模之工廠觀摩參訪，希望藉此達到以下目的：

(一) 提高參加人員對食品價值鏈之知識與瞭解，以及透過食品價值鏈的加值，如何使生產到消費端都獲得助益。

(二) 分享各國間食品價值鏈各環節現況，並以成功發展食品價值鏈之企業為例，分析其經驗優點及發展困難處。

貳、會議基本資料及議程

一、 會議名稱：Workshop on Innovations in Food Value Chains

二、 日期：107年11月26日至11月30日

三、 地點: 柬埔寨金邊

四、 與會人員：來自泰國、菲律賓、斐濟、馬來西亞、巴基斯坦、蒙古、印度、伊朗、柬埔寨、寮國、臺灣等11個國家，共計23位代表。

五、　會議議程：

Final Program of the workshop on Innovations in Food Value Chain, 26-30 Nov 2018, Phnom Penh, Cambodia		
Hotel Accommodation and Workshop Venue: Phnom Penh Era Hotel Address: No. 44, Street 163, Olympic Khan Chamcarmorn Chamkar Mon, Phnom Penh, Cambodia Tel: + 855 23 222 122 Fax: +855 23 223 1110 E-mail: info@phnompenhera.com Website: http://www.phnompenhera.com/		
Day 1: Monday, 26 November 2018		
Time	***Activity***	***Responsible***
08:30–09:00	Registration	NPCC team
09:00–10:00	Opening session - Welcome address by National Productivity Centre of Cambodia - Opening message by the chief guest - Self-Introduction of participants and resource persons - Group photograph	 NPCC Director H.E (Mr.) Phork Sovanrith, Secretary of State of MIH and APO Director for Cambodia NPCC Team NPCC Team
10:00–10:15	Coffee break	
10:15–10:30	Program Orientation	Mr. Um Serivuth, Deputy Director of NPCC, MIH, local coordinator of the program
Technical Session 1. **Global trends, current issues, and fostering advances in Food Value Chains**		
10:30–11:30	**Presentation 1:** Value chain concept, approaches, and tools to support FVC development	Mr. Waheed Ahmad Manager (Operations)/ Consultant, Capital Food Industries, Pakistan
11:30-12:00	Discussions	Facilitated by Local coordinator and experts
12:00– 13:00	Lunch break	
13:00–13:45	**Presentation 2:** Value addition through food quality and safety assurance certification systems	Mr. Michele Maccari, Independent Consultant, Italy
13:45-14:15	Discussions	Local coordinator and experts
14:15– 15:00	**Presentation 3:** Business models for improved inclusion of small farmer and SMEs in Food Value Chain (FVC)	Mr. Pakin Juthasilaparuth, Vice President- New Business
15:00– 15:15	Coffee break	

15:15– 16:00	**Presentation 4:** The increment of agribusiness value chain through innovative process	Ms. Choun MonyRoth, Phd, Chief of CamLAPF, Agro-industry of Department, MAFF
16:00– 16:30	Discussions and wrap-up	Facilitated by Local coordinator and experts
Day 2: Tuesday, 27 November 2018		
09:00– 09:30	Recapitulation of important knowledge gained from Day 1	Participants
Technical Session 2. **Applications of innovative Food Value Chain technologies in agribusiness**		
09:30– 10:15	**Presentation 5:** Product development, Innovation and value added in food processing	Mr. Waheed Ahmad
10:15– 11:00	**Presentation 6:**Public-private partnerships for developing innovative and inclusive Food Value Chains (FVCs)	Mr. Michele Maccari
11:00– 11:15	Coffee break	
11:15– 11:30	Discussions	Facilitated by Local coordinator and experts
11:30– 12:15	**Presentation 7:** Successful case study of innovative FVC	Mr. Pakin Juthasilaparuth
12:15– 12:30	Discussions	Facilitated by Local coordinator and experts
12:30– 13:30	Lunch break	
13:30-14:15	**Presentation 8:** Innovative value addition technologies for food packaging and marketing	Mr. Waheed Ahmad
Technical Session 3. **Sharing Country Case Studies on Organic agriculture**		
14:45– 15:15	Country paper presentation (10 minutes each country)	Participants
15:15-15:30	Coffee break	
15:30– 16:00	Country paper presentation (10 minutes each country)	Participants
16:00– 17:00	Discussions Briefing on field visit	
Day 3: Wednesday, 28 November 2018		
09:00– 14:00 Leaving time from hotel is 7:00 am	Site visit at Kiriroom Food Production Co., Ltd	NPCC team
Day 4: Thursday, 29 November 2018		
09:00– 09:30	Recapitulation of important knowledge gained from Day 2 and 3	Participants
9:30 -10:15	**Presentation 9:** Successful cases of innovative FVCs	Mr. Michele Maccari
10:15– 10:30	Coffee break	
Technical Session 4 Group break-out sessions		
10:30– 11:00	Briefing on Group Breakout Sessions	Resource Persons

