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2015 APEC Expert Consultation on Assessment Methodology of Fishery and Livestock Losses

Agricultural Technical Cooperation Working Group (ATCWG)
Policy Partnership of Food Security (PPFS)

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APEC Multi-Year Project: "Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain" (M SCE 02 2013A)

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Outcomes Report
"APEC Expert Consultation on Assessment Methodology of Fishery and Livestock Losses"

Project Number	MYP SCE 02 2013A
Project Title	Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain
Proposing Economy	Chinese Taipei
Seminar Title	APEC Expert Consultation on Assessment Methodology of Fisher and Livestock Losses
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I. Introduction

According to UN research, roughly one-third of the edible parts of food produced for human consumption is lost or wasted globally per year, totaling 1.3 billion tons annually. Therefore, it is of vital importance to strengthen partnerships among the public and private sectors of APEC economies in developing policy recommendations and solutions for reducing post-harvest losses and waste, as well as enhancing food quality and safety so as to contribute to food security in the Asia-Pacific region.

Since APEC is composed of developed and developing economies, the food loss issue raises more concerns to developing economies whereas the food waste issue to developed economies. The project aims to address post-harvest losses in all stages of the entire food supply chain in the APEC region by strengthening public-private partnership. This project is designed to be implemented in three phases within five years.

In Phase I (2013), a three-day seminar was held in August 2013 in Chinese Taipei, providing (1) a broad understanding of post-harvest food losses; (2) identifying key issues and challenges; (3) formulating the preliminary methodology on food crops; (4) deliberating on the strategies and action plans of cooperation among APEC economies and facilitating exchanges of best practices from public and private sectors among APEC economies; and (5) promoting exchanges of experience-sharing among APEC economies. In 2014, the “APEC Seminar on Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain of Fruits and Vegetables” was held on September 15, 2014 in Beijing, People's Republic of China.

In 2015, the “APEC Expert Consultation on Assessment Methodology of Fishery and Livestock Losses” was held on July 16-17, 2015 in Taipei, Chinese Taipei. The main purpose of the consultation was to review the current status and future prospects for reducing losses in the Asia Pacific fisheries and livestock supply chain by sharing current methods and approaches to data collection during loss assessment. Case studies of data gathering were presented and a number of methodologies introduced to attending representatives of APEC economies. The consultation sought to identify useful information and capacity building strategies for all stakeholders from the public, private, and academic sectors to better share and assess data on food losses in the fishery and livestock supply chain.

The consultation also served to foster communication and the beginning of a network among researchers and decision-makers for further collaboration on loss assessment methodologies, capacity building, and toolkit development for policy development for better data gathering and assessment and food loss reduction policies. The consultation presented basic research, current trends, business models, assessments of current data and analytical environment by economy, and opportunities and challenges for reducing food loss in the fishery and livestock supply chain.

The consultation consisted of six substantive sessions which comprised presentations and moderated discussion sessions. The first, second, and fourth sessions consisted of two expert presentations followed by moderated discussions on relevant issues. The third session consisted of member economy reports of economies in attendance followed by discussion. The sixth session contained one member economy report rescheduled due to time constraints followed by final deliberations in moderated discussion which crafted the key consultation consensuses.

II. Summary of Expert Consultation

1. Participants

The 2015 APEC Expert Consultation on Assessment Methodology of Fishery and Livestock Losses was attended by around 50 participants. The APEC member economies that participated in the Consultation were: Australia, Indonesia, Japan, Republic of Korea, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Singapore, Chinese Taipei, Thailand, the United States, and Vietnam.

2. Summary of Presentations

Session 1

Topic: Food Loss in the Supply Chain: The Landscape in Fisheries and Aquaculture

Presenter: Mrs. Staci Rijal, International Affairs Specialist, NOAA, the United States

- Mrs. Rijal related that APEC region fish consumption provides millions of jobs and hosts about 85% of global aquaculture
- Mrs. Rijal raised the prevalence of small-scale fishery in the APEC region as a primary factor contributing to the difficulty of data collection and loss assessment
- Destructive fishing methods and poor adherence to standards during production were cited as primary factors in production losses: poison and explosive use, poor hygiene and handling, and long transport times to market which affect mold growth, theft, infestation, and discoloration
- Mrs. Rijal suggested that responses rates for assessment surveys can be improved with more targeted, shorter surveys, and increased time for translation; lack of widely-tracked basic data was raised as a key concern
- IUU, dead discards, and out of season catches were highlighted as additional factors affecting production losses

