

Asia-Pacific  
Partnership

# Policy Partnership on Food Security (PPFS) Plenary Meeting Day One

Associate Professor Matthew Tan  
Chair – WG1  
Sustainable Development in Agriculture and Fishery Sectors  
APEC Policy Partnership on Food Security

Agenda Item [VI] –PPFS Working Group One  
Activities & Project Update – February 2024

# PPFS Working Group One

- 1. Update on Completed Activities in 2023.**
- 2. Current Work Plan/ Activities for 2024.**
- 3. Upcoming Activities - 2024**
- 4. Working Group One – Summary of Events**

# Update on Completed Activities in 2023

## Participation in relevant conferences

### **Event One** : 2nd Global Food and Agriculture Sustainability Symposium

- Organized by U.S. Soybean Export Council (USSEC). 26th to 27th 2023 @ Marriott Marquis Queens Park, Bangkok, Thailand
- WG1 Chair – Speaker & Panel Member
- Presented on Sustainable Aquaculture and Food Security in the next Decade &

**Possible Collaboration opportunities with PPFS WG1**



# Global Food and Agriculture Sustainability Symposium 2023



# Update on Completed Activities in 2023

## **Event Two** : Youth Model ASEAN 2023

- This annual event connects youths (our future leaders, regulators and policy makers) across ASEAN.
- Theme : Fishery & Aquaculture and its impact on future food security
- WG1 Chair delivered the presentation as an Expert Guest Speaker.



# Youth Model ASEAN 2023



# Update on Completed Activities in 2023

## **Event Three** : APEC Workshop on Reducing Food Loss and Waste by Strengthening Resilience and Digitalization in APEC Food System

- Theme : Challenges and Implications for Sustainable Food System
- Date: July 20–21, 2023
- Organizer: Council of Agriculture, Chinese Taipei
- WG1 Chair delivered the presentation on Best Practices Sharing on Sustainable Food Upcycling and Waste valorization in Singapore.



# APEC Workshop on Reducing Food Loss and Waste by Strengthening Resilience and Digitalization in APEC Food System Chinese Taipei - July 20–21, 2023





# Update on Completed Activities in 2023

## **Event Four** : Bridge2food Summit Asia 2023

- Theme : Consumer & Industry Challenges - The Future of Seafood Track
- Date: November 21–22, 2023
- Organizer: Bridge2food
- WG1 Chair delivered the presentation on The Future of Seafood



