WORLD TRADE ORGANIZATION

Illicit trade in food and food fraud

About the WTO

The World Trade Organization is the international body dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible, with a level playing field for all its members.

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Acknowledgements

This publication is the first WTO publication on illicit trade in food and food fraud. It includes contributions from participants in the WTO's Annual Agriculture Symposium, held on 11 and 12 December 2023, which explored this topic. The Symposium was organized by the Agriculture and Commodities Division with the cooperation of the Office of the Deputy Director-General Jean-Marie Paugam. The lead author, who also conceptualized the Symposium and this publication, was Doaa Abdel-Motaal, Senior Counsellor of the Agriculture and Commodities Division. She was assisted by Xiaolu Zhu, Legal Affairs Officer of the Agriculture and Commodities Division. Comments were gratefully received from staff members who peer reviewed this publication. The WTO is grateful to all participants at the Symposium and in particular those who submitted chapters for this publication.

Foreword

The WTO has long been committed to the fight against illicit trade, which undermines legitimate business activity, fosters corruption and denies governments potential tax revenue needed to improve socioeconomic conditions. Under the leadership of Director-General Okonjo-Iweala, the WTO Secretariat has been examining how WTO rules help members to resolve some of the challenges posed by such illicit trade.

Illicit trade and fraud in the agri-food sector has a wide range of impacts on various stakeholders, including consumers, farmers, agri-businesses, regulators and other operators within the food industry. Although the global cost of fraud to the food industry is difficult to determine given the clandestine nature of the activity, annual estimates are in the range of US$ 30-50 billion (which does not include losses associated with illicit trade in alcoholic beverages).

The impacts can be far reaching and affect different aspects of society and the economy. Illicit trade in food and food fraud incurs economic losses to legitimate businesses through the loss of sales and consumer confidence. Governments not only lose valuable revenue from tax evasion but also incur costs in the fight against counterfeit crime and smuggling.

Fraudulent and fake food and beverages damage public health and safety. Adulterated or contaminated food products can pose serious health risks to consumers and can have deadly consequences. Even counterfeit products which cause no harm – but fail to contain the ingredients advertised – defraud customers and erode consumer trust in the food supply chain.

Illicit trade in food and food fraud can create an unfair competitive advantage for fraudulent operators, disrupt food supply chains and place legitimate businesses at a severe disadvantage. It can raise the cost of trade by necessitating ever greater controls, which can lead to sweeping trade barriers. Moreover, legitimate products can be inadvertently ensnared in regulatory efforts to eradicate trade in fraudulent foods.

Addressing food fraud is crucial to ensure the safety, integrity and fairness of the global food supply chain – all of which are critical to achieving the United Nations Sustainable Development Goals. A comprehensive response requires a combination of regulatory measures, enforcement, industry cooperation and consumer education. This publication explores these issues and the role of the WTO rulebook to combat illicit trade in food and food fraud.

The WTO rulebook provides members with a range of legal instruments that can help to combat illicit trade in food and food fraud. Of particular importance to food safety are the WTO Agreement on the Application of Sanitary and Phytosanitary Measures, which allows WTO members to regulate food imports based on science and risk assessment techniques, and the Agreement on Technical Barriers to Trade, which also allows members to address deceptive practices.

Other WTO agreements are also relevant and are covered in this publication. For instance, the full utilization of the WTO's Trade Facilitation Agreement would help to eliminate excessively cumbersome customs procedures and red tape at borders that present opportunities for exploitation

by criminals. In addition, the Agreement on the Trade-Related Aspects of Intellectual Property Rights serves as a vital tool for members in tackling counterfeit food and beverages.

The recently concluded WTO Agreement on Fisheries Subsidies prohibits support for illegal, unreported and unregulated (IUU) fishing, subsidies for fishing overfished stocks and subsidies for fishing on the unregulated high seas. It is estimated that every year, IUU fishing generates 8-14 million tonnes of illegally traded fish products, worth US$ 9-14 billion. With over 3.3 billion people around the world obtaining at least 20 per cent of their daily animal protein intake from fish, the Agreement thus represents a milestone in the fight against illicit trade in food.

This publication draws on the expertise of a diverse range of organizations, including the Food and Agriculture Organization of the United Nations (FAO), the International Seed Federation (ISF), SSAFE – a non-profit organization for food safety, the Transnational Alliance to Combat Illicit Trade (TRACIT) and the United Nations Interregional Crime and Justice Research Institute (UNICRI). These valuable contributions, and the different approaches the organizations take, will help to provide new areas for discussion and potential actions the WTO can take in tackling illicit trade in food and food fraud.

In reference to the important role the WTO rulebook has in the fight against illicit trade in medical products, Director-General Okonjo-Iweala spoke of the "double dividend" that comes from strengthening members' capacity to fight illicit trade while also expanding legitimate trading opportunities and building resilience within the multilateral trading system. This publication will help deepen our understanding of illicit trade in agri-food and move us closer to achieving the double dividend in the agri-food sector to ensure that trade contributes to strengthening global food security.

Jean-Marie Paugam
WTO Deputy Director-General

Executive summary

International trade has helped to reduce global hunger, but food fraud is a growing problem

Access to healthy, affordable food is a prerequisite for improving the lives of the poorest. International trade has helped to reduce both global poverty and hunger. However, the resulting complexity of food supply chains makes combating illicit trade in food and food fraud much harder. Increased interconnectivity of supply chains and greater distances between where food is grown and where it is consumed provide more opportunities for illegal activities.

Illicit trade in food and food fraud inflict considerable damage to international trade and public health

The illicit trade in food and food fraud includes the buying and selling of products to be eaten, drunk or grown that are not what they are claimed to be, that fail to comply with health and other regulations (e.g. on quality) and that are smuggled or otherwise produced or traded outside the legitimate market framework. Illicit trade in food and food fraud inflict considerable damage to international trade and public health.

Illicit trade in food undermines international trade by distorting markets, eroding consumer confidence and triggering the imposition of trade barriers due to safety concerns. Simultaneously, it poses significant public health risks through the distribution of counterfeit or substandard products, contributing to the spread of diseases and creating challenges for regulatory enforcement on a global scale. The consumption of contaminated, counterfeited or adulterated food products can result in malnutrition and even death.

Illicit trade in food undermines global food security and agri-food value chains

Illicit trade in food disrupts legitimate supply chains and limits access to foods by reducing availability and increasing prices. It undermines fair markets and reduces income for legitimate producers, with the most vulnerable communities affected the greatest.

The impact of illicit trade in seeds and seed fraud can be significant for farmers, the agri-food value chain and hence global food security. Illegal seed practices also discourage innovation. The integrity of the seed sector can be strengthened through the protection of intellectual property rights and enhancing enforcement to ensure that farmers have access to reliable, high-quality seeds.

The WTO rulebook brings a legal framework to international trade in food, helping to combat illicit trade

The WTO agreements can be used in the fight against illicit trade in food and food fraud, in particular the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade. The WTO rulebook brings a legal framework to the international trade in food, helping to combat illicit trade.

The WTO has a unique role in promoting open and legal trade. WTO rules enable members to exercise control over their borders and enforce their trade laws, leaving less room for illegal trade.

Reducing import and export restrictions could diminish incentives for smuggling and illicit trade in food

The smuggling of agriculture products is driven by a disparity between the price of a good at its origin and its destination, which can include price differentials deriving from government subsidies. The ongoing WTO agriculture negotiations, which aim to simplify tariff structures, to reduce excessively high tariffs and trade-distorting subsidies and to address import and export restrictions, could reduce the incentives for smuggling and illegal trade. The full utilization of the WTO's Trade Facilitation Agreement would also help to eliminate excessively cumbersome customs procedures and red tape at borders, which can present opportunities for fraudsters and smugglers to exploit.

Modern food safety legislation can minimize the potential for fraudsters to exploit gaps in the food supply chain

Modern food safety legislation offers many possibilities to counter food fraud. Regulations on the detection, prevention, mitigation and control of food fraud can help to protect the health of consumers and to ensure fair practices in food and feed trade. Such legislation which takes a holistic approach to the food chain will leave few gaps for fraudsters to exploit.

Timely, thorough investigations can disrupt illicit trade in food and food fraud

Timely, thorough investigations can disrupt illicit trade in food and food fraud. Criminal investigations not only identify illicit actors, uncover fraud and, most importantly, expose any risks to public health and safety but also deter future illegal activities. Investigations can warn the public about current dangers and prevent fraudulent food from being consumed unwittingly. Customs authorities have a key role to play in combating fraud.

Public–private collaboration and international cooperation can help to combat illicit trade in food

New food products and food production methods demand new analytical and enforcement capacities and pose as yet unknown challenges. Public–private collaboration between the food industry and consumer organizations, together with international cooperation, can help to address illegal activities.

The prevention of fraud is a more cost-effective strategy than stopping illicit trade in food once it is already underway – for both governments and the food industry. Prevention also helps to ensure consumer safety, maintain product integrity and preserve brand reputation. Multi-stakeholder collaboration involving governments, international organizations, civil society and the private sector is necessary to respond to the challenges effectively.

By bringing together governments, the private sector, law enforcement and technical experts from around the world to work in collaboration, the WTO can help to combat illicit trade in food and food fraud internationally.

Introduction

This is the first WTO publication on illicit trade in food and food fraud. It includes contributions from participants in the WTO's Annual Agriculture Symposium, held in Geneva, 11-12 December 2023, which explored this topic. At the Symposium, prominent experts discussed the various forms and definitions of illicit trade in food and food fraud, the links to international trade and ways to combat the phenomenon effectively.

Building on these discussions, this publication presents the views of different international organizations, non-governmental organizations and the private sector. Contributors examine the topic from their area of expertise, offering their unique perspective on illicit trade in food and food fraud, and identifying what they see as priorities. These diverse contributions provide new areas for discussion and potential actions for the WTO and its members.

The publication highlights four key messages:

(i) Illicit trade in food and food fraud inflict considerable damage to international trade and public health.
(ii) Prevention is a more cost-effective strategy for both governments and the food industry, since it helps to ensure consumer safety, maintain product integrity and preserve brand reputation.
(iii) Multi-stakeholder collaboration involving governments, international organizations, civil society and the private sector is a pre-requisite to building an effective response.
(iv) The WTO rulebook brings a legal framework to international trade in food, helping to combat illicit trade.

The following provides an overview of the publication.

Chapter 1: WTO - Agriculture and Commodities Division

Doaa Abdel-Motaal, Senior Counsellor in the Agriculture and Commodities Division, explores the different definitions of illicit trade in food and food fraud, and outlines the main agri-food products targeted by fraud. She presents some of the key findings from the WTO's 2023 Annual Agriculture Symposium, which looked into how to better leverage the WTO rulebook in preventing and mitigating illicit trade in agri-food.

Chapter 2: WTO - Economic Research and Statistics Division

Gabrielle Marceau, Senior Counsellor in the Economic Research and Statistics Division, notes that, despite the lack of disciplines expressly for illicit trade in agri-food, relevant provisions of the WTO agreements equip members with numerous tools and allow for ample policy space to tackle the problem. The chapter also highlights the importance of the WTO as a forum for members to exchange information and facilitate coordination of trade policy measures; including those taken to address illicit agri-food trade.

Chapter 3: Transnational Alliance to Combat Illicit Trade

Jeffrey Hardy, Director General of the Transnational Alliance to Combat Illicit Trade (TRACIT), examines the adverse impact of illicit agri-food trade on the achievement of the United Nations Sustainable Development Goals (SDGs). He highlights how fraud and other illicit acts in the food supply chain hinder progress on the vital goals to eradicate hunger and poverty, improve health and well-being, and generate sustainable economic growth.

TRACIT is an independent, private-sector initiative with the aim of mitigating the economic and social damage of illicit trade by strengthening government enforcement and mobilizing the most affected businesses.

Chapter 4: Food and Agriculture Organization of the United Nations

Maximo Torero, Chief Economist of the Food and Agriculture Organization of the United Nations (FAO), surveys incidences and risk factors of food fraud in agri-food systems and presents different strategies for policymakers and regulators to counter food fraud. He advocates for broad food systems thinking – which means addressing fraud holistically – and strengthened cooperation at the global, regional and national levels to detect, address and respond to food fraud effectively.