11:00– 12:30	Group Breakout Sessions (hands-on experience) • Group discussions will be based on the outcome of the Day 1–3 workshop proceedings such as presentations by resource persons and participants, resource papers and country papers, learning from field visit, and discussions and exchange of views among the participants/resource persons on the subject. • Participants facilitated by resource persons will discuss the opportunities, issues and challenges on food value chains and formulate strategic action plans to address them. • A framework for group discussions will be provided separately later.	Resource Persons and Participants
12:30– 13:30	Lunch break	
13:30– 17:00	Group Breakout Sessions (hands-on experience) –Contd.	Resource Persons and Participants
18:30– 20:00	Farewell dinner	Hosted by NPCC, MIH
Day 5: Friday, 30 November 2018		
08:00– 09:00	Presentations of Group Breakout Sessions	Participants
09:00– 09:30	Discussion	
09:30– 09:45	Tea/coffee break	
09:45– 10:15	**Panel Discussion:** The way forward	Resource Persons
10:15– 10:30	Lunch break	
10:30– 11:00	Workshop recommendation and output action plan	Resource Persons and Participants
11:00– 11:45	Formulation of action plans for follow-up by individual participants after the project completion	Facilitated by the Workshop Secretariat
11:45– 12:15	Program evaluation by participants, resource persons, and implementing organization	Participants, Resource Persons, and implementing organization
12:15– 13:00	Closing & certification • Remarks of resource persons • Vote of thanks by a participant • Closing remarks by NPCC director • Certificate conferment	NPCC Team
Day 0: Saturday, 01 December 2018- Departure of Participants from Phnom Penh		

參、會議內容摘要

演講主題(一):價值鏈概念及增進食品價值鏈方式與發展 Value chain concept, approaches, and tools to support FVC development

1、講師: 巴基斯坦Capital Food Industries 顧問-Mr. Waheed Ahmad

2、內容摘要:

食品價值鏈係指涵蓋農地到餐桌，從生產、種植、採收、加工、運輸、銷售至消費，所有的流程環環相扣，如何在每個階段皆有良好的操作模式，增進食品價值鏈是一項非常重要之概念。不良的種子及栽培模式、施加大量殺蟲劑、採收後不良之儲存條件、加工耗損量大、消費者食用無品質保障，造成農民收益低也影響消費信任度，倘若有良好的供應流程，創造優質產品、完善採後技術、透過良好加工方式、多樣產品種類、創新的包裝、導入新的設計、遵循國際規範並創造品牌，將創造更多就業機會、生產者和加工者收益增加、拓展國內外市場、減少耗損、建立穩定供需關係、維持環境永續性，在經濟、環境及社會利益三個面向皆有正面之影響。

而主要透過食品價值鏈所增進之價值組成包含食品安全、生產者薪資、產品利潤、國家稅收、消費者剩餘、對環境之影響。以樂事洋芋片為例，於1965年和百事可樂合併，該企業在巴基斯坦透過和農民契作、選用特定品種維持品質、督導使用肥料及殺蟲劑之方針、透過保險保障農民無受天災之苦，生產大量馬鈴薯，並經由機械化的加工流程及適當儲存環境增進最終洋芋片之品質。

圖.食物價值鏈概念

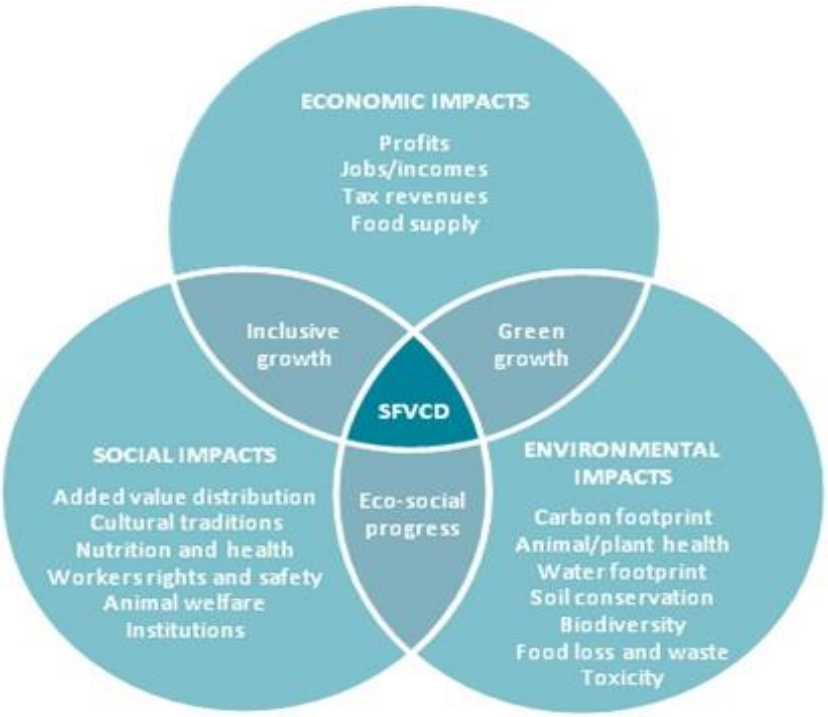

圖. 透過食品價值鏈增進之價值

演講主題(二)：透過品質及安全性認證制度增進食品價值 Value addition through food quality and safety assurance certification systems