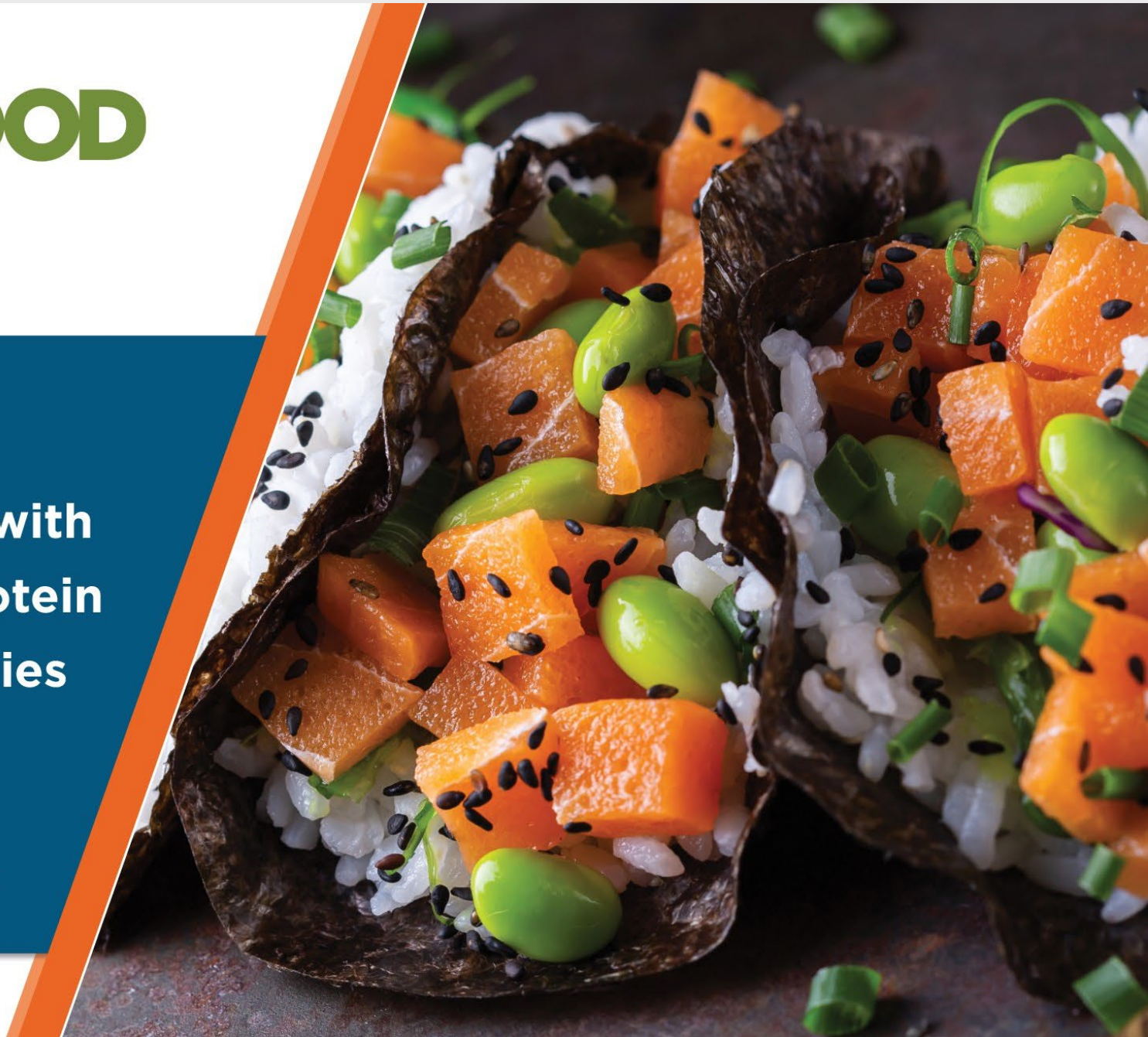


# BRIDGE2FOOD

## Summit Asia

**Fuelling Innovation: Connect with leaders driving alternative protein developments and opportunities in the APAC region.**

**21-22 November, 2023 | Singapore**





## Update on Completed Activities in 2023

**Event Five** : 1st APEC seminar on best practices and applications of digitalization and innovation in food supply chain – Hangzhou, China – 4th Dec 2023.

- Date: 4<sup>th</sup> & 5<sup>th</sup> December 2023
- Organizer: Academy of National Food and Strategic Reserves Administration
- WG1 Chair presented on Development of Digital and Innovative Technologies
- in Food Production and Processing and Future Trends

## Update on Completed Activities in 2023

### **Event Six** : 2nd Mandiri Sustainability Forum 2023 – Jakarta

- Theme : Challenges and Implications for Sustainable Food System
- Date: 7th December 2023
- Organizer : Bank Mandiri
- WG1 Chair delivered the presentation on ESG Implementation and Technology in Aquaculture and **Extended invitation to collaborate with Banking institutions on Green Financing – Food Security/ Aquaculture related project.**



