

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

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Outline

- Why look at fisheries in post harvest loss
- Existing Definitions/Initiatives
 - FAO
- Past APEC Initiatives
- Challenges
- Next Steps



Why look at Fisheries Post-Harvest Loss

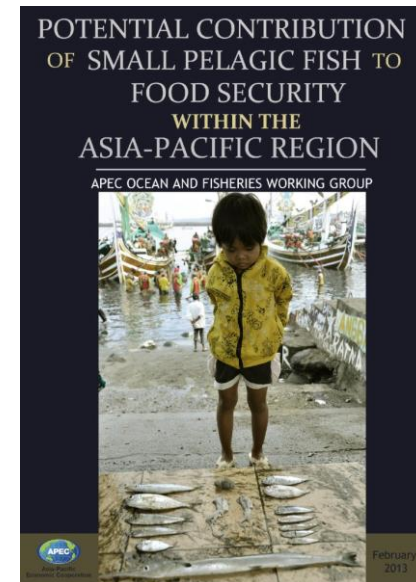
Fisheries and Food Security

- Fish= 16.7% of global animal protein intake
- >2.9 Billion people get almost 20% of protein from fish
- >4.3 Billion people get almost 15% of protein from fish
- Fish supply growing— avg of 3.2%/year
- (FAO SOFIA 2014)



Fisheries and Food Security

- Why does it matter in APEC?
 - APEC economies ~ 70% of global marine production (FAOstat)
 - 13 APEC economies are among the top 15 producers of marine capture (FAO 2014)
 - APEC economies ~63% of global wild capture and 80% of farmed fish (FAOstat)
 - Supply increasing— but at what cost?





Existing Definitions

Existing Definitions

Parfit et al (2010)

- “Food losses” refer to a decrease in edible food mass from the various stages of the supply chain that are specifically directed towards supplying food for human consumption
- Loss measures do not include inedible parts of the fish or fish destined for non-food uses such as animal feed
- Includes food originally meant for human consumption that is directed to a non-food use.
- Adopted by FAO in 2011

Food Loss Stages in Fisheries Supply Chain

Table 1. Definition of food loss stages in fish supply chains (FAO, 2011).

Food Loss Stages	Definition
Production	Discards during fishing
Post-Harvest Handling and Storage	Spillage and degradation during icing, packaging, storage and transportation after landing.
Processing	Losses from industrial processing such as canning or smoking
Distribution	Losses and waste in the market system, at e.g. wholesale markets, supermarkets, retailers and wet markets.
Consumption	Losses and waste at the household level

Food Loss Stages in the Fisheries Supply Chain (FAO SSF)

Stages	Definition
During fishing on board	<ul style="list-style-type: none">- Use of destructive/harmful methods of fishing, such as dynamite, poison, resulting in harvesting fish that is already damaged or of inferior quality- Falling from the net or discarded as by catch- Setting fishing gear for long periods, causing fish to spoil before the gear is hauled- Delay returning to landing after fishing, and exposure of fish to high ambient temperatures at sea- Failure to gut, wash and chill the fish on board- Stepping on fish, causing physical damage

Food Loss Stages in the Fisheries Supply Chain

Stages	Definition
During unloading & storage	<ul style="list-style-type: none">- Poor hygienic practices causing contamination- Fish falling from the pan/crate/basket on to the shore- Very long bargaining time at first point-of-sale, while fish is kept on the ground exposed to the sun at high ambient temperatures- Theft at the landing site during offloading of fish- Growth of mold causes spoilage and makes the fish damp- Insects consume fish during storage- Discoloration owing to chemical changes- Inadequate storage facilities

Food Loss Stages in the Fisheries Supply Chain

Stages	Definition
During processing and packaging	<ul style="list-style-type: none">- Processing of already spoiled/poor-quality fish- Processing fish under unhygienic conditions, allowing blowfly infestation- Inadequate control of heat intensity during smoking leads to over-smoking of fish and possible burning- Drying fish unsupervised, on ground, rocks or herbs- Breakage or damage owing to inadequate packaging method and materials- Oxidation of fatty fish leading to rancidity

Food Loss Stages in the Fisheries Supply Chain

Stages	Definition
During distribution & marketing	<ul style="list-style-type: none">- Inadequate application of ice, and no insulated container used- Limited preservation capacity during bumper catches, e.g. ice, processing equipment- No access to or lack of marketing information, with oversupply of market- Deliberate delay in purchasing the fish by traders- Delays owing to breakdown of transport vehicles and inaccessibility of production areas- Damage to fish during transportation- Delays in selling Quality- Inadequate cold-storage facilities and warehouses and lack of ice- Supplying the market at the “wrong time”- Poor purchasing power of buyers/consumers

FAO

- Regional Program in Africa
- Guide for Extension officers on assessment



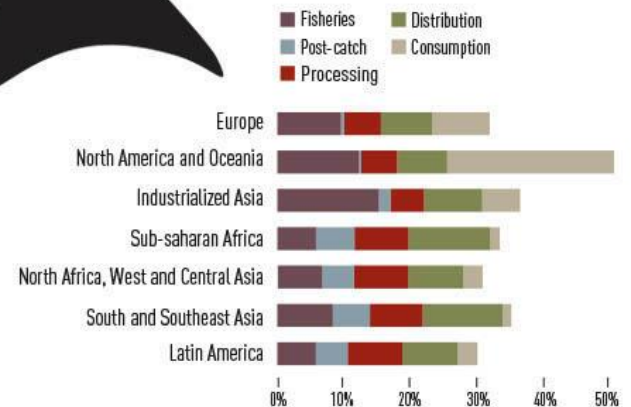
30%

FISH & SEAFOOD FOOD LOSSES

8% of fish caught globally is thrown back into the sea. In most cases they are dead, dying or badly damaged.



