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Exporters' perspectives on pesticide regulations

SPS COMMITTEE THEMATIC SESSION ON TRADE FACILITATIVE APPROACHES TO PESTICIDE MRLS

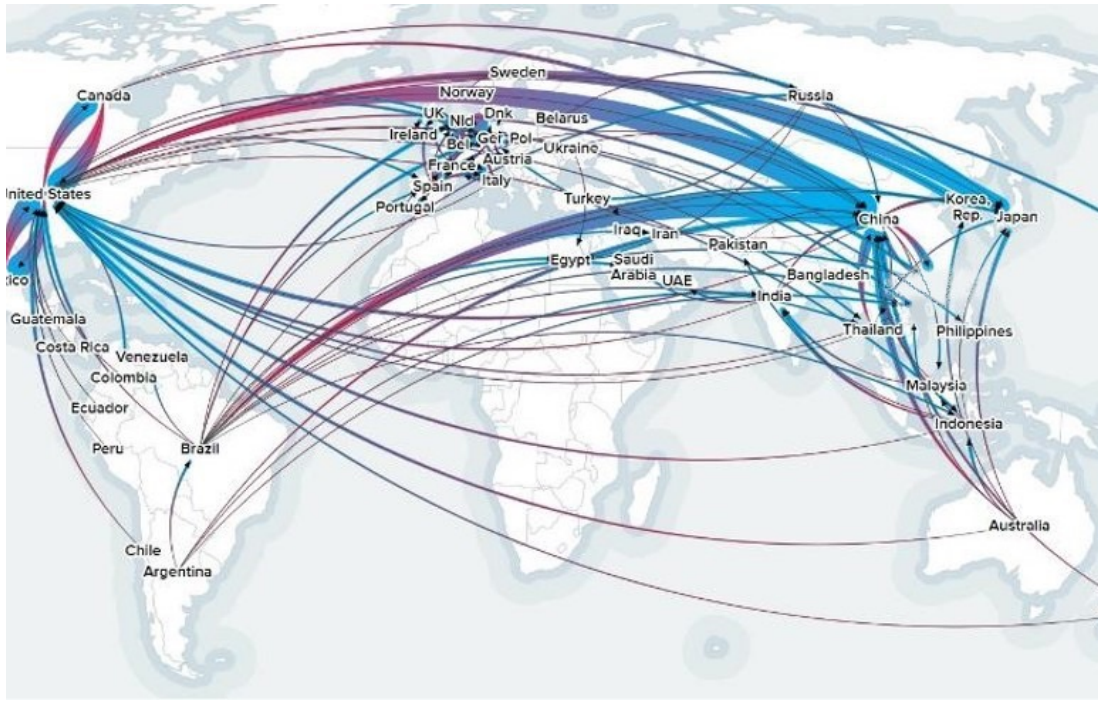
22 MARCH 2022

Growth in volume, complexity of global agricultural trade

"Since 1995, international trade in food and agriculture **more than doubled** in real terms to amount to USD 1.5 trillion in 2018."

"Emerging economies and developing countries are increasingly participating in global agricultural and food markets; **their exports have grown to more than one-third** of the world total."