# 2nd Mandiri Sustainability Forum 2023 – Jakarta

**Mandiri Sustainability Forum 2023**

**Sustainable Acts: Why Now, What's Next?**

Thursday, 7 December 2023 | 07.30 AM - 12.30 PM

<b>INARNO DJAJADI</b> Chief Executive of Capital Markets, Financial Services, & Customer Experience Department (Financial Services Industry Unit)	<b>PROF. MATTHEW TAN</b> Chief Executive Officer, Emerald Paper Asia Pacific	<b>DARMAWAN JUNAIDI</b> President Director Bank Mandiri	<b>ROBERTO ROSSI</b> Cluster President Indonesia & Timor-Leste Schneider Electric	<b>IMAN RACHMAN</b> Chief Executive Officer Indonesia (Unit) Amalgam (UK)
<b>SEAN KIDNEY</b> Co-Founder & Chief Executive Officer Climate Bonds Initiative	<b>STAN BORN</b> Chairman of the Board of Directors Export-Import Bank of Indonesia	<b>JONATHAN LUAN</b> Head of APAC Sustainability & Environmental Management	<b>ALEXANDRA ASKANDAR</b> Vice President Director Bank Mandiri	<b>DISHELL GOKALDAS</b> South-East Asia Leading Partner for Climate Risk Modelling
<b>DEWI SUYENTI TIO</b> Country Manager Global Reporting Initiative (GRI) Indonesia	<b>VALERINA DANIEL</b> Moderator	<b>PROF. JOHAN SULAEMAN</b> Adjunct Professor at Institut Teknologi Sepuluh Nopember (ITS)	<b>ARFAN ARLANDA</b> Founder & Chief Executive Officer Japan	<b>ROBERTO ROSSI</b> Cluster President Indonesia & Timor-Leste Schneider Electric
<b>ARFAN ARLANDA</b> Founder & Chief Executive Officer Japan	<b>STAN BORN</b> Chairman of the Board of Directors Export-Import Bank of Indonesia	<b>PROF. MATTHEW TAN</b> Chief Executive Officer Amalgam Asia Pacific Ltd.	<b>VALERINA DANIEL</b> Moderator Journalist & Communications Advisor	



# Work Plan/ Activities for 2024



# Work Plan/ Activities for 2024

## 1. Training (Ongoing)

- WG1 has an ongoing training arrangement with APEC Centre @ Temasek Poly – Singapore
- Part time Diploma - Aquaculture
- Course overview – Covering the important aspects of Aquaculture &, which include Feed Nutrition, Diseases Management, Hatchery Technology, and Aquaculture Systems which include aquaculture management for environmentally and economically sustainable way of production.

## Work Plan/ Activities for 2024

### List of Aquaculture-related CET Training Courses

- Qualified Persons in Aquaculture Farm Biosecurity and Monitoring
- Auditor training course for Good Aquaculture Practice
- Clean and Green Urban Farms (Aquaculture)
- Specialist Diploma in Aquaculture Management and Technology
- Foundation in Aquaculture Technology

# APEC Centre for Sustainable Development in Agriculture & Fishery Sectors



 **APEC Centre @Temasek Polytechnic**  
*For Sustainable Development in Agriculture & Fishery Sectors*  
Policy Partnership on Food Security

 **BLUE AQUA Research Centre @Temasek Polytechnic**  
*"Innovation Towards Sustainability"*

 **OCEANUS Innovation Centre @Temasek Polytechnic**  
oceanus GROUP



# Work Plan/ Activities for 2024

## 2. Project Updates

# Updates on WG1 Projects – Ongoing

## 1. Private sector collaboration - Singapore, Malaysia, Australia and USA

- Singapore Crawfish - Large scale Fresh water Crawfish hatchery
- Current farming operations/ activities - Singapore, Australia, Indonesia & Malaysia
- Distribution of Crawfish fry to Rice & vegetables farmers in APEC Economies
  - Multi Cropping Strategy (Crawfish, fish & rice/vegetables)
- Transfer of expertise and technology to interested economies
- Interested economy pls contact WG1 Chair for more information



## Updates on WG1 Projects – Ongoing

### 2. Private sector collaboration – Singapore & Malaysia

- Sento Biotech - Carbon Neutral Prawn Project
- Carbon Transition Strategy for Aquaculture farms
- Self sufficiency – No longer reliant on feed supplier
- Easy adoption and more income for small and women farmers
- Circular Economy Aquaculture