Topic: Global trends for the Livestock Chain and the need to reduce wastage of high value product

Presenter: Prof. James Morton, Head, Dept. of Wine, Food and Molecular Biosciences, Lincoln University, New Zealand

- Prof. Morton highlighted pork consumption remains the number one consumption type with poultry following; both are expected to maintain strong growth in developing economies as is dairy
- Prof. Morton related that livestock products are nutrient-rich compared to vegetables and other crops but bring issues for environment and diet such as saturated fat content
- Sustainability issues were raised – pig and poultry production is more ecologically efficient than beef but cropland used for feed competes with land used for human food production
- Dairy losses are higher at the consumption level compared to meat; parasitic and disease burdens (ex. mastitis) affect production of both; disease is a huge constraint to trade due to cross-border restrictions based on current status and losses from necessary culling
- Prof. Morton related that shifts in production trends can be successfully accomplished with improved signaling from the government to producers of consumer needs.
- The issue of distortion of loses due to the weight-based method of accounting was raised as livestock product has typically has higher nutritional value by weight

Session 2

Topic: Current Status of Food Loss in Fishery Supply Chain – Lessons: Implications from Korea Case

Presenter: Dr. Jung-Hee Cho, Overseas Fisheries Research Department, Korea Maritime Institute, Republic of Korea

- Dr. Cho related that the critical challenge for fisheries was increasing demand on vulnerable ecosystems already suffering from pollution, degradation, and climate change
- Dr. Cho presented the Korean landing system for capture fisheries which moves from unloading to selection to packing to carry to arrangement to auction to transport for consumption and sale
- The Korean policy challenge is to reduce fishing capacity while vessels continue to be commissioned and bad inputs exist – insufficient freezers in smaller Korean cities and temperature control issues overall
- Methods of management include government buybacks of licenses and vessels and license restriction, efforts seek to increase efficiency and the need for the current pre-loss production level
- Dr. Cho highlighted that Korean surveys of fishermen and consumers related a consumer tolerance for up to a 10% increase in price from costs imposed by increase regulation
- Better definitions in Korea for waste can help recycling efforts along with developing better ice for refrigeration and government distribution of manuals for best practices

Topic: Major Issues on Food Loss Assessment and Improvement

Presenter: Dr. Ching-Cheng Chang, Academia Sinica, Chinese Taipei

- Dr. Chang presented the question of how the survey questionnaire for food loss data can best be designed for APEC usage
- Dr. Chang focused on highlighting hotspots for targeting during survey distribution
- The question of whether existing loss ratios can be used was raised as was the possibility for improving definitions of edible portions of meat and fish by economy

Session 3: Member Economy Reports

Topic: Indonesia

Presenter: Mr. Mohamad Natsir, Agency for Marine and Fisheries Research and Development, Ministry of Marine Affairs and Fisheries

- Mr. Natsir related that about 2.21% of Indonesian GDP is derived from fisheries
- Most Indonesian fisheries are categorized as overexploited, have high harvest losses
- Shrimp, lobster, tuna, and seaweed dominate the Indonesian fishery supply chain
- The Indonesian supply chain consists of skipjacks and purse seiners which land their catch, move catches to ports whereupon middlemen sell to processors for trade
- Mr. Natsir related that most production is organized into cooperatives in Indonesia
- Previous efforts for loss assessment included monitoring based on rough estimation from observation of fish landings from 2008 to 2012
- Mr. Natsir related a key effort to reduce loss was a good handling practice certification but the challenge remained to motivate fisherman to register for training and certification

Topic: Mexico

Presenter: Ms. Leticia Albarran Mena, Specialist on Climate Change of the General Coordination of International Affairs, Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food

- Ms. Albarran related that food losses in Mexico are primarily due to obsolete equipment, inadequate transportation systems, and marketing issues stemming from inadequate quality standards and packaging
- The CELA Food Logistics Center is a government-run network established for the national distribution of food, a series of government-built refrigerated warehouses and transports coordinated by centers for information and logistics
- Ms. Albarran related that the CELA effort is an example of a possible solution to transportation loss problems in the food supply chain

Topic: New Zealand

Presenter: Prof. James Morton, Head, Dept. of Wine, Food and Molecular Biosciences, Lincoln University