1、講師: 義大利獨立顧問-Mr. Michele Maccari

2、內容摘要:

為了達到良好食品安全性，消費者越來越要求產品來自有機農場、公平貿易或地理標示(geograpgical indication)。全球的有機農業市場從2000年179億美元上升至2015年816億美元，人們願意多花點錢來保證食品安全性，也因此有機商品標準及認證迅速發展，有機商品也躍進主流市場。而有機農業的發展從有機1.0(1920-1968)始提出有機的概念，接續著在有機2.0之政策環境中，規範有機農產品之產出須依循有機生產標準、具有可追朔之生產流程及由第三方驗證機制。而正在發展中之有機3.0則強調透過有機農耕之過程凸顯健康、生態、公平與謹慎之原則，達到永續發展之目的。

演講主題(三)：小農及中小企業增進食品價值鏈之商業模式 Business models for improved inclusion of small farmer and SMEs in Food Value Chain (FVC)

1、講師: 泰國C.P. intertrade副總裁- Mr. Pakin Juthasilaparuth

2、內容摘要：

以泰國為例，儘管秈米及泰國香米消費量暫居第一第二，然數據顯示該二者之消費量逐漸下降，而泰國境內日本餐廳數量日益增加，每年為10-15%的增長幅度，將導致蓬萊米的需求上升。因此原生產泰國米之皇傘(Royal Unbrella)公司發展生產蓬萊米，其策略首先為找尋適合蓬萊米生長之地點-清萊，進而研究適合栽種之品種，與農民契作，並提供農民栽培所需之原料及技術。與臺灣不同之處在於該模式主要角色包含農民、經紀人及公司主體三方，其中由經紀人蒐集及篩選適當的契作農戶，並扮演中間角色教導農民適當之栽培模式，而公司則主要負責開創市場銷售管道。

演講主題(四)：透過創新過程增進農企業價值鏈 The increment of agribusiness value chain through innovative process

1、講師：柬埔寨 Agro-industry of Department, MAFF處長- Ms. Choun MonyRoth, Phd

2、內容摘要：

目前柬埔寨之農產品生產銷售上遇到之困難包括: 1.因耕地小且基礎建設不足，

產地難以運送農產品至市場 2.採後處理技術不良 3.缺乏完善的供應鏈系統 4.民眾缺乏食品安全知識 5.銷售管道未透明化，農民只將產品銷售給認識的中間商 6.廠商普遍依循傳統的食品供應鏈及加工模式。因此該國政府單位正致力於倡導良好農業規範(Good agricultural practice, GAP)來改善生產及品質、改善既有供應鏈、強化有關農業機構、增進產品銷售，並透過改善市場銷售策略、改善農產品包裝及標示、增加國內消費市場及種植進口替代作物來減少當地進口之農產品。

演講主題(五)：食品加工之產品研發、創新及加值 Product development, Innovation and value added in food processing

1、講師：巴基斯坦Capital Food Industries 顧問-Mr. Waheed Ahmad

2、內容摘要:

現今市場產品林立，為開拓新市場，需要創造新產品以增進食品價值。在新產品開發時，需要進行良好的市場及消費者需求研究、商品標誌、了解該種商品消費是否飽和、舊有的產品是否可被取代，或開發全新的消費市場(例如有機、非基改、機能性食品)。新的成分、味道、配方比例、氣味、包裝、更好的品質或更具感官上吸引力皆可歸於商品創新。產品創新的方向包含市場延伸、原有商品重新定位、新型態或容量改變(例如可口可樂由小瓶變大瓶)、商品配方改良、重新包裝及創造另一種新產品。而影響商品是否要創新源自市場需要、消費者需求及技術可行性。新產品開發的步驟為新想法的產生、想法的篩選、概念的發展和測試、市場策略、商業分析、商品製成、市場測試，到最終的商品化，其中產品上架前需要進行相當多市場測試，全盤考量宣傳、定價、儲架壽命、品牌化、包裝、預算等等，才能成功上市。