# Carbon Neutral Prawn & The Circular Economy

526 Ton of Carbon Dioxide (CO<sub>2</sub>) per year  
In Five Acres - 20,000 trees



200 metric tonnes of leaves crop  
produced



50 metric tonnes of fermented feed



33,400 Kg of Prawns



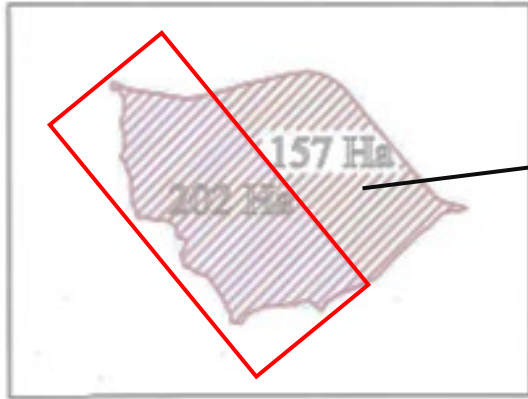
100 metric ton of FRASS (fertilizer)

# Site Layout – February 2023

860 acres of reserved land available for intercropping at 1,500 trees per acre

4,000 SS planted

Reserved land for SS planting



Office

BSFL factory and collection facilities

Staff quarters



# Carbon Neutral Prawn Project – 16<sup>th</sup> February 2024





# Updates on WG1 Projects – Ongoing

## 3. Private sector collaboration – Food Loss Waste

- Project – Addressing Sustainable Functional Food with Valorization of Food Processing Waste.
- Name of Company : Kosmode Health Singapore Pte Ltd.
- Project was presented in the recently concluded APEC PPFS workshop on “Challenges and Implications for Sustainable Food System” in Chinese Taipei.



KosmodeHealth  
Singapore

# An APEC PPFS Project

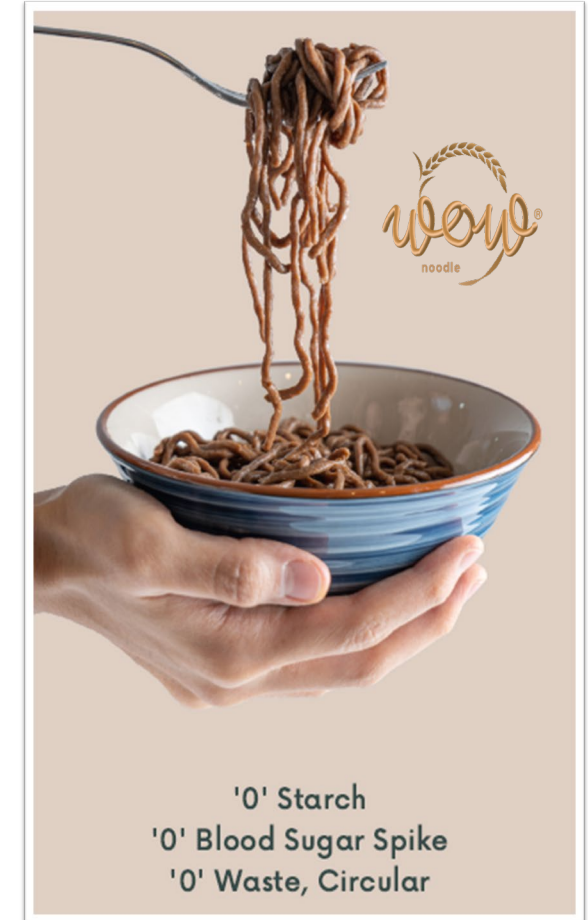
## UPVALUING SPENT BARLEY GRAINS FOR HUMAN NUTRITION



Spent Barley Grains  
Global: 30million tons pa  
Singapore: ~75,000 tons pa



Valorized Barley Protein  
Fiber Powder  
Protein:38%  
Fibre:29%



**WOW® noodle**  
A functional staple  
food





**REPURPOSING OF WHEAT BRAN**

**into**

**Fresh & Rehydratable noodles**

**Zero Blood Sugar Spike**





**PILOT PLANT FOR  
PRODUCTION OF PROTEIN FIBRE INGREDIENTS &  
FUNCTIONAL FOOD PREMIXES**

# Upcoming Activities - 2024

1. **Introduction of Carbon Neutral Agriculture & Aquaculture projects**
2. **More Training Opportunities for farmers (Small & Women farmers)**
3. **Possible Collaboration with ASEAN Committee on Science, Technology, and Innovation (COSTI) - Sub Committee on Marine Science and Technology.**