In addition to leading international efforts to defeat hunger, the FAO's goal is to achieve food security for all and ensure that people have regular access to sufficient high-quality food to lead active, healthy lives.

Chapter 5: International Seed Federation

Michael Keller, Secretary General of the International Seed Federation (ISF), and Szonja Csörgő, Intellectual Property and Legal Affairs Manager at the ISF, provide an account of illegal seed practices. Through case studies, they show the devastating impact of such practices on the seed value chain, stressing the importance of intellectual property in fostering innovation in the seed sector, and highlighting the need for cooperation amongst all actors in the value chain to combat fraud.

The ISF is a non-governmental, non-profit organization that represents the interests of the seed industry at the global level to create the best environment for the global movement of seed and promote plant breeding and innovation in seed.

Chapter 6: SSAFE

Quincy Lissaur, Executive Director of SSAFE, notes that global food trade has brought benefits in terms of reducing hunger but has also increased the complexity of the food supply chain. To keep the food chain resilient and safe from fraudulent activities, he highlights the private sector's responsibilities and the actions it can take to mitigate food fraud risks, and argues that close collaboration between the public sector and private sector is fundamental to combating food fraud.

SSAFE is a global non-profit organization that works to protect human, plant and animal health by responding quickly to emerging issues that affect the safe supply and trade of food around the world.

Chapter 7: United Nations Interregional Crime and Justice Research Institute

Antonia Marie De Meo, former Director of the United Nations Interregional Crime and Justice Research Institute (UNICRI), and Marco Musumeci, UNICRI Programme Management Officer, examine food fraud through a criminal justice lens. Through various examples, they showcase the tactics employed by criminals to infiltrate the food supply chain, the serious risks to consumers' health and safety, the role of technologies in facilitating law enforcement and the critical importance of a robust criminal justice response.

UNICRI is the only United Nations research and training institute to focus on criminal justice and crime prevention. It analyses law enforcement responses to crime, highlighting successful investigative and prosecutorial strategies, and showcasing them as best practices in studies and for law enforcement and judiciary training.

CHAPTER 1

Addressing illicit trade in food and food fraud

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Abstract

The WTO rulebook can be used by members in the fight against illicit trade in food and food fraud, in particular the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement).

This chapter explores the various definitions of food fraud, providing an overview of the main food products that have been the target of fraud, and the most notable incidents that have arisen over the past two decades. Building on the outcomes of the WTO's Annual Agriculture Symposium in December 2023 dedicated to this topic, the chapter asks whether it is time for a more explicit conversation at the WTO.

Definition of food fraud and illicit trade in food

From food fraud to the large-scale smuggling of agriculture products, illicit trade in agri-foods undermines farming and the global food trade system, destabilizes rural economies and jeopardizes the production and delivery of fair, safe and sustainable food supplies. The Transnational Alliance to Combat Illicit Trade (TRACIT, 2019) defines food fraud as the intentional substitution or dilution of an authentic food or ingredient with a cheaper product (such as replacing extra virgin olive oil with a cheaper oil), flavour or colour enhancement using illicit or unapproved substances, or substitution of one species with another. Fake infant milk powder and dangerously recycled vegetable oils are examples of how adulterated food supplies can contribute to malnutrition and undermine health.

The smuggling of agriculture products also forms part of TRACIT's definition of illicit food trade. Smuggling is typically driven by a disparity between the price of a good at its origin and its destination where it may be prohibited, or by price differentials deriving from government subsidies (TRACIT, 2019). The smuggling of sugar, tea and cocoa, for example, destabilizes food supplies and erodes the sustainability of the underlying legal industries.

However, there is no internationally harmonized legal definition of food fraud or of illicit trade in food, and creating one is beyond the scope of this publication. Different jurisdictions have adopted different definitions of food fraud, specifically, based on the scope of the problem they aim to tackle. While some jurisdictions regulate food fraud within the framework of food safety and quality legislation, including rules on standard-setting, labelling and quality control, consumer protection legislation and strategies have offered other avenues for governments and food companies to protect consumers from food fraud. Contract law has also provided an entry-point for the prevention of fraudulent or other illicit practices by the different actors involved in the food supply chain.

For example, the United States Food and Drug Administration states that economically motivated adulteration (EMA) in the case of food fraud occurs "when someone intentionally leaves out, takes out, or substitutes a valuable ingredient or part of a food" or "when someone adds a substance to a food to make it appear better or of greater value."[1] Other types of EMA include misbranding violations and adulteration of other products, such as animal food and cosmetics.

This differs somewhat from the definition of the European Union which considers food fraud to be a "suspected intentional action by businesses or individuals for the purpose of deceiving purchasers and gaining undue advantage there from, in violation of the rules referred to in Article 1(2) of Regulation (EU) 2017/625" on EU agri-food chains.[2]

Currently, the Codex Alimentarius Commission is developing a new guidance document on food fraud that is expected to be published in 2024 or 2025. It aims to develop definitions and update the existing instruments of Codex to address horizontal and cross-cutting issues.[3]

An important existing instrument is the Codex Code of Ethics for International Trade in Food including Concessional and Food Aid Transactions, which dates back to 1979 (see Box 1). The WTO does not itself define the concept of illicit trade in food or food fraud, despite providing numerous legal instruments that aid WTO members every day in combating the phenomenon (see Chapter 2).

At present, the most well-known and widely accepted definition of food fraud is by Spink and Moyer (2011):

> "Food fraud is a collective term used to encompass the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, food ingredients, or food packaging; or false or misleading statements made about a product, for economic gain."

It acts as a core definition that captures the main fraudulent practices in the agri-food sector.[4]

BOX 1

Codex Alimentarius Commission: Code of Ethics for International Trade in Food

The main principles of the Code of Ethics for International Trade in Food are articulated in Article 3 (Principles):

3.1 International trade in food should be conducted on the principle that all consumers are entitled to safe, sound and wholesome food and to protection from unfair trade practices.

3.2 No food (including re-exported food) should be in international trade which:

(a) has in or upon it any hazard in an amount which renders it poisonous, harmful or otherwise injurious to health, taking into account the application of risk analysis principles;

(b) consists in whole or in part of any filthy, putrid, rotten, decomposed or other substance or foreign matter which renders it unfit for human consumption;

(c) is adulterated;

(d) is labelled or presented in a manner that is false, misleading or deceptive;

(e) is prepared, processed, packaged, stored, transported or marketed under unsanitary conditions;

(f) has an expiration date, where applicable, which does not leave sufficient time for distribution in the importing country.

Source: Code of Ethics for International Trade in Food Including Concessional and Food Aid Transactions, CAC document CAC/RCP 20-1979, available at https://www.fao.org/fao-who-codexalimentarius/committees/committee/related-standards/en/?committee=CCGP.

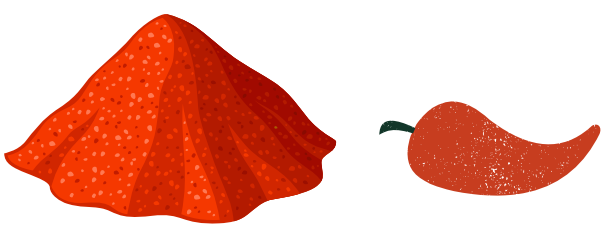
Globalization, supply chains and the cost to agri-food trade

With different definitions in use, the problem of illicit trade in food and food fraud is hard to quantify. Moreover, greater research on the scale and impact of the problem is urgently required. Some of the most authoritative numbers, however, have been generated by TRACIT based on its own definition of the phenomenon (see above). TRACIT reports in Chapter 3 that fake, substandard, smuggled and illegal agri-foods cost the global food industry an estimated US$ 30-50 billion per year (which does not include losses associated with illicit trade in alcoholic beverages).

TRACIT (2019) provides powerful examples at the economy and product level. For example, in the 2017 planting season, the Côte d'Ivoire lost about 125,000 tonnes of cocoa to smuggling. Equivalent to 9 per cent of its harvest, this was a significant loss in a country where cocoa accounts for 20 per cent of exports.

Moving to the product level, a 2018 study by Euromonitor International on 24 countries in Africa, Eastern Europe and Latin America estimated that of the 4.23 billion litres of pure alcohol consumed each year, 25.8 per cent was illicit.[5]

Experts' views differ on the extent to which international trade, and long supply chains, exacerbate the phenomenon. Some experts argue that the more food "changes hands", the higher the risk of fraud (Sampson, 2017). Ehmke *et al*. (2019: 688) also contend that globalization can be an aggravator and find that food ingredients may be sourced "via complex networks of brokers and distributors who, themselves, could have little knowledge of or accountability for the products they handle". Furthermore:



> "
>
> Fake, substandard, smuggled and illegal agri-foods cost the global food industry an estimated US$ 30-50 billion per year.

> "While economic incentives are always present, fraud may flourish when products are sourced from or shipped via countries with weak or insufficiently enforced domestic regulations or poorly structured legal systems. The international trade of food products increases fraud potential due to lack of preventative legal strategies, extended supply chains and increased difficulty identifying the source of fraud."

In a report published by the Food and Agriculture Organization of the United Nations and the University of California, Los Angeles, Roberts *et al*. (2022: 32) counter that "although complex and global supply chains have been implicated in notable cases of food fraud, locally manufactured and sold foods can be as much at risk." This will continue therefore to be an issue for debate.

What is clear is that food fraud increases agri-food trade costs. Higher incidences of food fraud put greater burdens on border inspection, testing and control, and related domestic food safety and quality rules and regulations. Although customs authorities and law enforcement are actively combating illicit trade (see Box 2), Ehmke *et al*. (2019) find that border inspection procedures in major developed economy markets are moving from response-focused to prevention-focused models as the most effective way to fight such crime.

Fraud also has the economic and trade impact of tarnishing the reputation of all similar products with a product category (such as adulterated cumin impacting all other spices), tarnishing the reputation of sellers, and reducing consumer confidence in how markets operate. Examples of the most heavily targeted products in fraud are given in Box 3, and some of the most prominent cases uncovered since 2008 are provided in Box 4.

BOX 2

Customs authorities and law enforcement

World Customs Organization

The World Customs Organization reported a 30 per cent increase in the number of alcohol trafficking cases in 2022 compared to 2021. The majority of which was wine and grape distilled products.

European Union Agency for Law Enforcement Cooperation

Operation OPSON Europe, which takes its name from the ancient Greek word for food, was coordinated by the European Union Agency for Law Enforcement Cooperation (Europol) and took place between December 2022 and April 2023.

The seizures reported to Europol were worth €30 million and included 6.5 million litres of beverages (mostly alcoholic) and 8,000 tonnes of illicit products, such as (in order of quantity):

- cereals, grains and derived products;
- fruits, vegetables and legumes;
- sweet and sugary products;
- meat and meat products;
- seafood;
- dairy products;
- food supplements and additives.

Source: See WCO (2023) and https://www.europol.europa.eu/media-press/newsroom/news/eur-30-million-worth-of-seizures-in-first-opson-europe.