This is equal to almost 3 billion Atlantic salmon.





APEC Initiatives

APEC Initiatives



Asia-Pacific Economic Cooperation

- 2014 Food Security Ministerial
- *We encourage all economies to enhance the management of food along the value chain; deepen cooperation in development of approaches to reduce post-harvest loss; promote food saving by raising consumers' awareness so that food loss and waste can be reduced in the whole process from farm to table. We welcome the APEC Reduce Food Loss and Waste Action Plan developed by PPFS in 2014 for improving food security in the region, which helps to meet the Millennium Development Goals 2015 of eradicating poverty and hunger. We recognize the importance of implementing the APEC Multi-Year Project on Strengthening Public-Private Partnership to Reduce Food Loss in the Supply Chain and **welcome the development of a methodology for data collection, establishment of baseline data, toolkits and best practices to reduce post-harvest loss.** All economies should promote the development and exchange of technologies on reducing food loss.*

APEC Initiatives

- Project by USATAARI
- Objectives
 - To obtain the best available Post Harvest Loss estimates for APEC economies.
 - Identify critical loss points in the supply chain where intervention may be warranted.

1

Literature Review

2

Survey

3

Modeling

APEC Initiatives

- Literature Review
 - 29 publications included information of value
 - Refereed journals (9); FAO reports (14) Others (5)
 - 55% published after 2010
 - 13 of the 29 publications contained quantitative data
 - Little specific to APEC economies
 - Only 38% focused specifically on regional output and trends
 - Focus mainly on bycatch and discard loss from capture fisheries operations
 - Limited information on downstream waste.

1

APEC Initiatives

- Survey (online and word)
 - 8 respondents

2

Level of Expertise	Loss Level Estimation				Not Qualified to Judge	Total
	Very Significant	Significant	Somewhat Significant	Not At All Significant		
Highly Knowledgeable	0	0	0	0	0	0
Knowledgeable	1	0	1	2	0	4
Somewhat Knowledgeable	0	0	0	0	1	1
Little Knowledge	0	0	1	0	2	3
None	0	0	0	0	0	0
Total	1	0	2	2	3	8

APEC Initiatives

3

- Model
 - Created to provide additional perspective on potential loss patterns in APEC economies
 - Used published FAO percentage loss estimates by loss stage and production volumes for broad geographic regions
 - Indicative estimates of possible losses only

APEC Initiatives

- Study identified gaps → Can focus more on those gaps
- Low response rate → Shorter surveys; targeted audiences; more time to allow for translation
- Respondents also could only provide limited information → Multiple, shorter surveys to different audiences
- Need more engagement from non-government → Reach beyond APEC Working Groups



Challenges

Overall Challenges

- Different scales
 - Artisanal vs small-scale vs large-scale
- Different sectors
 - freshwater vs salt water; aquaculture vs wild caught
- Variety of players at each step in supply chain



Challenges at Each Stage

- Production
 - Difficulty getting data just on fish caught!
 - IUU fishing
 - Dead discards— much of it is estimated
 - Reporting requirements
 - Key source of data: governments



Challenges at Each Stage

- Post-harvest handling and storage
 - Primarily private sector-held information
 - Large-scale operations vs small-medium operations



Challenges at Each Stage

- Processing
 - Primarily private sector
 - Willingness to share information if not well-regulated already
 - Losses may vary greatly by processing type



Challenges at Each Stage

- Distribution
 - Primarily private sector
 - Many more players— need to think about scale



Challenges at Each Stage

- Consumption
 - Public sector
 - High amount of uncertainty
 - Question of value by scale



The image features a white background with a dense pattern of thin, vertical, light blue lines of varying heights and slight curves, creating a textured, rain-like effect. A solid teal horizontal bar spans the bottom of the image, containing the text "Where from here?".

Where from here?

Suggestions

- Agree to scope
- Identify key players at each step for each economy
- Recognize no one size fits all approach
- Build off existing work— e.g. FAO Assessment methodology— and determine what may need to be adjusted for APEC purposes
- Engage multiple APEC fora— PPFS, OFWG, ABAC
- Engage outside regional organizations— FAO
- Engage private sector— fishermen/aquaculture farmers, fish processors, fish importers, etc.
- Target surveys for key players at each step

Thank you!

All presentation pictures from NOAA or a personal photo unless otherwise noted