# Upcoming Activities - 2024

- 1. Discussion with ASEAN Committee on Science, Technology, and Innovation (COSTI) - Sub Committee on Marine Science and Technology**
  - Use of technology for Marine fishery and aquaculture with a view to securing our future food security
  - Joint project collaborations and or teaming arrangement with Scientists from interested economies on problem statement relating to the ocean, fishery, aquaculture, climate challenges, micro plastic pollution in Ocean, Carbon neutral fishery and aquaculture etc.
  - Collaboration with APEC Centre for Sustainable Development in Agriculture & Fishery Sectors.



# Working Group One – Summary of Events

1. Projects in Progress (private sector) - 8
2. Projects Completed/ Ceased (mostly private sector) - 24
3. Economies Participation – 10
  - Malaysia, Brunei, United States, Indonesia, China, Australia, Philippines, Chile, Japan & Singapore.
4. Technology/ Best Practice sharing – 10
5. Participation in International Conference and Workshop – 22
6. Appointment of Technology Partners – 8
7. Setup of APEC Centre for Sustainable Development in Agriculture & Fishery Centre in 2017

# Compilation of Working Group 1 Activities – List of Technologies for dissemination, projects listing which include Current & Proposed Activities as at 15<sup>th</sup> February 2024

## SUBJECT : Sustainable Development of Agriculture and Fisheries Sectors

Revised by A/Prof Matthew Tan

Work Stream	Objectives / Key Performance Indicators (of the project)	Activities	Who	when	Linkages
Promoting research & development and technology dissemination	<p><u>Objectives:</u></p> <ol style="list-style-type: none"> <li>Promoting research &amp; development</li> <li>Technology dissemination and transfer</li> </ol> <p><u>KPIs:</u></p> <ol style="list-style-type: none"> <li>Private sectors with private sectors collaboration</li> </ol>	<p>Projects :</p> <ol style="list-style-type: none"> <li>Singapore &amp; Malaysia – Carbon Free Prawn Farming</li> <li>Urban Farming – Vertical farming technology</li> <li>Climate smart farming technology - Use of anti-thermal coating for Agriculture &amp; Aquaculture industry</li> <li>Climate Smart Farming Technology Use of Anti thermal coating in PE Sheets for Aquaculture farms in China</li> <li>24/7 Use of Drone for precision farming development project – APEC Centre, Singapore, China &amp; Chile.</li> <li>Development of New Floating Barge concept fish farm - In discussion with an Offshore Shipping Group – An APEC Centre Singapore R&amp;D initiative.</li> <li>Climate Change adaption project – Thailand Initiative</li> <li>Waste Valorization &amp; upcycling of food food waste</li> <li>Crawfish Hatchery – Distribution to APEC economies</li> </ol>	APEC Centre for Sustainable Development in Agriculture and Fishery sectors	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Completed</p> <p>Ongoing</p> <p>Ongoing</p>	<p><u>Technologies Available :</u></p> <ol style="list-style-type: none"> <li>Chemical free Water treatment Technologies for hatchery <ul style="list-style-type: none"> <li>Increased in larvae survival by more than 50%</li> <li>Increased in grow-out yield by 20% - 50%</li> <li>Recycled 90% of farm water.</li> </ul> </li> <li>Water treatment technology – resulting in shorter grow-out breeding period.</li> <li>Anti-thermal clear coating for Green house and hatchery use <ul style="list-style-type: none"> <li>Heat reduction by up to 90% for Climate Smart Greenhouse</li> </ul> </li> <li>Large scale hatchery technology <ul style="list-style-type: none"> <li>AVA Marine Aquaculture Centre – St John Island</li> <li>\$30m Hatchery, Nursery &amp; Brood stock facility</li> <li>R&amp;D in selective breeding of Asian Sea Bass</li> <li>Expertise in large-scale fry production</li> </ul> </li> </ol>

# Thank you.

Associate Professor Matthew Tan



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