Public-Private Partnerships for Fish Loss Assessment and Reduction Strategies

Purpose: Information
Submitted by: Chinese Taipei
Executive Summary

Acknowledging the strong commitment by APEC Leaders to achieve Regional Economic Integration and building capacity to participate in the global value chain; recognising the importance Food Security Ministers placed on promoting sustainable food supply chain and post-harvest loss reduction, an APEC Seminar on “Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain of Fishery and Livestock” was held on September 27 2015 in Iloilo and convened as a public private dialogue forum to discuss the challenges facing the fishery and livestock value chains and practical solutions in this region. In particular, the seminar is designated to identify the importance of developing a systematic approach to reducing post-harvest loss through the value chain, increasing capability for producers to target high value products in export and domestic markets, thus providing economic gain. The participants determined that building technical and policy capabilities across APEC economies, and providing a stable regulatory framework to encourage investments in innovative solutions would best achieve a sustainable reduction of post-harvest loss.

The outcome of these events support our position that the sustainable business model to reduce food losses along the value chain need strong partners from both the public and private sectors in the APEC region. To achieve these outcomes, it was critical to examine the multi-dimensional aspects of waste and loss including: genetics, production, protection, postharvest quality, consumer behavior, capability development, science-based production and best practice business models

Required Action/Decision Points

It is recommended that Senior Officials:

1. support examination of the multi-dimensional aspects of waste and loss including: genetics, production, protection, postharvest quality, consumer behavior, capability development, science-based production and best practice business models

2. foster communication among smallholders, business groups, researchers and decision makers for further collaborations in food loss assessment methodologies and toolkit development and for working in a wide variety of agricultural trade and sustainable development related policy issues.
Public-Private Partnerships for Fish Loss Assessment and Reduction Strategies

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(APEC/PPFS & ATCWG Multi-Year Project M SCE 02 2013A)

Outline

- Importance and Challenges
- Food Loss Reduction in APEC
- APEC Multi-Year Project
- Public-Private Partnership
- Knowledge-Sharing
- Next Step
Ocean increasingly produces food

- Inland Capture: 7%
- Freshwater Aquaculture: 10%
- Marine Capture: 70%
- Marine aquaculture: 13%

83% from Ocean

Data source: FAO, FISHSTAT J, the pie chart is the accumulated production from 1950-2012

Capture fisheries

- 64% from APEC Economies

Stable...

Data source: FAO, FISHSTAT J, the pie chart is the accumulated production from 1950-2012
Marine fish resources are limited

90% are over or fully fished

Trend of aquaculture production

83% from APEC
80% from APEC (Asia)

Data source: FAO, FISHSTAT [ ], the pie chart is the average from 1950-2012; SOFIA, 2014.
Challenges in Capture Fisheries

- Overcapacity
- IUU fishing
- Expanding fishing areas & Insufficient management
- Discards & bycatch
- Pollution

Challenges in Aquaculture Growth

- Insufficient wild seed
- Disease
- Fish meal shortage
- Environmental impact
Fish: Solutions of Aquaculture Growth

- Diversified species
- Feeding with vegetable protein
- Fish disease R&D
- Multi-trophic aquaculture

Ensure food security

- Strengthening International cooperation
- Fisheries management
- Aquaculture innovation
- Environment protection
- Trade & Market
APEC ATCWG/PPFS Multi-Year Project
“Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain” (2013-2018) (M SCE 02 2013A)

Overview of Key Issues and Grains in 2013
Fruit and Vegetable Products in 2014
Fishery and Livestock Products in 2015
Food Waste Issues in 2016
High Level Policy Dialogue in 2017

APEC Food Security Roadmap Toward 2020

APEC Multi-Year Project

- 3 Purposes
  - Identify key issues on reducing food losses and wastes
  - Seek best practices in private and public sectors
  - Find practical solutions and enhance capacity-building

Work Plan (2013-2016):

- 2013
  - Preparation, Research, and Identification
    - Launch Focal Point Network (FPN), identify key issues, research methodologies

- 2014/15
  - Investigation of Food Losses and Waste
    - Modify methodology with FPN/other feedback, launch annual seminars, gather data

- 2015/16
  - Action and Inter-linkages
    - Hold high-level meeting for policy dialogue, produce/share policy recommendations
Reducing food loss and waste is urgent

WHY?