The State of Agricultural of Commodity Markets, FAO, 2020



Chatham House (2018), 'resourcetrade.earth', http://resourcetrade.earth/

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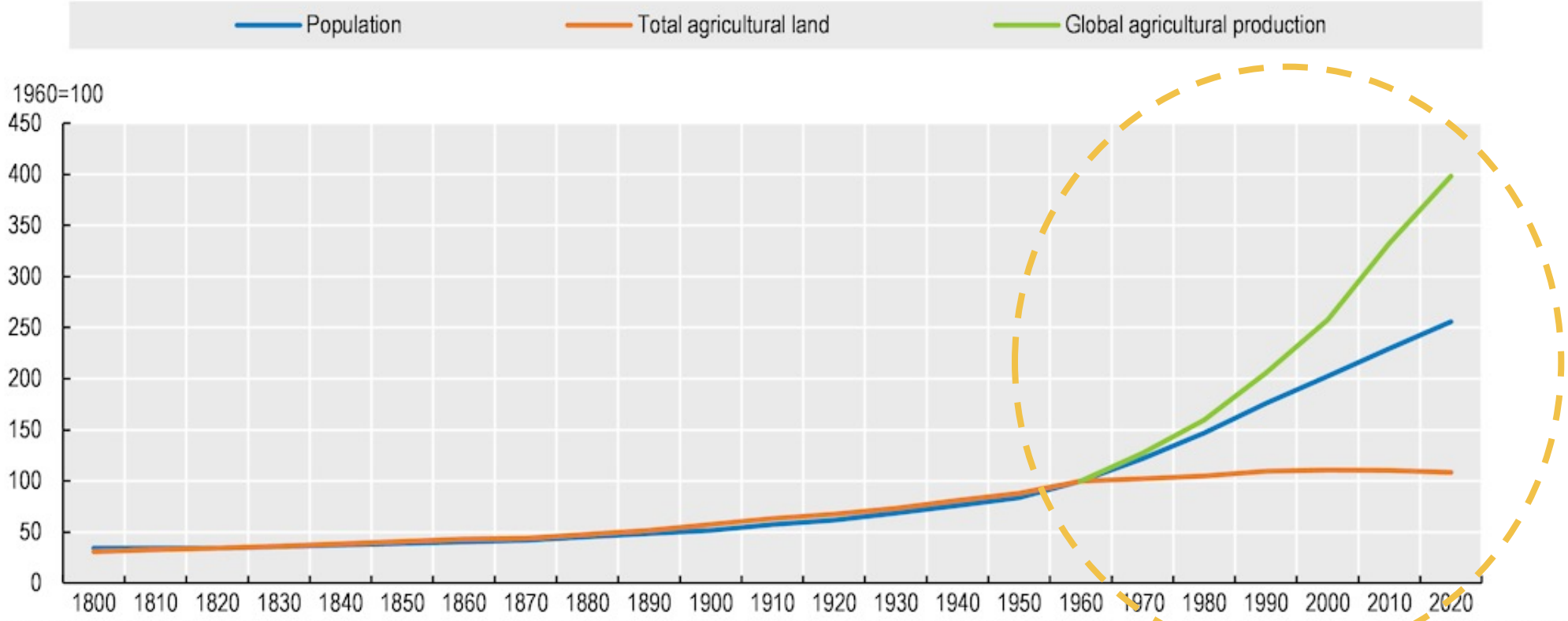
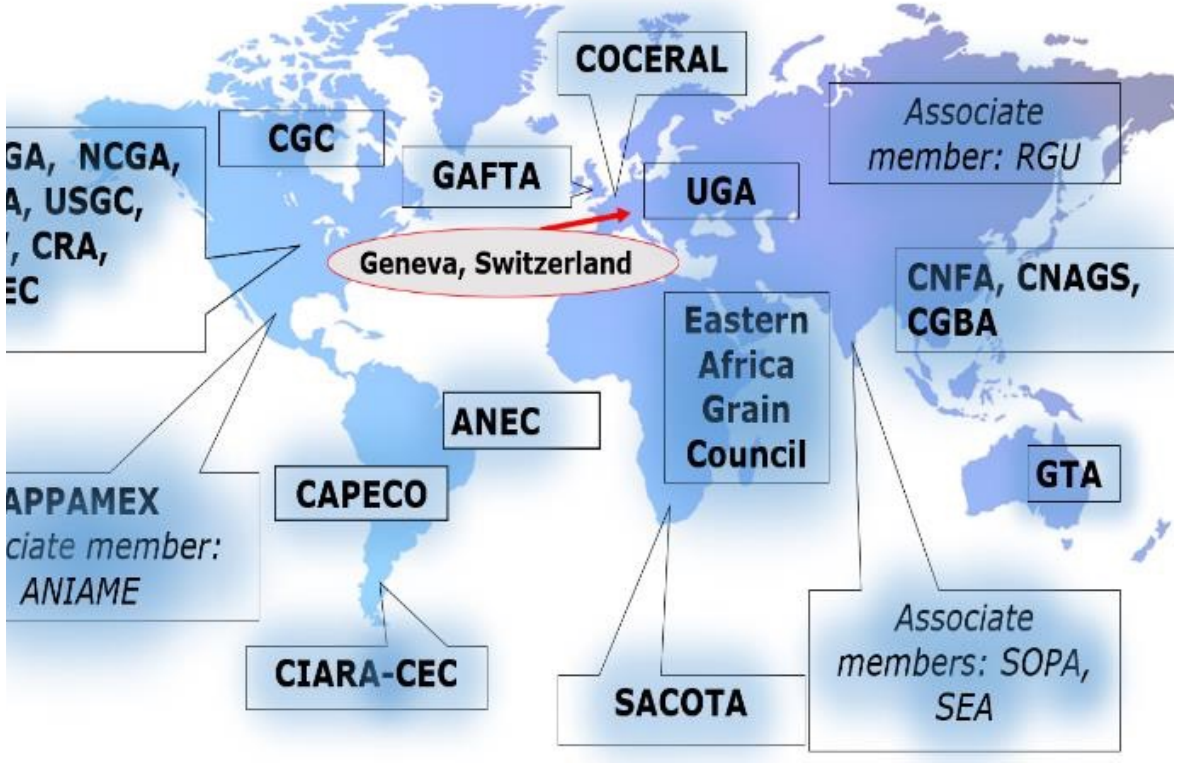
Why we worry about the increasing complexity of technology-related standards and requirements