- Prof. Morton related that dairy is the key New Zealand export industry with about 95% of processed milk production being exported
- Changing the focus of production from weight to quality emphasis has reduced trimmings for fat and decreased volumes of waste
- New Zealand aquaculture focuses on king salmon and green shell mussel
- Aquaculture has the easiest input control in supply chain
- Prof. Morton related that “disease free” status and “clean and safe” image is key to New Zealand export and trade

Topic: Peru

Presenter: Mr. Luis Alberto Chimpen Salazar, Engineer, Technical Institute of Production (ITP)

- Mr. Chimpen reported that the Peruvian fishing supply chain for direct human consumption is mainly artisanal and supply chain losses are attributable to slow increases in good handling practices, and the lack of isolated, covered, and/or refrigerated storage areas in artisanal vessels
- Upwelling in Peruvian sea features translates into high productivity for coastal fishing with about 10% of the global catch being produced, heavily based on the anchovy
- Mr. Chimpen related a new method of compliance with success in reducing losses: vessels must comply with the Programs of Good Manufacturing Practices (GMP) in handling and preservation as well as following good hygiene and sanitation practices on fishing vessels
- Mr. Chimpen highlighted that opportunities for other improvements are opening as the Peruvian economy has stabilized in recent years

Topic: The Philippines

Presenter: Dr. Jonathan V. Sabiniano, Meat Control Officer II, Plant Operation Standards and Monitoring Division, National Meat Inspection Service

- Dr. Sabiniano related that the Philippines meat supply chain is fragmented in terms of jurisdiction and control, the sources of meat are under the jurisdiction of the Bureau of Animal Industry, the Meat Establishments are under the control of the NMIS, and the Market is under the Local Government Unit (Provincial, City, and Municipal Governments)
- The National Meat Inspection Service (NMIS) is the sole national controlling authority on

matters pertaining to meat and meat products inspection and meat hygiene via Republic Act 9296 “Meat Inspection Code of the Philippines” and Republic Act 10536 “Amendment to the Meat Inspection Code of the Philippines”

- Dr. Sabiniano summarized that the Philippines livestock sector accounted for 16.1% of 2014 farm output growing 1.02% from 2013, poultry accounted for 14.54%, the absence of avian flu and food-and-mouth disease will boost the livestock and poultry sectors, and per capita consumption of meat has increased from 24kg in 2010 to 32kg in 2014, expected to increase to 34kg in 2016
- Data is collected from slaughterhouses and poultry dressing plants are as follows: number of animals slaughtered (number of heads of each species of food animals – carabao, cattle, hogs, chicken, goat, ostrich, and crocodile), volume of meat produced (expressed in kilograms for each species of food animal), numbers condemned pre (expressed in number of heads with cause) and post mortem (expressed in kilograms of each type of organ and/or primal part)
- Challenges to data collection are timeliness of data submission, inaccuracy of data, underreporting, partial data due to late submission, logistical issues in printing, distribution, form collection, and computers for encoding, non-uniform forms (LGU and NMIS have different forms), and lack of incentives (for data collectors)
- DA-Administrative Order No. 27 is an attempt to remedy the challenges and delineates collection responsibilities for agencies, stipulates need for web-based data processing (timeliness and automation/summary)
- Dr. Sabiniano highlighted a policy effort to automate data collection with an online portal (automation of slaughter data collection) and create incentive mechanisms for local government meat inspectors

Topic: Chinese Taipei

Presenter: Prof. Yun-Chu Wu, Dept. of Animal Sciences and Biotechnology, Tunghai University

- Prof. Wu related that Chinese Taipei consumption-level waste is thought to be uniquely low due to higher proportion of animal parts being consumed or otherwise extracted for industrial use
- Prof. Wu highlighted traditional markets in Chinese Taipei as an alternate chain bypassing processing after production, often without refrigeration
- Supply chain loss ratios are nonexistent for the traditional chain and data confidentiality concerns from private industry also need to be addressed

Topic: Thailand

Presenter: Ms. Hirunya Srasom, Senior Professional Economist, Ministry of Agriculture and Cooperatives

- Ms. Srasom related that cattle production is decreasing in Thailand due to limitations of raising area and labor
- Swine production decreased in 2014 due to climate change and high temperatures
- Egg production increased due to price increases
- Fishery losses are primarily due to the high cost of ice and the lack of knowledge on temperature control, early mortality syndrome extremely harmful to shrimp production
- Ms. Srasom related that food balance sheets are calculated for the Thai economy based on FAO guidelines for South-Southeast Asia and highlighted that increased technical

knowledge should be provided to data collectors

Topic: Vietnam

Presenter: Mr. Bach Van Hanh, Directorate of Fisheries (D-FISH) of the Ministry of Agriculture and Rural Development (MARD)