BOX 3

Most heavily targeted products in food fraud

Product	Global trade value in 2021*
Meat Meat is subject to substitution and mislabelling, where cheaper or lower-quality meats are sold as higher-priced or higher-quality ones. For example, horse meat may be sold as beef.	**US$ 168 bn**
Seafood Seafood is a high-value product that is subject to substitution and mislabelling, where lower-priced fish species may be labelled as more expensive ones, or farmed fish may be sold as wild-caught.	**US$ 160 bn**
Alcoholic beverages Spirits and wine are high-value products that are subject to counterfeiting and smuggling, where cheaper, fake or adulterated versions are sold as more expensive ones. Mislabelling of the origin or vintage can also occur. According to the World Spirits Alliance (WSA, 2022), around US$ 8.9 billion of fiscal revenue is lost every year due to illicit alcohol.	**US$ 98 bn**
Coffee Coffee is a popular and valuable product that is subject to food fraud with cheaper ingredients such as corn, soybeans or twigs often added. Mislabelling of origin or type of bean can also occur.	**US$ 42 bn**
Milk Milk is subject to food fraud with the injection of water or other substances to increase volume and reduce cost. This can lead to a decrease in quality and safety.	**US$ 31 bn**
Fruit and vegetable juice Fruit and vegetable juice is subject to dilution with water or other juices to increase volume and reduce cost. Mislabelling of origin or type of fruit and vegetable can also occur.	**US$ 15 bn**
Spices Spices are subject to food fraud with the use of cheaper ingredients, such as fillers or artificial colours. For example, turmeric is sometimes adulterated with lead chromate, a toxic substance.	**US$ 13 bn**

Olive oil Olive oil is a popular and expensive product that is subject to food fraud with the use of cheaper oils, such as sunflower or canola oil, or shortcuts in the manufacturing of extra virgin olive oil. This can lead to a decrease in quality and nutritional value.	**US$ 9 bn**
Honey Honey is a valuable product that is subject to dilution with cheaper sweeteners, such as corn syrup or sugar. Mislabelling of origin or floral source can also occur.	**US$ 3 bn**
Organic products Organic products are subject to mislabelling and fraud, where non-organic products are sold as organic ones. This can lead to consumer deception and harm the reputation of the organic industry. It is hard to pin down the exact value of world trade in organic products, as definitions of such products vary.	**Indetermined**

Source: Adapted from https://www.inecta.com/blog/5-biggest-food-fraud-cases#:~:text=Here%20are%20some%20examples%20of,be%20sold%20as%20wild%2Dcaught. * WTO Secretariat data.

BOX 4

Examples of illicit trade in food

Relabelling expired food and beverages (2023)

The unveiling of criminal gangs in Italy and Latvia resulted in the arrest of 27 criminals, who relabelled expired food and beverages to give the false appearance the products were fresh and safe for consumption. By exploiting vulnerabilities in the supply chain caused by the COVID-19 pandemic, the gangs acquired millions of food products at little to no cost.*

Adulterated honey (2018)

Honey was imported into Canada, where it was laundered and sold as Canadian honey. The investigation revealed that some of the honey advertised as pure honey was adulterated with corn syrup, rice syrup and sugar cane syrup. The incident highlighted the complexity of the global honey supply chain and the risks for fraud.

Olive oil fraud (2016)

This incident involved the mislabelling of lower-grade oil as extra virgin olive oil in Spain. The investigation revealed that some products contained up to 80 per cent of lower-grade oil, with the rest being composed of additives and artificial colours. The incident led to a crackdown on olive oil fraud in Spain and increased awareness of the issue among consumers and regulators.

Adulterated Parmesan cheese (2016)

Cellulose, a wood-based filler, was discovered in Parmesan cheese sold in the United States. The investigation revealed that some products contained as little as 2 per cent of actual Parmesan cheese, with the rest being composed of fillers and other additives. The incident highlighted the vulnerability of the food supply chain to economically motivated adulteration and the need for more stringent testing and labelling requirements.

Horsemeat fraud (2013)

Horsemeat was discovered in beef products sold across Europe. The scandal originated in Ireland and spread to other countries, leading to a recall of millions of products and significant financial losses for the industry. The incident highlighted the vulnerability of the global food industry to fraud and the importance of traceability and transparency in food production.

Adulterated infant milk (2008)

Infant formula was adulterated with melamine in China, a toxic substance used to boost protein levels in the product. The scandal led to the hospitalization of thousands of infants and some deaths. The incident highlighted the need for stronger regulatory oversight and stricter penalties for food fraud.

Source: Adapted from https://www.inecta.com/blog/5-biggest-food-fraud-cases#:~:text=Here%20are%20some%20examples%20of,be%20sold%20as%20wild%2Dcaught. * See https://www.europol.europa.eu/media-press/newsroom/news/27-food-fraudsters-arrested-in-lithuania-and-italy.

WTO activities to address illicit trade in food and food fraud

WTO's Annual Agriculture Symposium, December 2023

The Annual Agriculture Symposium, held virtually on 11 and 12 December, was dedicated to combating illicit trade in food and food fraud.[6] The Symposium brought together trade negotiators, experts in combating food fraud, international organizations, businesses, civil society and academics to improve understanding of illegal trade, and how the WTO rulebook could contribute to tackling illegal practices. The three thematic sessions included:

- Session 1: Food fraud – emerging issues and future trends
- Session 2: Business perspective
- Session 3: Assessing food fraud in the global supply chain

The experts recognized the difficulty in establishing a universal definition of the phenomenon but underlined that a broad definition of food crime could extend to issues such as the illegal slaughter of livestock (e.g. fraudulent labelling for halal or kosher products), harvesting food and livestock from protected lands, illegal underreported and unregulated fishing[7] and the use of child and illegal migrant labour to harvest or produce food. These are issues that clearly go beyond the core definition previously discussed above.

Since food fraud techniques evolve and illicit trade occurs along the entire food supply chain, experts stressed the need to see food fraud as a continuum along the supply chain and to study the weakest links along the chain, identifying vulnerabilities and potential entry points by fraudsters. The Symposium demonstrated that the problem of illicit trade in food and food fraud is compounded by illegal trade in seeds, agrochemicals and pesticides, which play an integral role in minimizing crop losses and increasing yields – contributing to sustainable agricultural practices and global food security. According to estimates by participants, the share of illegal pesticides on the global pesticide market is as high as 25 per cent.

> "By definition, our DNA is legal trade. Strengthening the WTO is the first way to combat illicit trade."
>
> **WTO Deputy Director-General Jean-Marie Paugam, speaking during the Opening Session**

> "We cannot test our way out of food fraud. Collaboration between all parties with relevant stakes is key to fraud prevention and control."
>
> **Quincy Lissaur, SSAFE Executive Director, speaking during Session 1**

When examining the issue from regional and development perspectives, experts said that the training of customs officials and international collaboration could help to tackle food fraud. The driving factors for illegal trade in many regions include:

- the lack of legal instruments and border controls;
- long and porous borders between countries that offer multiple points of penetration by smugglers and fraudsters;
- weakly regulated informal economies;
- a large, lucrative consumer base;
- high levels of poverty driving demand for cheap food.

The United Nations Interregional Crime and Justice Research Institute (UNICRI) spoke of the strong links between organized crime and food fraud and stressed the importance of technology and artificial intelligence in fighting crime. Cyber-patrols could scan the web for suspicious offerings and platforms. The food processing sector was becoming particularly problematic, with fraud harder to detect in more complex and processed foods, it added.

Experts were unanimous that the best way to combat food crime lies in crime prevention. Governments have finite resources, with prevention being more cost effective. However, the clandestine nature of food crime means that governments find it difficult to model solutions for what they do not know exists. The same applies to the use of Big Data to fight food fraud, which have little value if regulators do not know what they are looking for. Although cryptocurrencies might be used in food crime, blockchain technology could help to prevent food fraud.

WTO legal framework for the international trade in food

Speaking at the Symposium, WTO Deputy Director-General Jean-Marie Paugam emphasized that the WTO rulebook brings a legal framework to international trade in food, helping to combat illicit trade.

Highlighting the WTO's unique role in promoting open and legal trade, DDG Paugam said WTO rules allow members to exercise control over their borders and enforce their trade laws, leaving less room for illegal trade.

While several WTO agreements can contribute to catching fraud once it occurs, such as through the application of the control, inspection and approval procedures of the WTO's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the conformity assessment procedures of the Agreement on Technical Barriers to Trade (TBT), a useful exercise for the WTO could be to identify the rules that could boost prevention, he said. Of course, catching fraud can deter further fraud from occurring. However, certain additional steps could help to eliminate the opportunities for fraud.

> "While the WTO toolbox is already comprehensive, the WTO can do more to address food fraud – which is an issue that impacts the entire global food system.
>
> **H.E. Ambassador Nadia Theodore, Permanent Representative of Canada to the WTO, speaking during the Closing Session**

For examples, fully utilizing the WTO's Trade Facilitation Agreement would help to eliminate excessively cumbersome customs procedures and red tape at borders that present opportunities for exploitation by fraudsters and smuggling. Members could also consider holding discussions within the SPS and TBT Committees on the new guidance document that the Codex Alimentarius Commission is developing on food fraud that is expected to be published in 2024/2025.[8] Ongoing WTO agriculture negotiations, which aim to reduce trade-distorting subsidies and to address import and export restrictions, among other things, could help to reduce the incentives for smuggling and illegal trade.

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Endnotes

1. See https://www.fda.gov/food/compliance-enforcement-food/economically-motivated-adulteration-food-fraud#:~:text=Economically%20motivated%20adulteration%20(EMA)%20occurs,better%20or%20of%20greater%20value..
2. See https://eur-lex.europa.eu/eli/reg_impl/2019/1715/oj. Article 1(2) of Regulation (EU) 2017/625 (see https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32017R0625) covers a broad scope of rules, including, *inter alia*, food/feed safety rules, animal health and welfare requirements, organic production and labelling of organic products, and use and labelling of protected designation of origin and geographical indications (see also Li *et al*., 2023).
3. *Proposed Draft Guidelines on the Prevention and Control of Food Fraud*, CAC document CX/FICS 23/26/6, 27 March 2023.
4. See also the International Organization for Standardization (ISO) Standard ISO 22380:2018, *Security and Resilience: Authenticity, Integrity and Trust for Products and Documents – General Principles for Product Fraud Risk and Countermeasures*, which "establishes general principles for an organization to identify the risks related to various types of product fraud and product fraudsters" and it "provides guidance on how organizations can establish strategic, business countermeasures to prevent or reduce any harm, tangible or intangible loss and cost from such fraudulent attacks in a cost-effective manner." ISO 22380:2018 defines the types of food fraud as: adulterant-substances (dilution, substitution, concealment and unapproved enhancements); mislabeling and misbranding; gray market or parallel trade; smuggling; theft; simulation; production over-run; and intellectual property rights counterfeiting.
5. Countries in Africa included Ghana, Malawi, Mozambique, Nigeria, South Africa, Tanzania, Uganda and Zambia. Countries in Eastern Europe included the Czech Republic and the Russian Federation. Countries in Latin America included Argentina, the Plurinational State of Bolivia, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay and Peru. See also WSA (2022).
6. See https://www.wto.org/english/tratop_e/agric_e/agri_11122023_e/agri_11122023_e.htm.
7. Adopted by consensus at the WTO's 12th Ministerial Conference in June 2022, the Agreement on Fisheries Subsidies sets new, binding, multilateral rules to curb harmful subsidies, which are a key factor in the widespread depletion of the world's fish stocks.
8. *Proposed Draft Guidelines on the Prevention and Control of Food Fraud*, CAC document CX/FICS 23/26/6, 27 March 2023.

CHAPTER 2

WTO rulebook and combating illicit trade in food and food fraud

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Abstract

As the only global organization dealing with the rules of international trade, the WTO has a key role to play in members' efforts to tackle illicit agri-food trade through its rules and institutional framework. Specifically, the WTO offers members a variety of tools and best practices, as well as the opportunity to exchange information and implement policies both within and at the border, that can assist them in combating this phenomenon.

This chapter examines the most relevant parts of the WTO rulebook to fight the trade in illicit agri-food, and the provisions which allow WTO members to derogate from commitments when fulfilling legitimate public policy goals. This chapter highlights that the lack of disciplines expressly addressing illicit agri-food trade does not prevent the WTO agreements from providing members with several important tools that they can use to tackle the problem.

Introduction

Illicit agri-food trade is a serious concern for international food security and economic development, especially in developing countries and least-developed countries (LDCs). The WTO and its members are responsive to this.

Illicit trade in agri-food products is a multifaceted phenomenon that eludes a clear definition and attempting to confirm one is beyond the scope of this chapter.[1] Given its inherently clandestine nature, illicit trade is difficult to measure (WTO, 2022b: 7). In the same vein, the Panel in *Australia – Tobacco Plain Packaging* noted "the inherent difficulty and limits of measuring illicit trade, given the quasi-legal or illegal nature of the activities involved."[2]

For the purpose of this chapter, illicit food trade includes food content that is not what it claims to be and other forms of food fraud, food that does not comply with health and other regulations (e.g. on quality), and food that is smuggled or otherwise produced or traded outside the legitimate market framework.