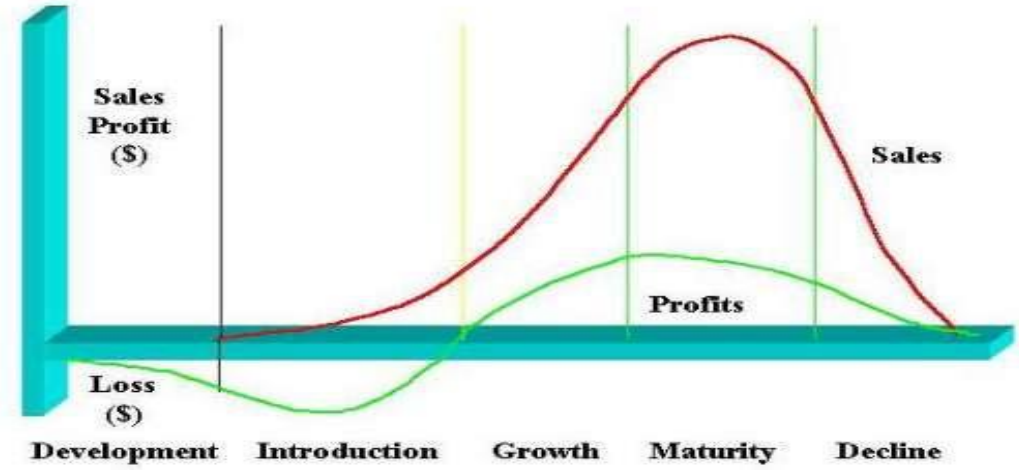

圖.新產品生產週期及利潤變化

演講主題(六)：食品價值鏈提升及創新公私協力作法 Public-private partnerships for developing innovative and inclusive Food Value Chains (FVCs)

1、講師：義大利獨立顧問-Mr. Michele Maccari

2、內容摘要:

食品價值鏈涉及廣泛的範圍，包含不同階段、角色甚至不同機構，其中私人企業扮演相當重要的份量，像是販賣產出、購買加工後的產品或是居中協調等。在此過程，公私協力（public private partnership, PPP）的夥伴關係對食品價值鏈的發展佔有很重要的地位，藉由長期合作、資源共享、風險降低等理由達到共同期待目標或取得各自需求，進一步於食品價值鏈發揮加值效益。進一步亦可以公私生產者協力關係（public-private-producers partnership, 4Ps）作衍生，所有價值鏈內的各個角色藉由共同合作與分工機制，達到社會、經濟與環境永續發展的目標。

演講主題(七)：食品價值鏈創新成功案例分享 Successful case study of innovative FVC

1、講師：泰國C.P. intertrade副總裁- Mr. Pakin Juthasilaparuth

2、內容摘要:

分享於泰國境內種植販售用日本米之成功經驗，從一開始國內日本米使用與消費經驗背景資料調查、種植品種的選擇，至生產後產品形象塑造與通路行銷，最後達成於泰國境內成功銷售的成果。食品價值鏈從生產、加工至最後消費者購買，如

果要成功發展食品價值鏈並從中創造企業所需利潤，價值鏈內各階段皆應納入考量做為評估的工具，考量消費者的需求，更能事半功倍達成供應者所需目的。

演講主題(八)：食品包裝與行銷之創新加值作法 Innovative value addition technologies for food packaging and marketing

1、講師：巴基斯坦Capital Food Industries 顧問-Mr. Waheed Ahmad

2、內容摘要:

為了延長食品或加工產品保存期限、維持風味或運輸等目的，食品包裝為常用之方法，商品之包裝亦牽涉多元考量，像是為了保存或加工器材或材質的選擇、產品或企業傳遞形象及消費者使用的方便性等，於產品生產前即應詳加納入考量。除了包裝以外，產品的行銷也對於價值鏈加值佔有重要地位，包含產品定位，企業理念及消費者印象等，如果能詳加評估，除了可以創造公司收益，提升產品價格，也能使食品價值鏈各方面獲得相對之加值。

演講主題(九)：食品價值鏈創新成功案例分享 Successful cases of innovative FVCs

1、講師：義大利獨立顧問-Mr. Michele Maccari

2、內容摘要:

被忽視和未充分利用作物(Neglected and Underutilized Crops)指傳統上用於食品、纖維、飼料或油料等植物。雖此類作物具食品安全、營養及健康促進的潛能，但卻被科學研究和開發所忽視。除了被忽視和未被充分利用作物的潛在商業用途外，由於能夠適應邊緣土壤和氣候條件，許多這類物種還可以提供環境服務，在這類作物中，要如何結合傳統、文化知識與目前國際貿易市場的需求，達到符合社會福利又創造生產者收益局面，是各界都應仔細考量之新興議題。此外，於食品價值鏈發展過程中，新興且越來越多人關注之「農業旅遊」，結合農林漁牧生產、農村文化及農家生活，提供消費者休閒旅遊與體驗學習之產業，也跳脫傳統食品價值鏈之概念，為農產業提供更多元化之加值效益，也是未來各國評估產業發展不可或缺之要件。