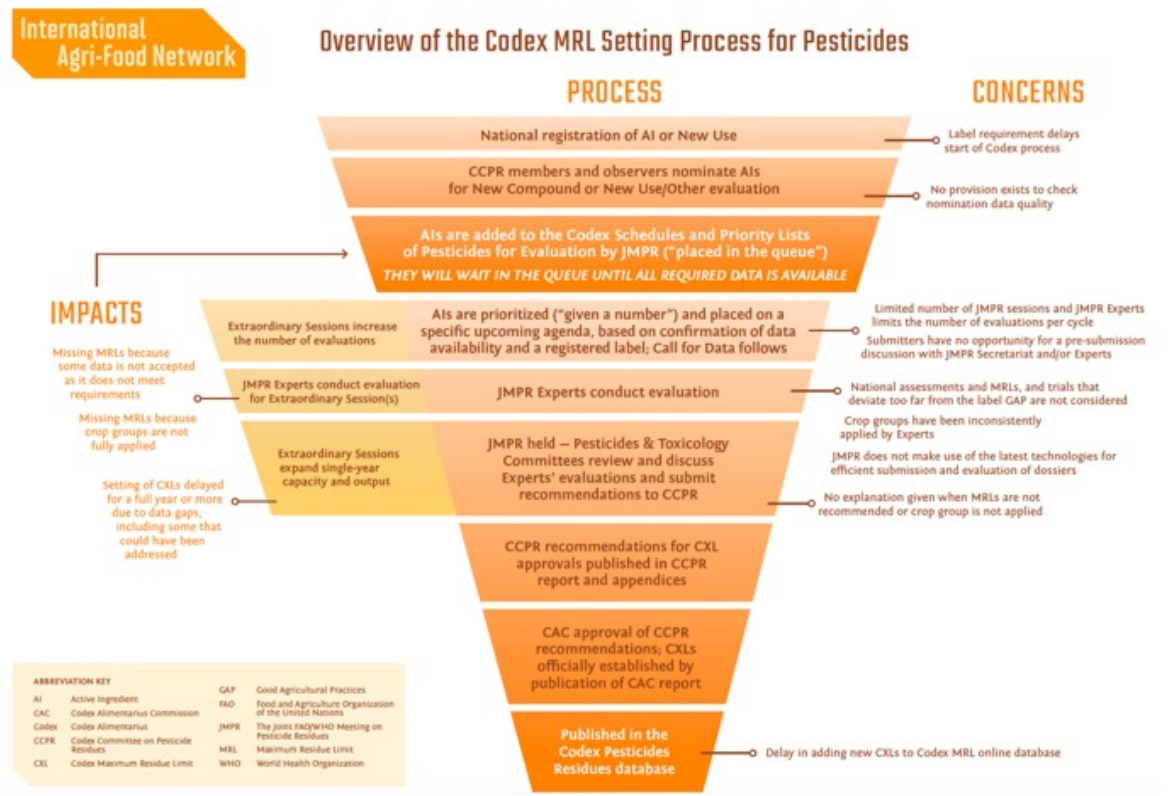
Figure 1.7. **Population, food production and agricultural land use in the long run**



Source: Population data from Maddison's historical statistics for 1820-1940; UN Population Division for 1950-2010; 1800 and 1810 extrapolated from Maddison. Agricultural (crops and pasture) land data for 1800-2010 from th History Database of the Global Environment (HYDE 3.2), Klein Goldewijk et al. (2017). Global agricultural production data for 1960-2010 from FAOSTAT (Net Agricultural Production Index), data for 2020 from OECD/FAO (2020), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