- Mr. Bach highlighted the prevalence of ponds and lakes in the Vietnam environment with applications for aquaculture
- Capture fisheries rely primarily on wooden vessels with low horsepower and lack of equipment for post-harvest handling
- Mr. Bach summarized the Vietnam supply chain of boat owners selling directly to the domestic market and middle men and tuna companies which sell domestically or onto the international market
- Mr. Bach highlighted loss estimates of about 20-30% due equipment insufficiency, non-target catches, and long distances traveled after catch
- Mr. Bach recommended that loss reduction can benefit from increases knowledge for catch selectivity
- Mr. Bach related data tracking methodology in the Vietnam tuna supply chain may serve as a useful baseline

Topic: Papua New Guinea

Note: Papua New Guinea's member economy report was delivered during Session 6 due to time constraints but as such is included in the Session 3 record.

Presenter: Mr. Mark Ivekolia, Project Analyst, National Fisheries Authority

- Mr. Ivekolia related on Papua New Guinea food losses resulting from transfer pricing mechanisms, lack of access to alternative markets (e.g. due to stringent market access requirements), lack of basic infrastructure, and low levels of food production technology
- Papua New Guinea supplies about 15% of world tuna catch with tuna comprising about 50% of production, or a sustainable catch of 720,000 metric tons per annum
- Challenges include overutilization (about 80% utilization of waters), increasing costs of production due to lack of basic infrastructure, economies of scale, and wage increases reaching 1.2M USD per annum
- Papua New Guinea efforts for sustainability include a commitment to Maximum Sustainable Yield (MSY) approach
- Mr. Ivekolia suggested policy considerations for increased research and development, implementation of infrastructure development, and incentives for industry compliance (e.g. import duty exemption, rebates on fuel consumption)

Session 4

Topic: Data Transparency and confidentiality in food supply chain

Presenter: Dr. Don Gunasekera, Institute for Supply Chain and Logistics, Victoria University, Australia

- Dr. Gunasekera related that while large numbers of small farmers and fishermen continue to operate in the Asia Pacific, the general trend is toward larger scale operations and corporatization
- Consumers are demanding more information for food labels and production information

- Dr. Gunasekera emphasized the lack of motivation to share data with governments as data sharing may result in increases to regulatory burdens
- Businesses may openly disclose potential losses when appealing for aid in the face of publicly-known loss events
- Dr. Gunasekera highlighted the need to develop engagement and buy-in for data-sharing as a primary challenge
- Surveyors should be third party groups with strong credentials such as academic or research affiliations which can maintain objectivity in order to reduce suspicion from private quarters of government implication
- Longer term challenges were discussed, including data protection concerns in which breaches or misuse of data breaks the trust of industry data suppliers

Topic: Economic Evaluation of Food Losses and Waste in the Supply Chain: The Case of Rice in Thailand

Presenter: Prof. Sarun Wattanutchariya, Faculty of Economics, Kasetsart University, Thailand

- Prof. Wattanutchariya summarized the cost of a rice loss assessment project in Thailand as totaling 2M Thai baht with savings potential of up to 68 million Thai baht
- The survey focused on economic evaluation of rice losses and waste along the supply chain
- Primary data were collected from five stages of the supply chain, namely: harvesting, milling, processing, distributing, and consumption stages
- Total value losses was 43 billion Thai baht (1.3 billion USD) with consumption stage being the highest, comprising 52%, and harvest stage comprising 30%
- Suggestions for the reduction of losses were also addressed
- Prof. Wattanutchariya related that developed personal ties were the key to success of data collection and its accuracy

Session 5

Topic: Issues on Reporting, Continuity, and Capacity Building in Food Loss: Experience from USDA with a Focus on Meat, Poultry, and Seafood Loss

Presenter: Dr. Jean Buzby, Economic Research Service (ERS), USDA, the United States