WTO rules do not define what distinguishes licit and illicit trade,[3] and whether and how licit and illicit trade affect the "like" product and "like" services determinations in the context of the WTO non-discrimination obligations.[4] Generally, trade liberalization through the lowering of tariffs reduces opportunities for arbitrariness and removes the incentive to engage in illicit trade in the form of smuggling.[5] WTO disciplines on subsidies also help reduce price distortions, which often motivate the smuggling of agricultural products.[6]

By providing a toolbox for possible regulatory barriers to trade, customs valuation, trade facilitation and preshipment inspection, WTO rules further help members combat illicit trade in many of its forms. They also guide members in designing more effective processes at the border and in the use of international standards and certification procedures, particularly for sanitary and phytosanitary (SPS) measures – falling under the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) – and other regulatory measures – falling under the WTO Agreement on Technical Barriers to Trade (TBT Agreement). The latter would include measures such as health and nutrition labelling, measures to prevent consumer deception and provide consumers with information, and measures to protect the environment (i.e. to regulate and promote organic products or to address animal welfare considerations). If applied consistently and in a complementary, mutually reinforcing fashion, these rules can be crucial to the design of national policies that actively contribute to weeding out illicit agri-food trade.

If WTO members wish to go beyond this toolbox and pursue even more ambitious targets to reduce illicit agri-food trade, they are provided with ample policy space and flexibilities – but they must avoid unjustified discrimination. Finally, the provisions on the enforcement of intellectual property rights (IPRs), in particular trademarks and geographical indications, are designed to prevent IPR-infringing forms of illicit trade, including illicitly traded food.

Given the limited scope of this chapter, the WTO rules that are discussed below are not meant to be exhaustive, but rather serve as examples of how the rulebook, as well as the policy space that they provide, can help members address the illicit trade in food.

"By providing a toolbox for possible regulatory barriers to trade, customs valuation, trade facilitation and preshipment inspection, WTO rules further help members combat illicit trade.

WTO agreements in the fight against illicit agri-food trade

Agreement on Agriculture

The only WTO agreement that explicitly refers to illicit crops is the WTO Agreement on Agriculture, which – among other things – governs the use of agricultural subsidies by members. Article 6.2 provides developing country members with flexibility when transitioning away from the cultivation of illicit narcotic crops by exempting subsidies that encourage diversification from domestic support reduction commitments. Providing small farmers with alternative means of making a living is crucial in order to deter them from growing narcotics. Agricultural subsidies are thus a central pillar of several members' anti-drug policies.[7] The Agreement on Agriculture recognizes this and provides the necessary policy space for it.

The smuggling of agriculture products is driven by a disparity between the price of a good at its origin and its destination, which can include price differentials deriving from government subsidies. The ongoing WTO agriculture negotiations, which aim to simplify tariff structures, to reduce excessively high tariffs and trade-distorting subsidies and to address import and export restrictions, could reduce the incentives for smuggling and illegal trade.

Agreement on Trade Facilitation

Indirectly related to illicit trade are the WTO agreements that regulate customs practices. They provide members with best practices that make customs enforcement more effective in the fight against illicit agri-food trade, as well as reduce the incentives for illicit contravention by lowering compliance costs.

The most detailed set of guidelines to harmonize and simplify customs procedures is set out in the WTO Agreement on Trade Facilitation (TFA). Its rules can serve as best-practice blueprints for members in designing their policies as well as reduce friction between different national systems. Section I of the TFA requires the publishing of customs-related information (Article 1), as well as making some of that information available through the Internet (Article 2) and mandating the designation of national enquiry points (Article 3).

In doing so, the TFA reduces compliance costs, creates transparency and limits the uncertainty that allows illicit and corrupt practices to thrive (WTO, 2022a: 14). Turning to customs administration practices, Articles 3 and 7 contain provisions on issuing advance rulings, developing risk management systems and conducting release and clearance procedures. They provide members with a transparent, effective and risk-appropriate method for these processes, allowing them to use their resources efficiently and focus their attention on the prevention of illicit trade practices (WTO, 2022a: 16).

Furthermore, the TFA explicitly allows members to take measures for enhancing controls and inspections at the border with respect to foods, beverages or feedstuffs or for the protection of human, animal or plant life or health within their territory (Article 5). While the TFA phases out preshipment inspections for tariff purposes, it expressly recognizes them for SPS purposes (Article 10.5). To better share information, the TFA mandates increased internal cooperation between national agencies in Article 8.1 (agency cooperation and coordination) and Article 23.2 (setting up a National Committee on Trade Facilitation (NCTF)), as well as international coordination in Articles 8.2 and 12, thereby reducing the loopholes that those involved in illicit trade may exploit (WTO, 2022a: 17). NCTFs in particular serve as crucial fora to exchange information and share best practices, with the involvement of a broad spectrum of stakeholders (WTO, 2022b: 19).

Complementing NCTFs and bilateral exchanges, the TFA created the Trade Facilitation Committee, which is tasked, among other things, with capacity building (Article 21) and facilitating the sharing of information and best practices (Article 23.1.4). It provides an invaluable forum for continually improving the measures taken against illicit trade, in particular by developing country members and LDCs. In summary, the TFA contains several instruments to help members allocate their resources more efficiently in the fight against illicit agri-food trade, strengthen cooperation between them and decrease friction caused by divergent regulatory approaches.

Customs Valuation Agreement

Another relevant agreement that harmonizes certain practices at the border is the Customs Valuation Agreement (CVA)[8], which provides standards for determining the value of imported goods and designing valuation procedures. It also includes guidelines on making customs valuation procedures uniform, non-discriminatory and expeditious, lowering compliance costs and therefore incentives for smuggling and other methods of circumvention (WTO, 2022a: 18).

The procedures of the CVA are a key instrument for determining the actual value of a product that has had its price artificially lowered through fraudulent means, either through outright mis-invoicing or illicit cost-cutting along the production chain. The CVA has built-in mechanisms for transparency and predictability, which WTO members can leverage to identify transactions that are most susceptible to mis-invoicing and build this into their risk profiles for illicit agri-food trade. The CVA is a fundamental tool in the fight against food fraud.

Agreement on Preshipment Inspection

An additional aspect of customs administration is regulated by the Agreement on Preshipment Inspection (PSI Agreement), which sets out standards for the inspection of goods in their country of origin. This is performed by private companies, making it attractive to developing country members with limited resources to spend on national customs enforcement. However, if inspections are implemented wrongly, it can cause delays and additional costs.[9]

The PSI Agreement addresses these issues. In prescribing minimum requirements and standard practices for preshipment inspections, the PSI Agreement lowers compliance costs and ensures that such inspections are carried out in a swift and efficient manner. If utilized effectively, it provides members with an important tool to fight illicit agri-food trade that might otherwise be carried out under the guise of unregulated PSI programmes.

Agreement on the Application of Sanitary and Phytosanitary Measures

In addition to the general administration of customs, WTO rules also recognize a member's right to regulate the safety of imported products – an issue vital to food trade. As one of the primary agreements dealing with this issue, the SPS Agreement contains specific disciplines that can be used to tackle certain forms of illicit agri-food trade.

One of the forms of food fraud is adulteration, which carries the risk of endangering the health of consumers. To prevent adulterated foods from illicitly entering the market, SPS measures may be used. The framework of the SPS Agreement balances a member's right to protect human, animal and plant life and health with the desire to avoid unnecessary barriers to trade, through the promotion of science-based measures in Article 2.2 and the reflection of the precautionary principle in Article 5.7.[10]

There is a thrust for harmonization (as a long-term goal) under Article 3 of the SPS Agreement which deems measures taken in conformity with international standards to be compliant with SPS rules. The SPS Agreement explicitly recognizes the food safety standards developed by the Codex Alimentarius Commission (established by the Food and Agriculture Organization of the United Nations and the World Health Organization), the animal health standards of the World Organisation for Animal Health and the plant health standards of the International Plant Protection Convention (IPPC). Members are thus asked to use international standards in their policy design, although they are free to choose higher levels of protection based on risk assessment.

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In this respect, the *Guidance on the Prevention and Control of Food Fraud*, currently being prepared by a working group of the Codex Alimentarius,[11] could be useful for WTO members. In the context of illicit food trade, the Organisation for Economic Co-operation and Development has recommended that countries create risk profiles for different products and implement policies at the border based on them.[12] This would allow low-risk imports to be cleared faster, freeing up capacity to focus on higher-risk products.

Article 2.3 of the SPS Agreement prevents members from applying SPS measures that discriminate between members where identical or similar conditions prevail, thus encouraging measures based on the risk profile of a member. Annex C of the SPS Agreement recognizes that members can prescribe control, inspection and approval procedures for imported products provided that these are reasonable and necessary. Such control measures, which also include sampling, testing and certification requirements, can help to identify unsafe or adulterated food before it reaches the market.

The current movement towards electronic SPS certificates, including for example the IPPC ePhyto solution for electronic phytosanitary certificates, helps combat falsified certificates, contributing to better enforcement of SPS requirements. A recent SPS Committee working group on approval procedures discussed how to minimize the trade-restricting effects of such measures while ensuring their efficacy, highlighting the importance of non-discriminatory, science-based and transparent approaches. The SPS Agreement thus offers both valuable tools and considerable flexibilities to members.

Agreement on Technical Barriers to Trade

Complementing the SPS Agreement, the TBT Agreement[13] covers standards and technical regulations laying down specifications with respect to any type of product (both "industrial and agricultural", Article 1.3) that members adopt for addressing a wide variety of policy objectives (such as the prevention of deceptive practices, and the protection of human health or safety, animal or plant life or health, or the environment).

> "Illicit traders exploit weaknesses in national regulatory systems to sell products that can be substandard or unsafe.

Importantly, it also covers conformity assessment procedures (CAPs) (Article 5); that is, the procedures put in place for certifying compliance with specifications. It is through these CAPs that members can employ methods such as sampling or testing (at the border or after the passage of goods) to verify the quality and other attributes of agri-food products.

As noted in a recent WTO study: "Illicit traders exploit weaknesses in national regulatory systems to sell … products that can be substandard or unsafe". It is therefore important that these CAPs are well designed and implemented.[14]

Also covered by the TBT Agreement are measures on food labelling, or marking requirements, which play a vital role in informing consumers about the ingredients and nutrients of a product, as well as its origins or other quality attributes. Proper labelling of agri-food products helps prevent deceptive and fraudulent practices.[15] However, labels can be easy to tamper with. In the absence of a binding and uniform worldwide labelling system, it can be difficult for regulatory authorities at the border to determine the authenticity of a label. Here, the role of Article 2.4 of the TBT Agreement comes into place. This provision promotes regulatory harmonization across members by requiring[16] the use of relevant international standards, unless such standards are ineffective and/or inappropriate for that member.

Unlike the SPS Agreement, the TBT Agreement does not list specific international standardizing bodies, nor has the TBT Committee adopted such a list. Existing international standards that may be relevant for food regulation in areas covered by the TBT Agreement include the Codex Alimentarius guidelines on nutrition labelling, which reduce divergences in domestic labelling requirements.[17]

Aligning standards and cooperating in their elaboration can also help members enforce laws and regulations across borders and work together to combat transnational illicit agri-food trade (WTO, 2022b: 20).

Marking requirements are also of interest to the discussion on food fraud, and these may include indications which certify that a particular standard has been complied with.[18] Certification marks are expressly mentioned in Article 5.1.1 of the TBT Agreement.[19]

In addition, the WTO also provides tools to protect certification marks under its rules on intellectual property (WTO, 2022b: 15). These serve to prevent the unauthorized use of such marks and thus contribute to consumer trust and confidence. This is a good example of how the different WTO agreements complement and mutually reinforce each other.[20]

Furthermore, the TBT Committee can be used to discuss CAP practices and attempt to achieve a degree of regulatory coherence for labelling and other relevant types of regulatory interventions in the area of food. Such recognition reduces the risk of adulteration and other instances of food fraud and makes it easier for manufacturers to conform with divergent labelling requirements.