- Around 12% of the global population are unable to meet their basic dietary requirements.
- Food production will need to increase by 60% to feed a world population expected to exceed 9 billion by 2050.
- About one-third of edible parts of food produced for human consumption, which is about 1.3 billion tons per year, gets lost or wasted (FAO, Global Food Loss and Food Waste, by Gustavsson, et al., 2011)
- The value of food lost or wasted annually at the global level is estimated at US$ 1 trillion (FAO, Global Initiative on Food Loss and Waste Reduction, 2014)

Food Loss Challenges for Asia-Pacific

HOW TO REDUCE?

ANSWER:

⇒ A mixture of public and private-sector approaches in

- Loss Assessment: Definition, Quantify the “quality” aspect, under or over-estimate?
- Loss Reduction: Technical issue, Sanitary issue, Cost/Benefit, Rapid Changes in Consumption Patterns
APEC 2015 Expert Consultation on Assessment Methodology of Fishery and Livestock Losses, Taipei, July 16-17, 2014

Agenda

- APEC fishery and livestock loss status and methods
- Best practice of enhancing fishery and livestock PPP
- Survey development for loss assessment
- Develop assessment methodology and dataset

Achievements

- Assessment surveys need to be shortened and better-targeted for best data
- Legal definitions can be improved to reduce waste, consensus on terms reached
- Government signaling to producers is an effective method to raise awareness of consumer needs and interests which reduce waste

Public-Private Partnership

- PPP with buy-in will increase data quality from assessment surveys but private producers need to be informed of benefits to be gained from research
- Partnerships can be better-developed with third-party oversight that increases buy-in from private industry partners

Expert Invited

- 7 invited experts
- 4 fora: ATCWG+PPFS+ABAC+OFWG
- 14 Member Economies delegates
Loss Assessment

“Measurable quantitative losses along the food supply chain starting with harvest until consumption by end users.”

Mass Flow Model (MFM) of FAO

Mass Flow Model (MFM) of FAO

Accounting technique and internal consistency checks are used within the framework of the Supply/Utilization Accounts.

Although FAO Food Balance Sheets are not perfect in statistical terms, they do provide a consistent and clear picture of overall food situation of individual economy.

Structure of Assessment Model

Based on USAID (2015),

APEC Fisheries Post-harvest Losses Summary Report

Model for Cereal & F&V

Model for Fish & Livestock

<table>
<thead>
<tr>
<th>Total Food Loss Equations for APEC Economy i</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Production and Harvesting Loss = ((\text{Col}_i \times \text{IL}_i) \times \text{EF}_i)</td>
</tr>
<tr>
<td>2. Handling and Storage Loss = ((\text{Col}_i \times \text{LS}_i) \times \text{EF}_i)</td>
</tr>
<tr>
<td>3. Processing and Packaging Loss = ((\text{Col}_i \times \text{PP}_i) \times \text{EF}_i)</td>
</tr>
<tr>
<td>4. Distribution and Marketing Loss = ((\text{Col}_i \times \text{DM}_i) \times \text{EF}_i)</td>
</tr>
<tr>
<td>5. Consumption Loss = ((\text{Col}_i \times \text{CM}_i) \times \text{EF}_i)</td>
</tr>
</tbody>
</table>
Data Collection Progress

- 2015 Expert Consultation in Taipei gave a chance to share economy progress on data collection and current challenges