- Dr. Buzby related that the US study presented was proposed to create a data series of food availability as a proxy for food consumption
- This study also provides estimates of food loss, which ERS defines as the amount of edible food, postharvest, that is available for human consumption but is not consumed for any reason; it includes cooking loss and natural shrinkage (e.g. moisture loss), loss from mold, pests, or inadequate climate control, and food waste
- Dr. Buzby related that 43 billion pounds of food goes uneaten at the retail level while a further 89.9 billion pounds of edible food goes uneaten at the consumer level
- Meat, poultry, and fish contribute about 15 billion pounds of loss out of the total 133 billion pounds at the retail and consumer level
- Food loss reporting and tracking can be accomplished with supermarket data collection and phone apps for consumers
- Dr. Buzby raised that some amount of food loss is tolerable as economically justifiable

Topic: Issues on Reporting, Continuity, and Capacity Building in Reducing Paddy Postharvest Losses: The Philippine Experience

Presenter: Dr. Amelita Salvador, Socio-Economics and Policy Research Division, Dept. of

Agriculture, Philmech, the Philippines

- Dr. Salvador related that data sampling for rice crops continues to utilize manual sampling methods
- The Philippines utilized 10-year price averages for cost/value calculations
- Drying and milling represents 1/3 each of post-harvest grain losses
- Highway drying was recommended to be banned, while information distributed via text message and other technological means reducing losses
- Dr. Salvador related that effective dissemination was the key to effective policy in the Philippines experience

Session 6

Note: Session 6 included one presentation – the member economy report of Papua New Guinea which is included alongside the Session 3 summaries of all other member economy reports; and the final conference deliberation which has been summarized in Section III below as a moderated discussion. The Session 6 Moderated Discussion represents the final consultation deliberations.

III. Summary of Moderated Discussions

Session 1

1. Mr. Tada remarked that natural disasters commonly affect transportation in APEC
2. Private sector response is poor, how can responses be incentivized?
3. Dr. Gunasekera asked after the supply chain stages to be targeted for maximum payoff
4. Prof. Wattanutchariya raised the issue of counting disease outbreaks and whether they should they be defined as losses
5. Prof. Chang discussed by-catch definitions and the merits of its inclusion in losses

Session 2

6. Mrs. Rijal suggested that the Korean survey and study be used to create a baseline survey for general use and customization by each member economy
7. Mr. Tada suggested that classifications and data variables can be more finely-defined so that economies can have better direct comparisons

Session 3

8. Dr. Gunasekera remarked that a number of economies have detailed information for specific parts of the supply chain, including Indonesia and Vietnam for tuna, their data seems robust and detailed as they include data organized by species and include numbers for catch volume and waste, this micro-level information at the economy level can be used to validate estimations in other economies
9. The group agreed that some economies utilize FAO ratios for loss estimation while there is sparse data for a number of other economies

Session 4

10. Prof. Wattanutchariya highlighted that it is possible to avoid questions that producers are unwilling to answer to maximize information gathered
11. Mr. Natsir raised that government-mandated reporting may affect data quality and asked how private/producer stakeholder buy-in be cultivated and suggested possible technology transfer incentives among other approaches

12. Dr. Gunasekera responded that economies with producer associations can be engaged via association representatives which reduces pressure on producers
13. Mr. Tada suggested that APEC is a place for problem understanding and that it would be most prudent to have APEC recommend good practices to APEC leaders and instead have practices independently implemented across member economies

Session 5

14. Dr. Bingabing remarked that government funding schemes for equipment can be effective - but cost sharing is essential as it renders producers vested in equipment provided as full subsidization has resulted in poor care of equipment in the Philippines experience. Cost-sharing, or a "counter-parting" program can be effective to address losses due to equipment obsolescence.
15. Dr. Salvador explained that discussions during surveys allow for better information gathering, particularly holistic surveying which explains why losses take place, e.g. diseases, infestations, and other factors impacting potential yield.
16. Dr. Gunasekera explained that price stabilization schemes and government interventions should be rendered during cyclical events but stockpiling and other price stabilizations have historically been ineffective. The focus of policy should be on the human-controlled aspects of loss rather than attempting to offset or mitigate weather and other factors that can result in total losses which have the potential to distort accounting and assessment.