Members using TBT and SPS measures should be cautious so as to not make them overly burdensome. Cumbersome CAPs are likely to make circumvention a more attractive option. The TBT and SPS Committees also serve as fora in which members can raise, among other things, specific trade concerns (STCs) relating to transparency or undue delays in approval procedures.[21] The information made available through members' notifications makes compliance and cooperation easier.[22]

> The TRIPS Agreement sets minimum standards for the availability, protection and enforcement of intellectual property rights.

Agreement on Trade-Related Aspects of Intellectual Property Rights

In the realm of IPRs, the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) makes a toolbox available to members against instances of illicit agri-food trade that constitute IPR violations (Roberts *et al*., 2022: 7, 26). It sets minimum standards for the availability, protection and enforcement of IPRs, balancing the interests of right holders and users of intellectual property. LDCs enjoy a transition period until 2033 to apply the substantive provisions of the TRIPS Agreement.

Examples of possible food-related IPR violations include:

- a supplier applying registered trademarks to products which are not manufactured by the owner and without consent;
- utilizing a counterfeit mark of certification;
- claiming that a particular product originates from a region when it in fact does not;[23]
- illicit trade in IPR infringing seeds or violations of a plant breeder's rights (see Box 1).

This is significant, as the TRIPS Agreement obliges members to make available effective and balanced enforcement mechanisms to counter trade in products that violate IPRs. The enforcement procedures mandated by the TRIPS Agreement are designed to allow right holders to have direct involvement with enforcement agencies in identifying and addressing unauthorized use of their trademark for trade in agri-food products.

Most of the provisions contained in the TRIPS Agreement aim to enable the right holder to prevent IPR violations at their source. They require members to put in place enforcement procedures that protect IPRs in the country of origin (for instance, the member in which the production of counterfeits takes place). In particular, Article 41.1 requires that members put in place effective and balanced enforcement procedures that provide for administrative and judicial remedies to the right holder while protecting the rights of the users of intellectual property.

BOX 1

Plant variety protection and the TRIPS Agreement

With regard to plant variety protection, Article 27 of the TRIPS Agreement defines which inventions members are obliged to make eligible for patenting, and what they can exclude from patenting. While Article 27.3(b) permits the exclusion of certain products and processes from patenting (i.e. plants, animals and "essentially" biological processes), it specifically provides that plant varieties have to be eligible for protection either through patent protection, an "effective *sui generis* system" (i.e. created specifically for the purpose), or a combination of the two.

A number of members have implemented such a *sui generis* system in the form of plant breeder's rights in national jurisdictions and many WTO members have joined recent versions of the International Convention for the Protection of New Varieties of Plants. However, the TRIPS Agreement does not reference any particular convention or minimum standard in this regard, and thus leaves policy space for members to implement a system that balances the interests of right holders and those of farmers. This is of particular relevance to developing country members that wish to take into account farming practices ("farmers' rights" – reuse of seeds and across the fence exchanges of seeds) that they consider essential for maintaining the livelihoods of their smallholder farmers.

With regard to cross-border trade, section 4 of the enforcement chapter of the TRIPS Agreement requires members to provide border measures targeting the import of trademark counterfeit and copyright pirated products (see Box 2). This is optional for products infringing other IPRs, as well as for export and goods in transit.

Furthermore, members are obligated to provide for criminal sanctions in cases of wilful IPR violations on a commercial scale under Article 61, which can serve as powerful deterrents. Another point to note is the role of the TRIPS Council in collecting notifications, promoting transparency and encouraging discussions, all of which can strengthen cooperation in the fight against illicit agri-food trade.

In the spirit of cooperation, the TRIPS Agreement also encourages members (including their customs authorities) to work together on combating counterfeit trademark goods (Article 69), including for food products, and to provide technical and financial assistance to developing country and LDC members (Article 67). In sum, the TRIPS Agreement plays a crucial role in empowering public authorities to effectively combat illicit agri-food trade. Other WTO provisions leave policy space for more ambitious measures, as discussed below.

Ongoing discussions on the Agreement on Fisheries Subsidies

Finally, if the definition of illicit trade in agri-food were to extend to the illegal harvesting of natural resources, then the newly concluded WTO Agreement on Fisheries Subsidies[24] is also relevant.[25] Adopted by consensus at the WTO's 12th Ministerial Conference in June 2022, the Agreement sets new, binding, multilateral rules to curb harmful subsidies, which are a key factor in the widespread depletion of the world's fish stocks. For the Agreement to enter into force, two-thirds of WTO members must formally accept the Protocol of the Agreement on Fisheries Subsidies by depositing an "instrument of acceptance" with the WTO.

The Agreement prohibits support for illegal, unreported and unregulated fishing, subsidies for fishing overfished stocks, and subsidies for fishing on the unregulated high seas. With over 3.3 billion people around the world obtaining at least 20 per cent of their daily animal protein intake from fish, the Agreement represents a milestone in the fight against illicit trade in this critical source of food and dietary protein. WTO members continue to negotiate on outstanding issues. In fact, negotiations continued at the WTO's 13th Ministerial Conference in Abu Dhabi, United Arab Emirates, in February 2024, on additional provisions that would further enhance the disciplines of the Agreement.

The policy space under GATT Article XX to combat illicit agri-food trade

The Appellate Body held in *Colombia – Textiles*[26] that the obligations of members under the General Agreement on Tariffs and Trade (GATT) apply irrespective of whether a member considers the trade in a certain good illicit or not. This means that there can be, in principle, no discrimination between "like" products, even if one of them stems from illicit trade. Nevertheless, members can combat illicit trade in goods by making use of the policy space afforded to them by GATT Article XX, which lists general exemptions.

In the context of illicit agri-food trade, paragraphs (a), (b) and (d) of GATT Article XX are relevant. These exceptions allow members to derogate from GATT obligations when necessary to protect public morals and order (paragraph (a)), to protect human, animal or plant life or health (paragraph (b)) and to secure compliance with laws and regulations designed, *inter alia*, to prevent fraudulent and deceptive practices (paragraph (d)).

Since illicit agri-food trade includes the intentional adulteration or dilution of food and the use of illicit substances (WTO, 2022a: 4), measures designed to tackle these practices would comfortably fall within these policy objectives. The Appellate Body has had the opportunity to discuss GATT Article XX(d) in the context of food in the *Korea – Various Measures on Beef*[27] dispute. Here, the Republic of Korea argued that domestic retailers and suppliers were engaging in fraudulent practices by which beef was being marked as

BOX 2

Counterfeit trademark goods and pirated copyright goods as defined in the TRIPS Agreement

Counterfeit trademark goods are "any goods, including packaging, bearing without authorization a trademark which is identical to the trademark validly registered in respect of such goods, or which cannot be distinguished in its essential aspects from such a trademark, and which thereby infringes the rights of the owner of the trademark in question under the law of the country of importation".

Pirated copyright goods are "any goods which are copies made without the consent of the right holder or person duly authorized by the right holder in the country of production and which are made directly or indirectly from an article where the making of that copy would have constituted an infringement of a copyright or a related right under the law of the country of importation".

Source: Footnote 14 to Article 51 of the TRIPS Agreement.

domestically produced (for a much higher cost and price) when it was in fact imported. The Government of the Republic of Korea addressed these practices with a policy that allowed the sale of imported beef only in specialized stores and not in regular supermarkets (dual retail system). The Appellate Body found that this measure was more trade restrictive than necessary to achieve the objective of preventing deceptive and fraudulent sales. Alternative, less trade-restrictive measures such as labelling, prosecution accompanied with fines and record keeping, among other things were available to the Republic of Korea. Accordingly, the Appellate Body found the dual retail system in the Republic of Korea unnecessarily trade distorting and not justified under GATT Article XX.

The *Korea – Various Measures on Beef* Appellate Body report suggests that the policy space of members is not unlimited because of the need to adopt less trade-restrictive alternatives if they are reasonably available (financially and technically). Nonetheless, the Appellate Body has held that members are allowed to choose high levels of protection so long as they deal coherently with any risk to human, animal and plant health.[28]

Moreover, it is the complaining party that has to show the existence and availability of a less trade-restrictive measure and must ensure that such an alternative measure is equally feasible and effective as the responding member's existing measure in order to reach that member's chosen level of protection.[29] Governments can thus take steps to frame the gravity of the problems arising from illicit agri-food trade and use this as a basis for more controls at the border. Finally, measures taken under GATT Article XX cannot be arbitrary and discriminatory or operate as disguised restrictions on trade under the first *chapeau* paragraph of Article XX.

Members have significant policy space under GATT to take public measures against illicit agri-food trade, so long as they act in good faith and apply their measure coherently and even handedly.

In sum, members have significant policy space under GATT to take public measures against illicit agri-food trade, so long as they act in good faith and apply their measure coherently and even handedly. As the next section shows, they can also request the assistance of private actors.

The role of the private sector in combating illicit agri-food trade

Public authorities may want to tap into the expertise of private actors in the fight against illicit agri-food trade. One option to do this are the border measures foreseen by the TRIPS Agreement. They include provisional measures to ensure that infringing goods are not released into commercial circulation, subject to the procedural safeguards spelled out in the TRIPS Agreement. Notably, private right holders may initiate actions with competent border authorities to prevent pirated and counterfeit goods from entering the commercial market of the importing member.

Ex officio action by competent authorities is optional under the TRIPS Agreement, as is taking action against the import of small consignments. Collaboration of customs authorities and right holders, as well as encouraging private actors to be vigilant and make use of border enforcement mechanisms under Article 51 of the TRIPS Agreement can help weed out instances of illicit agri-food trade that also constitute an IPR infringement (WTO, 2022a: 12, 13). At the same time, the TRIPS Agreement provides safeguards to ensure that the legal and legitimate use of IPRs is not stifled (WTO, 2022a: 26).

The private sector can also play a role in making border controls more effective in other areas, by providing customs authorities with valuable expertise to correctly identify and classify a product and thereby apply the appropriate tariffs and restrictions. This leveraging of private capacities is a part of the sovereign right of members to pursue legitimate administrative objectives through the design of their customs procedures, as emphasized by the Panel in *Thailand – Cigarettes (Philippines)*.[30]

However, given the inherent conflict of interests involved when private actors exercise control over their competitors, steps must be taken to ensure they act uniformly, impartially and reasonably pursuant to GATT Article X:3(a). Thus, they should only be given access to information strictly necessary to discharge their duties,[31] and safeguards have to be in place to ensure this information is not mishandled. Keeping this in mind when designing policy allows members to benefit from private expertise while ensuring that private actors do not abuse their authority.

Conclusion

The WTO agreements equip members with a toolbox to combat illicit trade in food and food fraud, a pervasive challenge that undermines global food security, economic development and consumer trust by jeopardizing the safety, quality and integrity of the global food supply chain.

WTO disciplines promote transparency and reduce opportunities for illicit activity. Trade liberalization through tariff reduction lessens incentives for smuggling, and disciplines on subsidies help mitigate price distortions that can motivate illicit trade. Furthermore, WTO agreements empower members to set appropriate protection levels, ensuring food safety and quality standards without resorting to disguised protectionism or unjustified discrimination. It is crucial to note, particularly within the SPS and TBT frameworks, that the freedom to choose protection levels is a fundamental right, not an exception. Agreements on regulatory barriers to trade, dealing with customs valuation, trade facilitation and preshipment inspection provide WTO members with the capacity to strengthen border controls. These measures can encompass health and nutrition labelling, consumer protection measures and environmental regulations. Consistent and complementary application of these rules is crucial for designing national policies that effectively combat illicit agri-food trade.

The WTO framework also allows flexibility for members to pursue more ambitious anti-counterfeiting measures, provided they avoid unjustified discrimination. The provisions on IPRs help prevent illicit trade involving trademarks and geographical indications in the food sector.

The WTO rulebook, along with the policy space it provides, offers a valuable framework for promoting a safer, fairer and more transparent global food system.