<table>
<thead>
<tr>
<th>Member Economy</th>
<th>Data Collection Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>Paused</td>
<td>Large geography requires additional coordination</td>
</tr>
<tr>
<td>Korea</td>
<td>Collected/In Progress</td>
<td>New data is being collected</td>
</tr>
<tr>
<td>Mexico</td>
<td>Collected</td>
<td>Data should be collected and reportable</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Accessible</td>
<td>Concentrated industries mean easy data access</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>In Progress</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>In Progress</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>In Progress</td>
<td>Building relationships for improved data collection</td>
</tr>
<tr>
<td>Singapore</td>
<td>Accessible</td>
<td>Smaller industry contacts need to be developed</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>In Progress</td>
<td>Data is being reported and new contacts compiled</td>
</tr>
<tr>
<td>Thailand</td>
<td>Paused</td>
<td>Departments need to renew cooperation</td>
</tr>
<tr>
<td>United States</td>
<td>Accessible</td>
<td>Contractors need to be notified for data</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Paused</td>
<td>Process to start after this consultation</td>
</tr>
</tbody>
</table>

Information sharing

Survey Results on post-harvest management in fisheries and its benefit in Korea: Mackerel and Oyster

- Decrease in distribution cost: mackerel(20%) and oyster(50%)
- Increase in producers’ price: mackerel(13%–25%) and oyster(10%–24%)

ABAC: Mr Tada Yukio, President & CEO, Sojitz Research Institute

- **Loss Reduction**:
  - Natural disasters commonly affect transportation in APEC
  - APEC is a place for problem understanding and that it would be most prudent to have APEC recommend good practices to APEC leaders to be independently implemented across MEs

- **Loss Assessment**
  - Classifications and variables can be more finely-defined so that economies can have better direct comparisons
  - Private sector response is poor, how can responses be incentivized?
Assessment and Other Progress through 2015 Taipei Consultation

Definitions
✓ Interchangeability of FAO terms:
  ✓ “Loss”
  ✓ “Waste”

✓ Agreement was reached that the terms simply denote the stage of post-harvest supply/consumption at which the food was lost and further time should not be expended on definitional issues.

<table>
<thead>
<tr>
<th></th>
<th>Losses (mill MT)</th>
<th>Production (mill MT)</th>
<th>% Loss in Total Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>11.44</td>
<td>168.58</td>
<td>6.78%</td>
</tr>
<tr>
<td>Fish</td>
<td>17.43</td>
<td>109.83</td>
<td>15.87%</td>
</tr>
<tr>
<td>Egg</td>
<td>6.10</td>
<td>47.04</td>
<td>12.94%</td>
</tr>
<tr>
<td>Dairy</td>
<td>18.97</td>
<td>225.69</td>
<td>8.40%</td>
</tr>
</tbody>
</table>

Technical Team
✓ Formation and organization of technical team:
  ✓ Delegates agreed to a Work Plan where Chinese Taipei will organize a Technical Team with relevant statistical and data collection experience.

Toolkits

- Dairy
  - Cool Chain
  - Refrigerated transport
  - Rapid and efficient drying
  - Separation of milk to provide ingredients for high value products such as infant formula and ingredients.
Major Challenges for Fish Supply Chain

1. Gap between the current landing and post-harvest management (unsanitary system, wooden boxes, and undesignated section)
2. Lack of technology and equipment for post-harvest management and related capacity building (training, practical use)
3. Improper cold chain in cargo transportation
4. More seafood was being consumed and more by-products were being created for value-added
5. More consumers prefer to buy fish with pre-treatment processing, not live fishes

Public-Private Partnerships

- Public-Private Partnerships greatly improve data quality
- Engagement and building trust in key stakeholders for food production and loss reduction mitigates improper reporting of data
- Partnerships produce applicable best practices and case studies
  - Select case studies include: kiwi marketing by Zespri, banana pre-harvest improvement in the Philippines, and mango best practices in Chinese Taipei
- Partnerships create favorable business environment and develop market-oriented structures for food export and import.
  - Establish high value-added food value chains by improving postharvest centers and cold chains with advanced technologies such as dry & cold weather farming, irrigation, ICT, plant factories and quality control system.
- Partnerships make policy, knowledge-sharing, and enforcement/compliance more effective
Knowledge-Sharing Activities: Seminars in 2013-2014