Field visit 現地參訪行程:

1、參訪對象：Kirirom Food Production

2、內容摘要：

位於柬埔寨的Kirirom地區的Kirirom Food Production是一家果乾加工企業，設立於2014年，其擁有500公頃之果園，員工共200餘人，透過與農民契作並與中盤商簽訂契約供應芒果原料。工廠設立緣自kirirom地區盛產芒果，但因土地肥沃，在盛產期供過於求導致價格暴跌、影響果農收入，因此透過加工廠在芒果盛產期加工成芒果乾，穩定農民收益，在其他季節則加工木瓜、鳳梨等。而為了減少浪費，亦將果皮與種子進行堆肥。該企業致力於生產新鮮及自然的果乾，未添加香料及染色劑，擁有多張工廠及食品安全認證，包含GMP及HACCP認證，其產品現已外銷至澳洲、中國、香港、日本、韓國、菲律賓、台灣、泰國、美國、英國及越南等11國家。另外該企業除了設立宿舍、醫療站、餐廳及運動場等人性化空間照顧員工，亦設立基金捐款、送餐給需要幫助的人及至學校進行公益，於公司銷售產品創造利潤之餘，投注心力於社會落實企業責任，創造食品產業鏈雙贏局面。

3、參訪心得

本次前往Kirirom Food Production工廠參觀，該工廠針對產品製作，建立標準化流程並取得各項認證，成立不同行銷團隊負責不同區域之外銷政策，並於社會福利及公益方面投注大量心力，為當地少見且具相當規模之公司。惟在產品生產過程中超過50%使用人力進行，如芒果削皮及產品分裝等，為保持品質穩定，勢必要花費更多管控點，相關風險亦相對提升，與目前國內農企業皆逐漸以智慧化機械化提供穩定且高標準產品之作法略有差異；同時與農民合作關係僅限於收購農產品，尚未有進一步兼顧農民收益或農產品品質要求之發展，既該公司於柬埔寨已有一定規模且外銷10餘國家，機械化及農民互利關係之建立應可納入未來發展考量，更有助於食品價值鏈之加值。

肆、心得與建議

參加本次亞洲生產力組織舉辦之食品價值鏈創新研習會，有助於瞭解各會員國的農產業發展趨勢、瞭解對於不同階段食品價值鏈推動或提升的作法及經驗，也可針對各國在食品價值鏈相關政策推動上之困難點，進行經驗交流。相對於歐美國家以大企業規模經營模式，東南亞國家的食品價值鏈包含生產端，加工業者及消費購買端，許多仍侷限於傳統或大量人工模式；相較之下臺灣目前雖有許多小農耕作模式及產品，但有不少已具規模之農企業，透過導入智慧化管理或相關科技設施，以達到高效率及高產出的成果。

透過研討會講者之專題內容、案例分享及參訪行程，就食品價值鏈創新概念及如何增進食品價值，經過一系列討論，綜整建議如下：

面向	建議
作物生產栽培	✧ 運用良好種子、改善栽培環境及技術 ✧ 利用契作建構良好合作模式 ✧ 安全用藥、朝向有機栽培、前進有機 3.0 ✧ 進行 GAP、有機、地理標示(geographical indication)認證
農產品加工加值	✧ 取得 GHP、GMP 食品安全衛生國際認證 ✧ 開發機能性食品 ✧ 充分運用產品以減少食物浪費 ✧ 建立創新食品包裝技術及良好標示 ✧ 開發可生物分解之永續性包裝媒材 ✧ 具規模之加工產業可以導入自動化或智慧機械
市場行銷	✧ 創造新商品開拓新市場 ✧ 進行周全的市場定位及消費者需求研究 ✧ 建立消費者導向之創新包裝 ✧ 結合不同通路之行銷策略

政策及合作模式	✧ 建立公部門及私人企業合作關係(Public Private Partnerships,PPP) ✧ 建立公司及生產者合作關係(Public-Private-Producers Partnership) ✧ 發展休閒農業(agri-tourism)，利用農業旅遊帶動地方社區經濟

發展食品價值鏈之過程中，往往面臨許多挑戰，尤其目前食安意識抬頭，消費者對食品品質要求提高，如何創造價值鏈中產業成功又兼顧社會利益，更需要仔細規劃及多方合作方能達成。以生產端之農民角色而言，生產之作物為整個食品價值鏈之起點，收益的創造除了透過收成數量，亦須將收成作物品質納入考量，同時因應消費端需求，搭配友善環境或有機耕作，創造收益同時也兼顧生態環境永續利用之概念。因此政策輔導面更應向農民宣導及說明，收益創造及社會利益並非為絕對衝突之情形，例如藉由生產高品質且符合消費者需求之有機產品，不僅可以獲取較高收入，也可兼顧生態環境保護之概念。