Session 6 (Final Deliberations)

17. The representatives agreed that the form of the survey itself should be clarified by end of consultation with first line, sector-specific questions tailored to each survey respondent, flexibility in survey form - electronic setup is an effective direction
18. Group discussion for producers to be targeted for survey, what is the list of contacts across the member economies used to identify survey respondents? Technical team will handle interviewee proposals but due to voluntary nature of APEC participation, respondents may drop out without the establishment of an official APEC contact window, contacts already established by other working groups can be useful for this issue
19. Translation will be independently managed by APEC economies targeted for surveys
20. Prof. Morton suggested that baseline data be prepared before sending out surveys as some overall baseline data can be provided for context, tailored by economy and available data
21. Mrs. Rijal commented that public/private, with 10 responses can be improved as a survey target, additionally, large geographies by economy may impact survey applicability
22. Mrs. Rijal related that some alternative plans may be needed if there is a lack of response: alternatives can be extremely short, focused, singular, potentially Y/N questions if response rate is below a certain threshold
23. The representatives agreed that the general contours of national situations can be delivered with case studies attached as an annex for political sensitivity, documentation of methodology and robust data are necessary to defend case studies and gives a baseline for comparisons, averages and general trends should be compiled from each individual national estimate to create a unified report rather than needing to mediate for conflicting estimations when reporting to APEC and individual national leaders
24. The representatives agreed that the wording of survey should be made flexible so that each economy can tailor survey to needed sectors by economy

25. The ultimate goals of the project in the medium term was discussed during this session to be (1) to define and write the survey questionnaire for food loss assessments by the technical team, (2) gather information with identified hotspots needing assessment and targeted respondents, (3) store and analyze data, (4) facilitate knowledge sharing, and (5) link results of work to recommended policy actions; the technical team will create a single working sheet for regular update and comment

Session 6 Member Economy Check-Ins on Data Collection Progress

26. Indonesia - large geography and population has paused current efforts
27. Mexico - data should be collated and reportable
28. New Zealand - small population, concentration of industry into cooperatives means industry respondents are easy to reach
29. Papua New Guinea - data collection remains in progress
30. Peru - data collection remains in progress
31. The Philippines - data remains based on production, for losses - good relationship has been built with stakeholders, data sharing is possible due to preexisting engagement, key players should be selectable through associations for cold storage, hog raisers, poultry, and small holds
32. Singapore – the number/s of large industry players can be provided; losses along the supply chain need to be studied together with willing fishery companies
33. Chinese Taipei - domestic team has been organized including fishery and livestock sector scientists and data is being slowly reported by local organizations and industry, a long list has been compiled
34. Thailand - information needs to be passed on to departments of fishery and livestock but research currently is limited
35. Vietnam - director of fishery can verify import/export data but for losses, the data is currently unavailable, process can be started after this consultation
36. Korea - data has been/is being collected for Korea
37. United States - bureaucratic limitations on direct engagement, contractors can be notified to contact interviewees for data gathering, some data has been gathered

III. Major Outcomes

- An important outcome of the consultation is that participants were able to meet, share ideas, and create a network for future cooperation. Participants gained valuable knowledge relating to best practices, innovative technologies and management, and assessment methodology along with an awareness of key challenges and possible solutions from presented case studies. Awareness of issues in other member economies was also increased.
- Key concerns for the fishery and livestock supply chain include the establishment of sufficient cold chain systems and the distribution of best practices during production – catching, landing and handling for fishery, efficient production for livestock. Products that will be stored or sent to distant markets are harvested but often left in the open without necessary refrigeration. Incomplete or inadequate cold chain infrastructure and shortage of equipment, along with low knowledge of best practices for handling after catch (primarily for fishery) or transport create losses estimated as high as 30%.
- The enhancement of public-private partnership has been achieved with the participation of speakers from government, business and academia. Government representatives have related

about the government policies, programs, and case studies. Business representatives presented their key concerns when engaging with government for data gathering and analytical efforts – including concerns for privacy, maintaining competitive advantage, and data security. Academic representatives discussed current methodologies for assessing food losses in fishery and livestock production and areas for improvement along with case studies from their own economies.

- Other deliberations during the consultation resulted in a better and clearer foundation for the establishment of a Technical Team for strengthening public-private partnership to reduce food losses in the supply chain. The consultation reached an agreement on the Work Plan where Chinese Taipei will organize a Technical Team with relevant statistical and/or data collection experiences to undertake three major activities: (1) preparation of the baseline inventory, (2) data collection in reducing food losses, and (3) final report.
- The consultation was also able to create consensus on a number of key issues including: an agreement on the interchangeability of FAO terms “loss” and “waste” as simply denoting the stage of post-harvest food supply and consumption at which food was lost; an enhancement of the questionnaire so that each economy can tailor survey to needed sectors and the general contours can be delivered with case studies; and the need to provide baseline information based on FAO model estimates and build trust for stakeholders’ buy-in before sending out surveys.