1st APEC Seminar on Food Grain
Taipei, Aug 5-8, 2013

- Achievements
  - Main Challenges of Food Losses and Food Security
  - Key Issues of PPP in Reducing Post-Harvest Losses
  - APEC Best Practices
  - Next Steps and Future Action Plans

2nd APEC Seminar on Vegetable and Fruits
Beijing, Sept 15, 2014

- Achievements
  - Main issues in vegetables & fruit supply chain in APEC
  - Best practices of enhancing PPP in vegetables & fruits
  - Innovative technology and management
  - Develop assessment methodology and database

3rd APEC Seminar on Fishery and Livestock Supply Chain
Iloilo, 27 September, 2015

AGENDA

09:30-10:00 Session 1: Keynote Speech
Food Loss and Waste: A Whole-Of-Chain Systems Approach With Economic Gain
Dr. Ian Ferguson, Ministry for Primary Industries, New Zealand

7 speakers: Japan, New Zealand, The Philippines, Chinese Taipei

13:30-18:00 Session 3: Breakout Sessions
Moderator: Ian Ferguson and Ching-Cheng Chang
1. Topic: “Key Challenges in your economy”
2. Topic: “Key opportunities in your economy”
Report summary: From 3 groups (10 minutes each)
Whole group discussion: Similarities, differences, results
Outcome: Policy statement and recommendations
Outcome & Highlights of 2015 Seminar

- 80 participants from 12 APEC economies
- 10 Speakers: 3 Private, 4 Academic, 3 Government

Strengthening PPP
- Loss Reduction: capacity building, infrastructural investment on energy-saving cold chain
- Recognize the diversified needs:
  - Fundamental principles are for general use,
  - Customization by member economies is essential
- Need to develop systematic approach so that food loss can be reduced by increase in R&D, food price and market size
- Provide economic incentive and adaptation mechanism for facilitating technology adoption and market access

Policy Recommendations

1. **Recognize and acknowledge the impact of food loss** across the supply chain and the need for APEC economies to cooperate and address this as a critical challenge confronting the region;
2. **Support investigation into the multi-dimensional aspects** of food loss including: genetics, production, food safety, postharvest quality, logistic process, infrastructure improvement, consumer behaviours;
3. **Encourage capability development and the use of best practice business models**, across all aspects of food loss in the supply chain;
4. **Foster communication and awareness** among smallholders, business groups, researchers, decision makers, and the public for further collaborations in
   - food loss assessment methodologies
   - toolkit development and
   - for working in a wide variety of trade and sustainable development related policy issues.
Knowledge and Data Sharing

APIP-PHLOWS
- Open Data
- As a Knowledge Bank

Key features
- Loss estimates
- Toolkits
- Best practices

Next Step: Data Collection, Analysis

Database Construction
1. Technical team to collect existing technologies, data, and best practices via survey
2. Identify the most efficient and cost-effective way to achieve the policy objective of food security in the region

Best Practices of PPP
- Main issues
  What are the hidden costs?
  KPI/metrics needed to make informed decisions
  Supporting mechanism for policy formation
**Next Steps, 2015-16 after Iloilo**

- **2015**
  - Loss assessment and toolkits Improvement
  - Conduct survey on PPP and best practices
  - Information sharing platform
- **2016**
  - 4th APEC seminar in Peru
  - Focus on Retail and Consumption Waste Reduction programs and policy issues

1. Share knowledge and findings from survey analysis
2. Cooperate to create policy recommendations
3. Distribute policy recommendations and monitoring
4. Maintain contact, network, and knowledge-sharing

**Let’s Work Together to Ensure Food Security & Sustainable Agriculture and Fisheries**