食品價值鏈之發展的成功與否，另一項重要的條件為消費者之需求，怎樣的產品是消費者想要而且需要的，對於產品的銷售及業者的收益，佔有決定性之角色，因此在未來不論各項諮詢或宣導，應該將此觀念納入傳遞給農民。進行農產品加工前，加工之目的、原料的條件品質、未來銷售的客群或是市場發展性，都必須納入考量而非僅有技術面的輔導。

除此之外，農產品食品價值鏈之提升，上市前及上市後各項政策、輔導及管制分別由農委會及衛福部食藥署負責，因此更應建立良好的合作關係，透過與農民、企業及消費者持續溝通協調與輔導，讓食品價值鏈不僅能夠創造越來越多收益，也能符合社會期待促進健康。透過教育、研發、行銷，產官學三方相互合作增加食品價值，除了增加產品利潤及生產者收益、創造更多就業機會、拓展國內外市場、增加國家稅收、減少耗損、建立穩定供需關係，更可維持環境永續性，在經濟、環境及社會利益皆有正面之影響，藉由本次出國參與研習經驗，可作為未來辦理我國農產品或加工產品從生產端到上市過程中，相關業務推動或政策草擬之參考。

伍、附件：

(一)會議相關照片：

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<tr><td>開幕-主辦單位及講師</td><td>開幕式</td></tr>
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<tr><td>各國學員自我介紹</td><td>講師 Mr. Pakin Juthasilaparuth</td></tr>
</table>

	
講師 Mr. Michele Maccari	講師 Mr. Waheed Ahmad
	
臺灣代表國情報告	臺灣代表國情報告
	
上課情形	臺灣代表與講師群合影

	
參訪 Kirirom Food Production 公司	Kirirom Food Production 公司一偶
	
Kirirom Food Production 公司介紹	Kirirom 地區芒果園
	
Kirirom 地區芒果	小組討論

	
國情報告頒獎-我國獲頒第一名，二至五名依序為斐濟、印度、寮國及馬來西亞	各國代表獲頒結業證書

(二)研習報告

The Current Developments and Trends in FVCs in ROC (Taiwan)
The country paper from R.O.C. (Taiwan)

Yi-Hsuan, Chiu and Meng-Fang, Hsu

1. Introduction-Agricultural Dvelopment in Taiwan and The Council of Agriculture(COA) Profile

Taiwan is located in sub-tropical and tropical weather zone. It is hot and rainy throughout summer and autumn but becomes arid and dry from winter to spring. The climate in Taiwan is suitable for growing a variety of crops. Our total agriculture and food production in 2017 are about 8.1 million tons, the annual value of production is 9.7 billion USD and the size of cultivation is around 746,000 hectares. The yearly production of each agricultural category in 2017 includes: Rice: 1.7 million tons, 274,000 hectares and 1.3 billion USD; Fruits: 3.9 billion USD; Vegetables: 2.5 billion USD.

According to the agricultural trade statistics of R.O.C in 2017, the total value of Taiwan agricultural trade was over US$ 20 billion and the value of export agricultural trade was 4.98 billion USD, the value of import agricultural trade was 15.19 billion USD. Within the value of agricultural trade, the agricultural imported value was divided as following: the proportion of crop products was 9.10 billion USD, livestock products was 3.16 billion USD, fishery products was 1.54 billion USD and forest products was 1.39 billion USD; and the exported value was: the proportion of crop products was 2.23 billion USD, livestock products was 0.85 billion USD, fishery products was 1.80 billion USD and forest products was 0.1 billion USD (Table 1).

Table 1. The Total Value of Agricultural Trade in Taiwan
Unit: USD 1,000

Division	Value of Import			Value of Export		
	2017	2016	Balance of percentage	2017	2016	Balance of percentage
Total	**15,190,523**	**14,218,863**	**6.8**	**4,980,778**	**4,673,107**	**6.6**
Crop Products	9,095,062	8,802,208	3.3	2,233,622	2,120,324	5.3
Livestock Products	3,163,814	2,678,444	18.1	851,773	863,861	-1.4
Fishery Products	1,543,937	1,446,442	6.7	1,803,508	1,604,134	12.4
Forest Products	1,387,710	1,291,769	7.4	91,875	84,788	8.4

In 2017, Taiwan’ s major export trading partners are China (20.7% of total value of exports), Japan (17.5%), United States (11.4%), Vietnam (8.7 %) and Hong Kong (7.6%); and the major import trading partners are United States (24.1%), China (6.9%), Brazil (5.6%), Australia (5.5%) and Thailand (5.3%) (Table 2).