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Endnotes

1. In any event, what is more important than finding an abstract definition is that, when addressing an instance of illicit agri-food trade, the nature of the infringement, be it adulteration, smuggling, intellectual property right (IPR) violations or something else, is precisely pinpointed, so that the fitting policy instrument can be chosen to combat it (see also WTO, 2022a: 4).
2. See *Australia – Tobacco Plain Packaging (Indonesia)*, Panel Report DS467, para. 7.1010.
3. Although note the references in the First Recital of the Preamble and Article 41.1 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) to "legitimate trade", emphasizing that the TRIPS Agreement's enforcement measures, which are designed to combat intellectual property right (IPR)-infringing illicit trade, should not become barriers to legitimate trade.
4. See https://www.wto.org/english/news_e/news22_e/ddgag_03mar22_e.htm.
5. The *Oxford English Dictionary* defines smuggling as the "*Clandestine importation of goods, etc.*" The *Dictionary of Trade Policy Terms* (WTO, 2020) defines it more specifically as "*taking goods illegally across borders. If the goods could be imported legally into the country after the payment of applicable customs duties, the main motivation may simply be the avoidance of these duties. If the import of the good is illegal in the first place, other motivations of course come into play.*" Finally, in *Colombia – Ports of Entry*, the Panel recognized that "*WTO Members have a legitimate right to apply measures aimed at combating under-invoicing, smuggling and money laundering*" (Panel Report DS366, para. 7.155).
6. See https://www.tracit.org/agri-food-industry.html.
7. Currently, four members, Colombia, Peru, Türkiye and Viet Nam, have notified the use of diversification subsidies (see https://agims.wto.org).
8. More commonly known as the Customs Valuation Agreement, its full title is the Agreement on Implementation of Article VII of the General Agreement on Tariffs and Trade 1994.
9. For background information, see Rome (1998).
10. See *EC – Hormones (US)*, Appellate Body Report DS26, para. 124.
11. See https://www.fao.org/fao-who-codexalimentarius/committees/ewg/detail/en/c/1481114. For a collection of other standards potentially relevant in this area, see *Collection of Available Tools and Resources in Relation to SPS Approval Procedures*, WTO document G/SPS/67, 27 March 2023.
12. *New Digital Technologies to Tackle Trade in Illegal Pesticides*, OECD Document COM/TAD/ENV/JWPTE(2020)8/FINAL, 20 May 2020, para. 86.
13. For a more detailed overview on the TBT Agreement, see WTO (2021).
14. See WTO (2022a: 12, 13, 17, 21). Box 3 of WTO (2022a) observes that: "The weaker a CAP, the higher the risk that more non-compliant products will enter the market. This, in turn, can open pathways for illicit trade in medical products that do not meet quality, health or safety standards. Conversely, well-designed and well-enforced CAPs are a crucial element of a country's NQI [National Quality Infrastructure] and are instrumental in efforts to stem the flow of illicit trade in medical products."
15. OECD document COM/TAD/ENV/JWPTE(2020)8/FINAL, para. 77.
16. However, a member is not required to use such internationals standards if they are "ineffective" of "inappropriate" for fulfilling the legitimate objective(s) pursued by its measure.
17. *Guidance on Nutrition Labelling*, Codex Alimentarius document CXG 2-1985, last revised in 2021. Another relevant standard in the context of traceability, published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), is *Automatic Identification and Data Capture Techniques: Supply Chain Applications of RFID – Product Tagging, Product Packaging, Transport Units, Returnable Transport Units and Returnable Packaging Items*, ISO/IEC 17360:2023.
18. Such marks serve, for example, to certify the origin of a product, the qualification of the producer or the classification of the product. They can either be issued by a public authority, like the Conformité Européene (CE) mark, or by a private actor, such as the Fairtrade label. In the latter case, they are typically registered trademarks.
19. Referred to as the "mark of the system", Article 5.1.1 concerns discrimination in terms of giving a supplier of an imported product less favourable access to the procedures for getting these marks as compared to that given to suppliers – who are in a "comparable situation" – of like products (of domestic origin or from other countries).

20. On this point, see also further examples on improving border controls and regulatory procedures in WTO (2022a: 14).
21. With respect to SPS Committee, see for example *Summary of the Meeting of 12-13 July 2018: Note by the Secretariat*, WTO document G/SPS/R/92/Rev.1, 15 October 2018. Technical regulations and CAPs affecting agri-food products are also frequently discussed in new STCs raised in the TBT Committee. For instance, the product categories most frequently targeted in TBT STCs raised in 2022 included (Harmonized System (HS) codes in parentheses): beverages (HS 22); fish and crustaceans (HS 03); meat and edible meat offal (HS 02); and coffee and tea (HS 09). See *Twenty-eighth Annual Review of the Implementation and Operation of the TBT Agreement: Note by the Secretariat*, WTO document G/TBT/50, 6 March 2023, pp. 36 and 37.
22. An especially valuable tool is the ePing SPS and TBT Platform, jointly developed by the International Trade Centre, the United Nations and the WTO, available at https://eping.wto.org.
23. Specific IPRs can take different forms, such as geographical indications, patents and trademarks, among others.
24. See https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm.
25. See Chapter 1 and the definitions discussed at the WTO Trade Dialogues on Food in March 2022, available at https://www.wto.org/english/res_e/reser_e/tradedialonfood_e.htm.
26. See *Colombia – Textiles*, Appellate Body Report DS461, paras 5.35 and 5.36.
27. See *Korea – Various Measures on Beef*, Appellate Body Report DS161, paras 172, 178-180.
28. See *EC – Asbestos*, Appellate Body Report DS135, paras 167 and 168; see also *Korea – Various Measures on Beef*, Appellate Body Report DS161, para. 178.
29. See *Brazil – Retreaded Tyres*, Appellate Body Report DS332, para. 156.
30. See *Thailand – Cigarettes (Philippines)*, Panel Report DS371, paras 7.923-7.925.
31. See *Argentina – Hides and Leather*, Panel Report DS155, para. 11.91; see also *China – Raw Materials*, Panel Report DS394, para. 795.
32. See *Argentina – Hides and Leather*, Panel Report DS155, para. 11.101.

CHAPTER 3

Mapping the negative impacts of illicit trade in agri-food and beverages against the United Nations Sustainable Development Goals

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Abstract

Agriculture, forestry and fishing contributed 4.3 per cent of global GDP in 2022 and account for large shares of the GDP for developing economies. A healthy agricultural sector is vital to eradicating hunger and poverty. Illicit trade in agri-food and beverages, in its various manifestations, undermines sustainable farming, limits crop yields and jeopardizes the delivery of fair, safe and sustainable food supplies.

This chapter examines how this form of illicit activity threatens the achievement of 11 of the United Nations Sustainable Development Goals (SDGs). Examples from illicit trade in food commodities, processed foods and pesticides demonstrate how fraud and failures in the food supply chain hinder progress on the vital goals to eradicate hunger and poverty, improve health and well-being, strengthen consumers' ability to make educated and eco-friendly decisions, and generate sustainable economic growth.

Introduction

The importance of multilateral trade towards achieving the SDGs has long been recognized by the international community. More recently, at the 15th session of the United Nations Conference on Trade and Development in 2021, the hampering effects of illicit trade on development was discussed and the significance of this threat was ascribed in the session's outcome document – the Bridgetown Covenant:[1]

> "Illicit trade creates a triple threat to the financing of development: crowding out legitimate economic activity, depriving Governments of revenues for investment in vital public services and increasing the costs of achieving the Sustainable Development Goals."

The latest data from the World Bank show that agriculture, forestry and fishing employ one in four of the global workforce, contributed 4.3 per cent of global GDP in 2022, account for large shares of the GDP for developing economies,[2] and are inseparably tied to the ecosphere. It is thus understandable that strong, healthy agricultural sectors are vital to achieving the SDGs, especially in developing and emerging economies. A thriving agricultural sector also pays dividends in terms of reducing hunger and poverty, improving the quality of life, driving trade, investment and industrialization, and creating jobs and overall economic prosperity (Charles, 2016).

In contrast, illicit trade in agri-foods and beverages undermines farming, destabilizes rural economies, distorts food markets, and jeopardizes the production and delivery of fair, safe and sustainable food and beverage supplies.[3] These circumstances also cost the global food industry US$ 30-50 billion each year (which does not include losses associated with illicit trade in alcoholic beverages). These losses undermine the SDGs for economic growth and decent work (SDG 8).[4] In the United States, for example, the Grocery Manufacturers Association (GMA and AT Kearney, 2010) estimated that the annual cost of food fraud was between US$ 10-15 billion.

"Illicit trade in agri-foods and beverages undermines farming, destabilizes rural economies, distorts food markets, and jeopardizes the production and delivery of fair, safe and sustainable food and beverage supplies.

Furthermore, farmers' access to legitimate pesticides is also closely tied to sustainability, agricultural productivity and output. Illegal pesticides in contrast are untested, contain an imbalance of chemicals including active ingredients, all of which can cause low crop yields, crop failure (SDG 2) or result in high levels of pesticide residues on food products (SDG 3). Illegal pesticides may also render agricultural land infertile owing to soil degradation and contamination of ground water – all of which can have destructive impacts on goals for clean water (SGD 6) and life on land (SDG 15).

Categorizing illicit trade in agri-food

In the agri-food sector, illicit trade affects multiple nodes of the supply chain. The term captures a wide spectrum of practices, including food smuggling, avoiding customs duties, exploiting price differentials across origin and destination markets, and committing fraudulent behaviour to deceive consumers about food quality, content or features.

Illicit trade in agri-food may concern the following two categories: commodity food; and packaged and processed food.

Commodity food

In their most essential form, agricultural products are commodities[5] that can be bought and sold, such as grains, fruits and vegetables, coffee beans, sugar, oils and animal products. Illegally produced versions of these products can be found on everyday supermarket shelves.

Examples of illicit food practices include:

- mislabelling, such as conventional vegetables labelled as organic or meat labelled as kosher when it is not;
- tampering with the weight of a commodity, such as fish or coffee;
- falsifying the origin of a product, for example by labelling regular table salt as Himalayan pink salt to imply premium origin and health benefits;
- illegally deforesting land for agricultural purposes (common examples include palm oil, chocolate, beef, soy);
- adulterating products such as honey by mixing it with corn or rice syrup (Strayer *et al*., 2014), or by mixing lower-grade olive oil into branded high-grade olive oil;
- smuggling products across borders or importing them through unauthorized channels, such as selling seafood intended for one market in another.

Packaged and processed food

Because the supply chain for packaged and processed food and beverages can be so complex, there is a risk for food fraud at multiple points. Examples include:

- selling expired goods, such as in energy drinks, past their expiration date;
- mislabelling ingredients or undisclosed ingredients or additives, such as adding inexpensive fillers to sausages or artificial flavouring to 100 per cent juices;
- creating counterfeit branding for fake versions of popular packaged foods (especially premium quality);
- using fraudulent certifications, such as labelling a product as certified organic when it is not;
- making misleading health claims, such as labelling a snack as made with whole grains when it was actually made with refined ingredients;
- introducing formulation changes, such as gradually altering the ingredients without changing the labelling.

The negative impacts of illicit trade in agri-foods and food fraud

Illicit trade in agri-food unambiguously impacts achievement of the following 11 of the 17 SDGs:

- SDG 1 (No poverty)
- SDG 2 (Zero hunger)
- SDG 3 (Good health and well-being)
- SDG 6 (Clean water and sanitation)
- SDG 8 (Decent work and economic growth)
- SDG 9 (Industry, innovation and infrastructure)
- SDG 11 (Sustainable cities and communities)
- SDG 12 (Responsible consumption and production)
- SDG 14 (Life below water)
- SDG 15 (Life on land)
- SDG 16 (Peace, justice and strong institutions)

Ending poverty and hunger and promoting good health (SDGs 1, 2 and 3)

Access to healthy and affordable food is a prerequisite for addressing global poverty and hunger. Illicit trade in agri-foods contributes directly to:

- food insecurity by disrupting legitimate supply chains, reducing availability and increasing prices that limit access to essential foods;
- poverty by undermining fair markets and reducing income for legitimate producers, especially in vulnerable communities;
- malnutrition by consuming contaminated, counterfeited or adulterated food products (e.g. fake infant milk powder and vegetable oil made of recycled oils unfit for human consumption) (see Box 1).[6]

The impact of food fraud on human health can also be felt indirectly. Long-term exposure to low-level toxic contaminants or the continual omission of active or beneficial ingredients, such as preservatives or vitamins, can have harmful health consequences. Similarly, health risks emerge when unlabelled or adulterated ingredients cause consumer allergy, intolerance or sensitivity.