From *OECD-FAO Agricultural Outlook 2020-2029*





Two international grower/trade coalitions

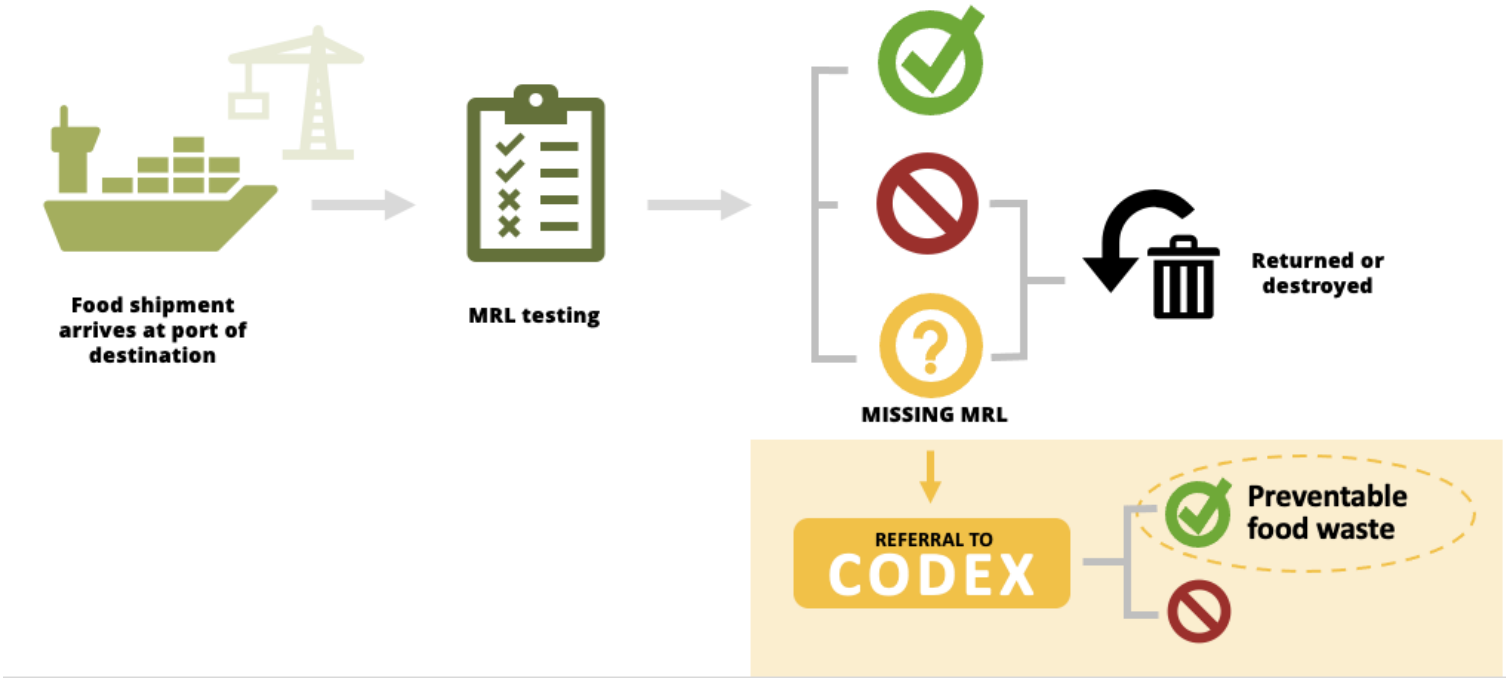
- International Grain Trade Coalition: more global use of international standards (Codex MRLs)
- International Agri-Food Network: support for an improved system of setting Codex MRLs

Food Waste/Loss Case study

First attempt to estimate the amount of food waste/loss resulting from noncompliances where the use of Codex would have prevented it

- Analysis began as an effort to meaningfully estimate food waste/loss.
- However, serious data gaps encountered (e.g., fate of shipments).