Table 2. Major Agricultural Exports or Imports by Destinations in Taiwan in 2017

Seq.	Agricultural Exports	Agricultural Imports

	Country	Amount of Exports(USD 1000)	Ratio%	Increasing rate (Compare to 2016)	Country	Amount of Imports(USD1000)	Ratio%	Increasing rate (Compare to 2016)
1	China	1,028,985	20.7	13.3	United States	3,655,293	24.1	8.8
2	Japan	870,180	17.5	8.8	China	1,049,004	6.9	7.4
3	United States	569,258	11.4	10.4	Brazil	848,290	5.6	-10.5
4	Vietnam	431,152	8.7	4.5	Australia	831,108	5.5	7.2
5	Hong Kong	377,370	7.6	-2.7	Thailand	806,347	5.3	27.2

Due to Taiwan’s insufficiency of agricultural production soy, corn, wheat, flour, oil, feed and sugar, therefore soybean (includes oil seeds), corn and wheat were the top 3 imported agricultural materials in Taiwan in 2017. The soy and corn are imported from the U.S. and Brazil, and the wheat is imported from the U.S. and Australia. Compared with imported agricultural materials, the agricultural exports were frozen seafood, leather and other primary processed products like baker’s wares or pasta in 2017, the value was 2.23 billion USD, and showed a 5.2% annual gain.

The Council of Agriculture is in charge of the agricultural, forestry, fishery, animal husbandry and food affairs in Taiwanese government. Its responsibilities include guiding and supervising provincial and municipal offices in these areas. Under the council, the Agriculture and Food Agency is in charge of agriculture grain affairs.

2. Current Developments and Trends in FVCs in Taiwan

Food Value Chain (FVC) is a series of activities that create and build value at every stage from agricultural production to storage, processing, distribution and consumption, to ensure safety and quality and reducing losses.

In order to improve the agricultural food safety and quality, the government is embarking on the following policies:

2.1 Construction of the Group Production Area and Contractual Farming System:

The agricultural sector is largely composed of small family farms in Taiwan. Hoping to strengthen small farmers and support enterprise farmers, we construct a supply system for the group production areas, expand the scale of industrial settlements and develop contractual farming system. In addition, in response to the diversified needs of the channel, a regional agricultural product processing center will be constructed to increase the added value of agriculture.

2.2 Accelerating the Industrialization of Agricultural Science and Technology:

To create a market-oriented, high-competition, and high value-added agriculture, the COA promotes automation and intelligent production, and constructs a new generation of digital service technology integration system. Intelligent production technologies and smart management applications could help small farmers overcome challenges and increase overall production efficiency and quantity. Through sensors, smart devices, Internet of Things (IoT), and big data analysis, knowledge can be digitalized, production can be automated, products can be optimized, operations can be simplified, and

products can be traced through computerized systems for the purposes of intelligent production and digital marketing.

2.3 Promotion of "Traceable Agricultural Product" (TAP) System:

To cultivate the agricultural products of highest quality and safety, production clusters and the cooperation between dealers and farmers are facilitated, as they are advised to operate along the guidelines of "Good Agricultural Practices". Other traceability associated systems, "Traceable Agricultural Product" and "Safe Agricultural Products (Gi-Am-Pu)", are also highly emphasized and encouraged. Consumers may gain timely access to all relevant details (producers' contact info, photos, as well as origins and overviews) of their products by scanning the QR codes, which along the way enhances consumer confidences; distributors may also utilize it to confirm the origins of their purchases and locate the problem within the supply chain to reduce risks of food safety.

2.4 Encouraging Organic and Friendly Farming Systems:

As one of the most environmentally-friendly farming methods, organic agriculture not only supplies safe and high-quality agricultural products to market but also reduces the pollution impact of agricultural production on the environment. The COA has implemented policy measures including counseling farmers in organic certification, establishing technical services group, and promoting organic cultivation clusters in the light of boosting the scale of organic production. To expand the positive effect on the environment from agricultural activities, the COA has included the Eco Friendly Farming, a cultivating method of using zero chemical substances, GMOs, and other relevant materials into its guidance scheme. The first subsidy on such farming activities took place in 2017, and the payment was issued on the basis of land area cultivated, so that farmers can be rewarded for the benefit they brought to the ecology and be compensated for the diminished profits.

2.5 Counseling and Planting Imported Alternative Crops:

In order to improve the efficiency of agricultural land use, the COA counsels the cultivation of non-genetically modified crops with import substitution, export potential and regional specialties to increase domestic grain supply and reduce the import of miscellaneous grains.

3. The Case Study of Enterprise with Successful FVC Approach-Introduction of the Company

The company, named "Great", was established in Yunlin in July 2014. It mainly produces fresh corn. The sweetness of fruit corn grown by the company is as high as 18 degrees. The taste is sweet and rich, the skin is thin and delicate, crisp and juicy, and it is well received. The annual output is about 7,500 tons. In production, Great connects agricultural raw materials, farmers, agriculture production and marketing groups and agricultural technology industry. Besides, the company also provides one-stop service, including channel firm, network, refrigeration, warehousing, processing industries at the end of the channel, and has sold the products to Hong Kong, Macao, Singapore and other countries. The followings are the FVC strategies of this company.