BOX 1

Spotlight on alcoholic beverages

The alcohol industry is one of the biggest sectors in the food and beverage sector. Illicit trade in alcoholic beverages is one of the largest forms of illicit trade. The Organisation for Economic Cooperation and Development (OECD, 2022) reports that the World Health Organization expects the share of unrecorded consumption of alcohol, much of which is presumed to be illicit, to reach an estimated 27.7 per cent of global consumption in 2025.*

The public health costs and personal tragedies from illicit trade in alcoholic beverages are staggering. Substandard products manufactured using dangerous, unapproved ingredients pose significant health risks to consumers (SDG 3) and disproportionally affect poorer and uneducated consumers. In addition, illicit trade in alcoholic beverages deprives governments of tax revenues (SDG 8) and diverts resources to organized crime (SDG 16).

* See also WHO (2018).

Examples include:

- In 2008, manufacturers in China added melamine to infant formula, causing over 300,000 illnesses, 50,000 hospitalizations and at least six deaths.[7]
- In 2021, around 500 people were hospitalized in New Delhi after consuming adulterated buckwheat flour (Dineshwori, 2021).

Clean water and sanitation (SDG 6)

Regulatory controls on the use, handling and transport of agrochemicals become ineffective when illegal pesticides are used as substitutes, especially when they contain banned and highly persistent organic pollutants such as the insecticide DDT (dichlorodiphenyltrichloroethane).

In addition to the health and safety risks posed to users of illegal pesticides (see Box 2), run-offs and releases into surrounding waterbodies can lead to widespread environmental contamination[8] and harmful accumulation in local animals and marine life.

Decent work and economic growth (SDG 8)

Fake, substandard, smuggled and other forms of illicitly traded agri-foods distort and destabilize food markets, undermining economic growth, costing jobs and hurting entire sectors of the economy. For a legitimate company, this form of illegal competition reduces sales and employment opportunities and disincentivizes investment. This is especially the case for small-scale food producers and businesses in developing economies. For example, Cambodia's rice industry was on the "brink of collapse" in 2016 due to unfair competition from cheaper, illegal rice imports (Sokhorng, 2016).

> "The latest data from the World Bank show that agriculture, forestry and fishing in 2022 accounted for 4.3% of global GDP and an average of 18.3% of GDP in least-developed countries, with some at over 35%.

The nature of the international market for food means that people from all over the world are likely to encounter food items that have been produced utilizing forced labour or child labour. There is no incentive for illicit traders along the food supply chain to respect human rights, as there is no transparency into their operations, no labour inspections or other oversight into how the workers are treated, and no avenue for workers to enforce their rights. As an example, human trafficking and forced labour are notorious on illicit fishing vessels (Witbooi *et al.*, 2020).

Incidents of food fraud in a market also may have long-term effects on consumer trust. Once confidence in the food system is lost, even the rumour of food fraud can have far-reaching consequences. In cases where illegal agri-food trade results in injury or harm, a corporation's economic sustainability can be severely damaged.

For governments, a strong and legal agricultural sector can contribute significantly to sustainable economic growth. The latest data from the World Bank show that agriculture, forestry and fishing in 2022 accounted for 4.3 per cent of global GDP and an average of 18.3 per cent of GDP in least-developed countries, with some at over 35 per cent.[9] For example, members of the Association of Southeast Asian Nations benefit from exports of agricultural commodities by as much as US$ 50 billion[10]; and in the Lao People's Democratic Republic, the sector accounted for 14.6 per cent of GDP in 2022.[11] Growth in the agricultural sector is two to four times more effective in raising incomes among the poorest compared to other sectors.[12]

BOX 2

Spotlight on illicit pesticides

Agrochemicals, specifically pesticides, are an integral part of conventional agriculture by mitigating pests and diseases that harm crops and reduce crop yield and quality.* With the global pesticide market anticipated to reach US$ 90 billion by 2028,** the prevalence of illegal pesticides, including counterfeits, infiltrating global markets is unsurprising. The share of illegal pesticides in the global market in 2015 was estimated to be as high as 25 per cent (OSCE/ENVSEC, 2015).+

The trade and use of illegal pesticides present significant risks to human health in the forms of food toxicity, exposure to unsafe chemicals and safety hazards associated with transportation and handling. Counterfeit and sub-standard pesticides often contain chemicals which are either banned or restricted due to the risk they pose to human health and/or the environment.

In addition, they are often falsely declared to avoid international labelling requirements designed to ensure safety during transport and usage. As a result, highly toxic, flammable or otherwise hazardous substances are transported and used without regard to the safety of workers handling the product.++

* For background information on the benefits and hazards of pesticides in agriculture, see Aktar *et al.* (2009).

** See https://www.techsciresearch.com/report/global-pesticides-market/1311.html.

+ For information on India, see the report by the Federation of Indian Chamber of Commerce and Industry (FICCI, 2015). Information of the work conducted by the European Union Agency for Law Enforcement Cooperation (Europol) is available at https://www.europol.europa.eu/crime-areas/intellectual-property-crime/counterfeiting-and-product-piracy.

++ For further information, see Fishel (2009), OSCE/ENVSEC (2015) and UNICRI (2016).

Industry, innovation and infrastructure (SDG 9)

Legitimate food companies invest significant amounts of time and money in developing products and protecting their intellectual property through patents, copyrights, design rights and trademarks. The production and sale of counterfeits undermines investment into scientific research and the industrial growth of the market. Unless intellectual property is protected, innovation and technological development will not be properly incentivized, consequently undermining industrialization and sustainable economic development.

For instance, a company that invests heavily in developing a novel ingredient or process for reducing the salt or sugar content of products – without compromising taste – will seek patent protection for its R&D investment. If counterfeiters were to produce and sell imitation products using a similar ingredient without proper authorization, it could significantly undermine the value of the original patent. The legitimate company would lose out on the returns on their investment in innovation, potentially leading to decreased funding for future R&D efforts.

Sustainable cities and communities (SDG 11)

A relevant example of the impact to sustainable cities and communities is the wide-ranging consequences of illegal, unreported and unregulated (IUU) fishing on Belize's ecotourism industry. The United Nations Educational, Scientific and Cultural Organization (UNESCO) designated the Belize Barrier Reef system a World Heritage site in 1996. The World Wide Fund For Nature (WWF) (2016) reported that it generated 15 per cent of Belize's GDP, with income derived from reef tourism and fisheries supporting more than half the population. The reef system and the economy that it supports are under constant threat from IUU fishing, which depletes the very wildlife on which ecotourism depends.[13] Sustainable management of marine sites can be net positive for tourism and society as a whole.

Responsible consumption and production (SDG 12)

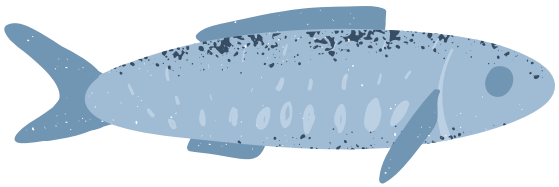
Consumers' ability to make educated and eco-friendly decisions are undermined when certificates of origin are falsified, quality assurance programmes hampered, claimed ingredients diluted with a cheaper product or entire species substituted. The practice of sustainable or safe catch seafood mislabelling is an example of how food fraud strips the consumer of the ability to make informed food choices – while simultaneously threatening ocean sustainability by creating or sustaining markets for illegally sourced fish to be laundered into legal seafood markets.[14]

Further, illegal deforestation of land for agricultural farming disrupts ecosystems, threatens biodiversity and undermines the goal of responsible consumption and production. Illicit pesticides usage can also degrade soil, contaminate water and render land infertile, undermining the long-term viability of agricultural production.

Life below water (SDG 14)

SDG Target 14.4 (end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices by 2020) specifically recognizes the detrimental effects of IUU fishing on global marine sustainability. It acknowledges the significant repercussions on the stability of coastal and offshore fisheries, as well as the economic well-being of communities reliant on fisheries.

Similarly, SDG Target 14.6 calls for the elimination of certain subsidies that contribute to IUU fishing. Subsidies to the fisheries sector were estimated at US$ 35.4 billion in 2018 (Sumaila *et al*., 2019). Subsidies can amplify unsustainable fishing practices by artificially increasing fishing capacity – which in turn promotes overfishing and other destructive fishing practices.



The use of illicit pesticides can also affect life under water. For example, run-offs and releases of unregulated illicit products into waterways, rivers, seas and oceans can lead to widespread environmental contamination and harmful accumulation in humans, local animals and marine life.

Life on land (SDG 15)

In addition to polluting waterways, illicit pesticides can contaminate land. The long-term usage of illegal pesticides on agricultural land can cause resistance to pests, reduce soil fertility or render land infertile. Releasing such chemicals into the environment can further impact biodiversity and endanger human health.

Peace, justice and strong institutions (SDG 16)

Organized crime plays a major role in the illicit trade of agri-food products, undermining SDG Target 16.1 (significantly reduce all forms of violence and related death rates everywhere) and SDG Target 16.4 (combat all forms of organized crime). In Italy, for example, organized criminal groups are involved in the commodity value chain of many Italian food products exported abroad (Bacchi, 2017). This activity spread to the US market where 75 to 80 per cent of olive oil labelled extra virgin imported from Italy is in fact not extra virgin.[15]

Economic activities in the Italian agri-food sector managed by criminal organizations nearly doubled from €12.5 billion in 2011 to more than €22 billion in 2018, growing at an average of 10 per cent per year (Roberts, 2018). In 2019, Europol officers in Italy and Germany seized 150,000 litres of fake olive oil that was being sold by a criminal gang. The group was caught trying to sell the fraudulent oil to restaurants in Germany. It is estimated that the criminal organization made €8 million per year from the fraud.[16]

> “Illicit trade in agri-food undermines 11 of the 17 UN SDGs and puts public economies, governments and businesses at risk.

Illicit trade in agri-foods can also introduce wider risks to national and regional security, further undermining SDG Target 16.3 (promote the rule of law) and Target 16.5 (reduce corruption). This is especially the case when existing routes and markets for cross-border smuggling of foodstuffs are exploited by criminal groups, including armed non-state actors, for trafficking high-profile illegal goods such as narcotics and arms (Babuta and Haenlein, 2018). Examples include the lucrative sugar smuggling business across the Kenya–Somalia borderlands, which have been linked to Al-Shabaab militants (Rasmussen, 2017), and the smuggling of subsidized foodstuffs in the Maghreb region that finances organized crime (Babuta and Haenlein, 2018). Similarly, the increasing worldwide demand for avocadoes has encouraged the involvement of crime cartels in food production in Mexico (FSA/FSS, 2020).

Conclusion

Illicit trade in agri-food undermines 11 of the 17 UN SDGs and puts public economies, governments and businesses at risk (see Table 1). More work is needed by the international community, governments, and food businesses to make headway. However, as long as the profits for traffickers outweigh the risks of being caught or adequately sanctioned, their illegal business will continue to flourish.