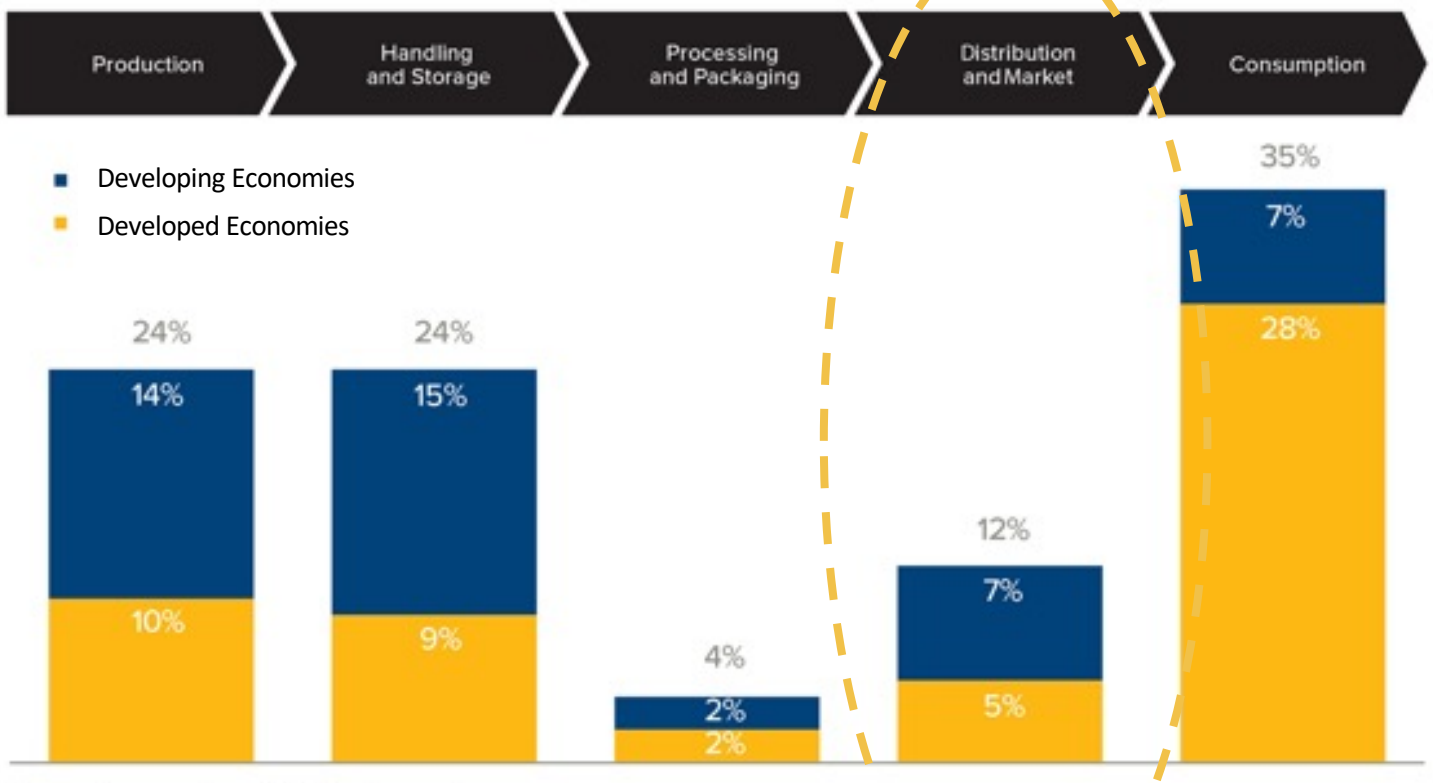
A decision was made to shift to an analysis of data gaps, areas for further research.



The Context: Quotes on Global Food Waste/Loss Estimates

- "When converted into calories, global food loss and waste amounts to approximately 24 percent of all food produced."
- "1.4 billion hectares of land - 28 percent of the world's agricultural area - is used annually to produce food that is lost or wasted."

Figure 5 | Share of Total Food Loss and Waste by Stage in the Value Chain, 2009 (100% = 1.5 quadrillion kcal)



Note: Number may not sum to 100 due to rounding.

Source: WRI analysis based on FAO. 2011. *Global food losses and food waste—extent, causes and prevention.* Rome: UN FAO.

Source: Lipinski et al., 2013. "Reducing Food Loss and Waste" World Resources Institute.