3.1 Production - Non-Genetically Modified Seeds, Works, Technology Management

Great currently has about 500 hectares of arable land and an annual output of 700 million corn, which comes from the contractual farming system. At present, there are 200 deed farmers. Great has combined the production of raw materials, farmers, agricultural technology industry. All small farmers who are willing to cooperate with Great to produce corn, can accept the company's counseling, and get the non-genetically modified seeds needed for production. Only one corn is left in each ear in production to enhance quality. The farmers also use technology management on the farmland control. The "Fresh Green Intelligent Field Management System APP" is used to monitor the soil, water quality and sunlight, and then big data analysis is used to promote the best harvest date. In order to

accurately collect data to set up a weather station in the field, data regarding basic rainfall, ambient temperature and humidity, wind direction meter, to the amount of solar radiation required by crops, all the information is transmitted instantly through the base station every 30 minutes. In addition, Great also cooperates with pesticide companies to comprehensively control the use of pesticides. They also use drones to assist pesticides. The company requires farmers to follow strict planting practices, to achieve sustainable business through a friendly farming system. Almost all corn products have "Traceable Agricultural Product" labels. Using systemic and intelligent agricultural management, it is easy to control the productive quality and decide marketing strategy.

3.2 Packaging - mechanized consistency

The company introduced post-harvest processing into automated machinery. From harvest to transportation, standard processing procedures make sure the quality of corn will be consistent. Great developed Taiwan's first corn knot cutting machine to trim the harvested corn. It can process 60 corns in one minute, which is equivalent to 7 to 10 manpower. When the weight of the corn is not up to standard or exceeds the standard, those corns will be eliminated, so the quality is consistent. The production, processing and packaging of corn are all operated under a one-stop management to reduce wear and create maximum efficiency.

3.3 Sales - super business, foreign

Great has cooperated with 5,000 convenience stores to supply 100,000 corns per week. The other marketing channels also include online platforms, mass merchandisers, restaurants, etc. The company even exported the products to Hong Kong, Dubai, Singapore, Macau, and Malaysia.

4. Main challenges that the company faced and the solutions

4.1 How to convince the farmers

It was very difficult for the company to convince the farmers to join the traceability systems. After a long period of in-depth communication and guidance, the company also rewards the farmers who produced higher quality corns. Gradually, most farmers successfully joined the traceability systems.

4.2 How to transform or upgrade the company

The conventional agricultural model is still fixed into small business. In order to get more resources, the company must try to transform or upgrade. Different difficulties will be faced when the enterprise tries to expand, such as money, marketing, manpower or technology. Great joined some of COA' s counseling projects, suggestions or resources which were gave through the counseling made Great could accelerate the industrialization easier.

4.3 How to make the brand stand out

Being successful in business means someone needs a brand that stands up against the competition as well as stands out from the crowd. Great made their products are worthwhile to pay. These strategies included certification of products and brand promises delivery. Great also combined different marketing plans to advertise their products in different countries. Multiple channels were used to make Great stand out.

5. Conclusion

It is very important in FVCs to produce both business success and social benefit. Each fragment should be considered carefully to satisfy everyone and make the win-win situation.

6. References

6.1 Agricultural Trade Statistics of Republic of China (Taiwan) 2017
6.2 http://agrstat.coa.gov.tw/sdweb/public/indicator/Indicator.aspx
6.3 https://www.coa.gov.tw/ws.php?id=14
6.4 https://www.afa.gov.tw/eng/index.php
6.5 https://eng.coa.gov.tw/ws.php?id=2503505

7. The summary

Taiwan is suitable for growing a variety of crops. In order to improve agricultural food safety and quality, the government is embarking on differentpolicies, such as constructing of the group production area and contractual farming system, accelerating the industrialization of agricultural science and technology, promoting of "Traceable Agricultural Product" system, encouraging organic and friendly farming systems, and counseling and planting imported alternative crops. There are some enterprises in Taiwan with successful FVC approach. We use the company "Great" as the example. It has many strategies to achieve value addition from production to storage, processing, distribution and consumption. All the farmers who are willing to cooperate with Great will get non-genetically modified corn seeds and technology management system. "Great" requires farmers to follow strict planting practices, so that almost all corn products have "Traceable Agricultural Product" labels which ensure food safety. The company also introduced post-harvest processing into automated machinery. Although "Great" faced some problems, like the difficulties in convincing the farmers to join the traceability systems, upgrading the company, and making the brand stand out, this company still has found some way to solve them. In the future, our government will continue to assist agri-food industry in increasing FVCs with proper strategies, in hopes of enhancing the industry's productivity and sustainability.