Sources: FAO, World Resources Institute
http://www.fao.org/news/story/en/item/196402/icode/
http://www.fao.org/3/ca6030en/ca6030en.pdf
http://www.fao.org/food-loss-and-food-waste/flw-data)
https://files.wri.org/d8/s3fs-public/reducing_food_loss_and_waste.pdf

Determining the subset of MRL violations as potential food waste (Aug 2014 – March 2021)

9442 →	2010 →	REMOVING ITEMS TESTED TWICE → 1600 →	1358
MRL violation samples in dataset from reporting economies: Australia EU Hong Kong, China Japan Korea Chinese Taipei	Samples that would be "No violation" if Codex had been used	Shipments that would have been "No violation" if Codex had been used	**ZERO TOLERANCE IMPACT:** Shipments would have been "No violation" if Codex had been used instead of : • **Missing MRL** • **Default MRL** • **LOD/LOQ** • **0.01 ppm**

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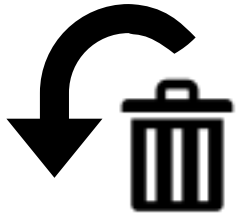
64-68% of total were compliant with av'g APEC and OECD MRLs



For shipments that were either returned or returned or destroyed (not specified), we have set up a perishability index to determine the probability of those shipments being re-directed to other jurisdictions versus the probability of the goods perishing before they can be re-directed.

Using this perishability index, we can estimate food waste across a range of Low – Medium – High probability that non-compliant shipments were re-directed to other markets.

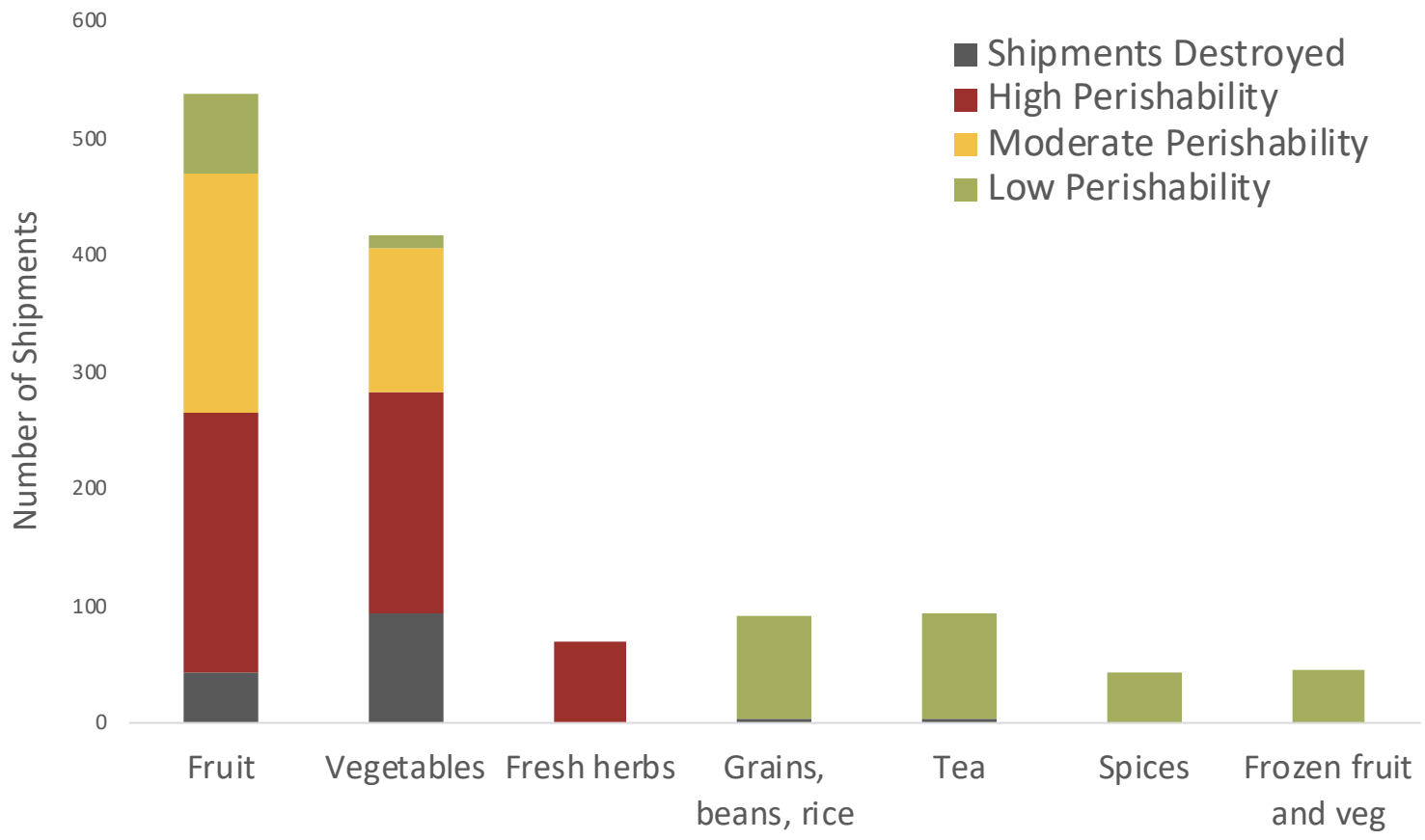
Perishability Index		
LOW PERISHABILITY	**MODERATE PERISHABILITY**	**HIGH PERISHABILITY**
Food products that have a long shelf like that can most likely be re-dispatched to other markets. For the purposes of this study, these foods have a low probability of being food waste.	Food products that have a shelf life beyond one week that can likely be redirected to other markets For the purposes of this study, these foods have a moderate probability of being food waste.	Food products that have a short shelf life and likely perish before being directed to food markets. For the purposes of this study, these foods have a high probability of being food waste.
Examples:	**Examples:**	**Examples:**
Grains Dry Beans Dried Fruit (e.g. raisins, dates) Frozen fruits and vegetables	Citrus Apples Onions Potatoes	Peppers, cucumbers, tomatoes Lettuce and leafy greens Fresh herbs Fresh berries

Data Gap on Size of Each Shipment: Method to Estimate

- Estimated minimum consignment size (via industry contacts and trade databases).
- Serious data limitation; adapted the case study by expressing results in a (very) wide range of potential food waste outcomes.
- Estimated volumes below are approximations. We expect that these can be improved through dialogue with industry colleagues.
- Convert consignment weight to kcal for each commodity (via FAO Food Balance Sheets).

***Minimum* Consignment Size Estimates**		
Examples:	**Examples:**	**Examples:**
Grains 25 Tonnes Dry Beans 24 Tonnes Dried Fruit (e.g. dates) 10 Tonnes	Citrus 24 Tonnes Apples 5 Tonnes Onions 20 Tonnes Potatoes 24 Tonnes	Peppers 5 Tonnes Spinach 1 Tonnes Raspberries 1 Tonnes Peaches 8 Tonnes

Estimating Food Loss/Waste: From rejected shipments that were compliant with Codex MRLs



*Based on 5 of 6 importing economies that report publicly (Australia, EU, Japan, Korea, and Chinese Taipei) from Aug 2014 – 2021. U.S. data excluded due to limitations on reported residue levels.

625 shipments of food that had a very **high probability** of contributing to food waste.

An additional **322** shipments had a **moderate chance** of contributing to food waste.

349 shipments assumed to have <u>not</u> resulted in food waste.

Estimated MRL-related global food waste/loss, 2014-2021*

(* Food shipments that were compliant with Codex MRLs, but zero tolerance principle was applied because importing country MRL was missing.)

- High probability that between 140,000 - 4,765,555 days of food was wasted (i.e. food to feed one person for one day).
- Small proportion of global food waste – but it is needless and therefore significant in absolute terms
- Moderate probability that up to an additional 6 million days of food was wasted

<u>Next Step: pass on to academics to further develop, address data gaps – expectation of peer reviewed journal article</u>

Text slides on methodology and assumptions appended

Category	LOW estimate*	HIGH estimate*
Food that was destroyed/seized or did not specify returned or destroyed, but was highly perishable	315,060,000 kcal	10,722,500,000 kcal
Food that did not specify whether it was returned or destroyed and was moderately perishable	1,462,000,000 kcal	14,620,000,000 kcal

Summary of messages

1. Farmers increasingly face a complex global patchwork of misaligned and missing MRLs.
2. Impacts on farmers, trade and food security are serious now, expected to grow.
3. Food waste/loss was the focus area of this presentation but is only one category of impact.
4. Of just under the 10,000 publicly-reported MRL noncompliances from 2014-2021, approx. 15% of these food shipments would have not been rejected if Codex MRLs had been used (instead of a default MRL, MRL set at the LOD/LOQ, or other form of 0.01 ppm MRL*). Some but not all of these resulted in food waste/loss.
5. Of the 15%, approx. half are estimated to have resulted in food waste/loss based on assumptions about perishability in the absence of hard data on the fate of shipments (e.g. all grain and dried fruit assumed to be redirected to other countries, all fresh berries and herbs assumed to have resulted in food waste/loss).
6. Because of significant data gaps: (a) results are expressed in a wide range; (b) collaboration is underway with academia on further research; (c) approach/assumptions made transparent.
7. There is a high probability that between 140,000 - 4,765,555 days of food was wasted (i.e. food to feed one person for one day).

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*Another 5,000+ of the 10,000 rejected/noncompliant shipments did not have a Codex MRL in place but were compliant with the relevant MRLs in OECD and APEC countries, indicating a need for more Codex MRLs.

Data assumptions and sources

The goal of this case study is to summarize data gaps and lessons learned when estimating the amount of food wasted; specifically, in cases where shipments in question were compliant with Codex MRLs, and where deferral to Codex MRLs would therefore have prevented food waste

Methods Used:

BCI database of non-compliances from Aug 2014 – March 2021 for reporting economies: Australia; EU; Hong Kong, China; Japan; Chinese Taipei; Korea

Selected shipments that were deemed non-compliant based on a missing or default MRL level (which includes the following categories: *No MRL, Default MRL, 0.01 ppm, LOD/LOQ MRL*)

From this subset of non-compliances based on missing or default MRLs, it was determined which samples would have been compliant if the relevant Codex MRL had been used, instead of the missing/default MRL

The goal of this case study is to summarize data gaps and lessons learned when estimating the amount of food wasted; specifically, in cases where shipments in question were compliant with Codex MRLs, and where deferral to Codex MRLs would therefore have prevented food waste

Data Assumptions:

Samples versus shipments: Samples non-compliance data were further analysed to determine unique shipments versus individual samples. Sometimes one shipment can have non-compliance data entered for more than one active ingredient.

For EU data, sample IDs are linked to shipments via the Violation ID, so it is easy to distinguish which samples arose from the same shipments. Multiple samples were removed so each shipment was only counted once.

For all other cases (e.g. Australia, Japan, Korea, Chinese Taipei), samples are not linked to shipments and data were analysed to determine which samples likely arose from one shipment. Using a combination of sampling date, reporting date, manufacturer and importer identity, multiple samples were identified and removed so each presumed shipment was only counted once.

For non-compliances that would have been compliant if CODEX was used instead of (a) a default, (b) 0.01, or (c) an unknown or missing MRL: when there were multiple active ingredient non-compliances and even one active ingredient was non-compliant based on a domestically-set MRL, then the whole shipment and all related samples were removed from the dataset.

Data Assumptions:

Fate of shipments: Each reporting economy uses different language and different levels of detail to indicate the fate of non-compliant shipments. In some cases, the specific action taken is identified (e.g. *Destroyed, Re-dispatch to country of origin, etc.*), whereas in the majority of cases, the action taken is less defined (e.g. "*The goods that did not meet the requirements in the case were returned or destroyed in accordance with the regulations*.")

We have separated the fate of shipments into 3 categories of action taken:

Category of Shipment	This category includes the actions taken:
Destroyed	Destruction Seized
Returned	Return to consignor Redispatch to origin
Returned or destroyed (not specified)	Detained by operator Directed abandonment or return of the cargo Import not authorized The goods were returned or destroyed in accordance with the regulations. Official detention Placed under customs seals Withdrawal from the recipients Withdrawal from the market Not reported
Datasets not included in this study:	Already sold or consumed Press release or recall No action taken No stock left

Estimating weight and calories of food waste

Data Assumptions:

- FAO Food Balance Sheets were used to determine the calories per 100g of each commodity
- The LOW estimate of consignment size weight was calculated using the average MOQ (minimum order quantity) on food trade websites.
- The HIGH estimate of consignment size weight was calculated as 10X the LOW estimate of consignment size.
- Assumed average consumption for one person is 2250 kcal/day
- Removed herbs, spices, tea from dataset (as per World Resources Institute food waste analysis methods)

	LOW estimate	HIGH estimate
Food that was destroyed/seized or did not specify returned or destroyed, but was highly perishable	315,060,000 kcal	10,722,500,000 kcal
Food that did not specify whether it was returned or destroyed and was moderately perishable	1,462,000,000 kcal	14,620,000,000 kcal