TABLE 1

Sustainable Development Goals and the negative impacts of illicit trade in agri-food and beverages

Action	Effect
SDG 1 (No poverty)	Undermines agricultural markets and fishing industries that support economic development, employment and poverty reduction. Destabilizes the associated local economic communities.
SDG 2 (Zero hunger)	Destabilizes food security. Undermines sustainable food production and access to food.
SDG 3 (Good health and well-being)	Exposes consumers to harmful ingredients or deprives them of active beneficial ingredients.
SDG 6 (Clean water and sanitation)	Jeopardizes water quality and the protection of water-related ecosystems from contamination.
SDG 8 (Decent work and economic growth)	Drains farmer profitability through spending on ineffective pesticides, causing reductions in crop yields and quality. Siphons GDP, jobs and tax revenues from national economies. Introduces health risks that can jeopardize corporate brands and economic sustainability.
SDG 9 (Industry, innovation & infrastructure)	Discourages investment. Undermines innovation. Disincentivizes technological advancement.
SDG 11 (Sustainable cities & communities)	Contributes to local economic instabilities that threaten the fishing industry's long-run contributions to GDP and employment.
SDG 12 (Responsible consumption & production)	Deprives consumers of choice and ability to make educated and eco-friendly decisions.
SDG 14 (Life below water)	Exacerbates the prevention of harmful run-offs and releases of toxic chemicals into water bodies.
SDG 15 (Life on land)	Use of unregulated, toxic, illicit pesticides contaminates land, reduces soil fertility or renders land infertile.
SDG 16 (Peace, justice & strong institutions)	Undermines governments' capacity to enforce policy, promote the rule of law, eradicate corruption and combat other forms of criminal activity. Illegal profits underwrite smugglers, breed corruption, subsidize wider criminal activity and threaten political and economic stability.

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CHAPTER 4

Regulatory solutions and food systems thinking to counter food fraud in supply chains

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Abstract

All of the people and activities that play a part in growing, transporting, supplying and consuming food – known as the (agri-)food system – need to be involved in addressing the complexities of food fraud. Trade globalization, the lengthening of food supply chains, the fast growth of e-commerce of food and vast informal food economies all provide new possibilities for food fraud.

This chapter presents different strategies for policymakers and regulators to counter food fraud – from regulatory strategies to intersectoral collaboration, private-sector engagement and consumer information. It addresses the status of food fraud discussions in various intergovernmental bodies and advocates for broad food systems thinking and strengthened cooperation at the global, regional and national levels.

Introduction

Food fraud has plagued agri-food systems for as long as there has been agriculture, food processing and trade. Equally old are attempts at regulatory solutions to address the problem. These can be traced all the way back to the Code of Hammurabi – a Babylonian code of law from ancient Mesopotamia, which, among other rules, refers to the punishment of sellers of fraudulent wine. There has never been a country nor an agri-food system which has been free of food fraud. Countries across the development spectrum deal both with similar and unique challenges, depending on their national context. Recognizing this long history, this chapter explores challenges relating to current agri-food systems and how regulatory solutions and food systems thinking may be used to counter it.

Policymakers have a variety of different tools and approaches at their disposal to improve their legal and technical preparedness in tackling food fraud (see Box 1). Applying food systems thinking to food fraud means addressing the fraud holistically and identifying solutions to the weaknesses inherent to modern agri-food systems (Roberts, 2019). Food systems thinking requires strategic cooperation among different stakeholders at all levels of governance, and across the entirety of food supply chains (Roberts *et al.*, 2022). It requires stakeholders to identify specific goals, to gain knowledge and understanding of the specific kind of fraud faced, and to carefully assess how best to effect real and holistic change (Roberts, 2019).

Food fraud is on the agenda of the Codex Alimentarius Commission, established by the FAO and the World Health Organization to protect consumer health and promote fair practices in food trade. The Codex Committee on Food Import and Export Inspection and Certification Systems is developing a guideline on the prevention and control of food fraud.[1] In its current version, the draft guideline aims to provide guidance to competent authorities and food business operators on the detection, prevention, mitigation and control of food fraud to help protect the health of consumers and to ensure fair practices in food and feed trade.

> “Food systems thinking means addressing food fraud holistically and solving weaknesses inherent to agri-food systems.

This chapter aligns with the definition of food fraud as proposed by this draft guideline: “Any deliberate action to deceive others in regard to the prescribed specifications or expected characteristics of food to gain an unfair economic advantage.”[2] The draft makes explicit the linkages between food fraud and existing controls and mitigation measures available to countries through their national food control systems[3], and recognizes that there may be a need to adopt new measures.

As per the approach adopted by draft guideline, food fraud is by definition connected to the identity and/or quality of food and can be related to either the product itself (horse meat sold as beef) or its process of production (non-organic products labelled as organic). Food fraud often – but not always – also results in food safety risks, such as when allergens are undeclared or when food contains otherwise unsafe ingredients (Roberts *et al.*, 2022).

Food fraud results in an economic burden which can take two forms. The first is the economic damage suffered by those who have been defrauded. This would be the case, for instance, of a consumer who has overpaid for pure honey when sold honey mixed with sugar instead. The second is the economic damage suffered by market operators in situations where fraudsters outcompete those who play by the rules (FAO, 2022a).

BOX 1

Vulnerability Analysis and Critical Control Point System

Food safety has traditionally benefited from the use of the Hazard Analysis and Critical Control Point (HACCP) principles. These well-functioning principles could be adapted to help combat food fraud. This could take the form of the Vulnerability Analysis and Critical Control Point (VACCP) system, in which food businesses develop documented procedures to identify and mitigate the risks of food fraud in their supply chains (Reilly, 2018).

A VACCP system would typically consist of:

- drawing up a list of all ingredients and materials used in the manufacturing process;
- identifying potential forms of fraud they may be subject to;
- evaluating the risk of fraudulent practices;
- identifying and implementing control measures;
- recording and reviewing findings.

Source: Adapted from box 2 of FAO (2021).

Ultimately, most participants in agri-food systems – whether primary producers, food business operators, government officials or others – want to and do adhere to the rules that keep us all safe and allow fair competition. Their efforts and dedication are frustrated by a minority of food fraudsters who are able to game the system and undermine control mechanisms built on trust and shared responsibility. By intentionally violating the explicit and implicit claims made on foods, they destabilize the relationship we all have with food, thus negatively affecting our confidence in foods and our future expectations (FAO, 2022a).

Vulnerabilities in modern agri-food systems

No country is safe from food fraud. This section takes a look at the vulnerabilities in modern agri-food systems that can be breeding grounds for fraud. These vulnerabilities vary by country and national context, necessitating tailor-made approaches to combating fraud.

By their very nature, fraudsters attempt to avoid detection. This leads to a dearth of information on food fraud, making it harder to establish how common the practice actually is. While individual stories of food fraud are easy to find, it is much harder to come up with systematic estimates of the prevalence of the phenomenon. The increase in reported cases of food fraud does not necessarily mean an increase in food fraud – rather, it can simply indicate greater success in detecting food fraud (FAO, 2022a). There is no doubt, however, that the lack of information makes it difficult to develop strategies as well as legal tools to respond to fraud (Roberts *et al*., 2022).

While information is limited, globalization and the lengthening of food supply chains have been observed to increase the range of fraud risks and vulnerabilities for foods, food ingredients and other inputs (Lotta and Bogue, 2015), particularly by reducing transparency and traceability. Some commenters have even gone so far as to describe global supply chains as "global supply mazes", highlighting the challenges involved in authenticating food as it moves along a chain (Roberts *et al*., 2022).

> "Cross-border e-commerce for private consumption poses unique legal and enforcement problems.

E-commerce

An emerging issue is the fast growth of e-commerce in the food sector, in particular when cross-border transactions are involved. A legacy of the COVID-19 pandemic is the continued rise in e-commerce. In addition to the challenges of transparency, traceability and jurisdictional coverage, cross-border e-commerce for private consumption poses unique legal and enforcement problems. In countries where food safety legislation includes exceptions to border control requirements for the import of food destined for personal/individual consumption, yet another avenue for food fraud is created – allowing food to enter a country outside of official control mechanisms.

From the consumer perspective, e-commerce presents a set of unique challenges. Consumers do not have any face-to-face contact with traders and no real opportunity to inspect food items prior to purchasing them. While detecting food fraud as a consumer is always difficult, it is even more so under these conditions. Further, in e-commerce transactions, consumers may be required to pay in advance of delivery; and in cross-border scenarios, consumers may have few, if any, effective remedies when fraud occurs (see Box 2).

New food sources and production systems

New food sources and production systems can constitute yet another source of vulnerability. For the purposes of this discussion, new food sources include foods that have not been widely consumed, either because their consumption has been historically restricted or they have recently emerged in the global retail space thanks to technological innovation (FAO, 2022a). As these types

BOX 2

Fish fraud in e-commerce

Fish is a common object of fraud. One of the simplest forms of fraud is the substitution of high-value fish for fish of a lower value. It is also one of the forms of fraud that is hardest for consumers to detect. The flesh of many fish species is similar in appearance, taste and texture. It can be difficult to identify or differentiate species once these have been processed or prepared for consumption and presented with flavouring in sauces or in batter.

Increasing numbers of consumers are purchasing fish products via e-commerce platforms, where there is a higher risk of deception through species substitution, as consumers are unable to inspect the product prior to their purchase. An investigation using DNA barcoding of fishery products sold online on a major e-commerce market in Asia found that 85 per cent of the fish samples had been mislabelled (Xiong *et al*., 2016).

Source: Adapted from FAO (2018).

of food are unfamiliar both to consumers and regulators, they provide an opportunity for food fraudsters to exploit novelty to their advantage.

Cell-based foods, which are produced by growing animal-based food products directly from cell cultures and explored as a potentially sustainable alternative to foods from conventional livestock, are a case in point, where the appropriate terminology has yet to be developed. At present, the terminology remains wide open in relation to this technology, its production process and final product (FAO, 2022b). This situation allows fraudsters to make unsubstantiated claims – ranging from hiding the true nature of the production process all the way to exaggerating the potential benefits of cell-based foods. In addition, the legislative instruments that regulate the safety of cell-based foods are nascent and vary widely across jurisdictions, creating potential loopholes for fraudsters to exploit (FAO, 2022c).

The monitoring of food quality – and in fact our very understanding of food – is tied to the criteria used to specify the identity of food items. While such criteria can more readily be established at the beginning of a food chain, where the integrity of an agricultural item is still intact, they become more difficult as a food is processed. For instance, while an orange is readily identifiable for most consumers, it is impossible to visually verify whether water has been fraudulently added to orange juice. That is where food standards come into play, which, by defining a food item, provide a benchmark against which instances of food fraud can more easily be detected (Roberts *et al*., 2022).

The Codex Alimentarius Commission has been setting food identity standards since the start of the 1980s, covering many of the food items commonly targeted by fraudsters. These include standard CXS 12-1981 for honey, standard CXS 33-1981 for olive oils and olive pomace oils, and standard CXS 201-1999 for milk and cream powders. However, standards are limited in their ability to contain fraud because they must also account for natural variability in food, when countries do not have enforcement capacity (i.e. are unable to adequately test and inspect products and production facilities).

Informal food economy

Another source of vulnerability is the informal food economy. Globally, almost 94 per cent of the agricultural sector worked informally in 2016, while 93 per cent of the world's informal employment was in emerging and developing countries (ILO, 2018). By 2019, the situation had barely improved, with the International Labour Organization (ILO, 2023) reporting that nine in ten workers in the agricultural sector worked informally. The informal food sector is a potentially vast source of fraudulent foods. Informal economies in which no verification of food standards takes place can severely hamper the ability of consumers to detect fraud.

Organized crime

Food fraud is also intricately linked to national and international organized crime (Lord *et al*., 2017), and is easier to engage in situations where the cost of doing so is perceived to be low (low penalties or a low probability of being caught). It is easier for fraudulent products to penetrate the legal food system when the oversight of supply chains is weak and corruption prevalent (May, 2017).

In July 2020, Europol – European Union Agency for Law Enforcement Cooperation – and INTERPOL – International Criminal Police Organization – caught 19 organized crime groups involved in food fraud, arresting 406 suspects (EUIPO, 2020). Previously, Italian and Serbian authorities in close cooperation with the European Union Agency for Criminal Justice Cooperation (Eurojust, 2019) discovered and dismantled large-scale transnational fraud in the production and trade of fake organic foods and beverages. Nine suspects of an organized crime group were arrested, and illegal assets worth €6 million and over 1,400 tonnes of adulterated products were seized.

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Conclusion

A comprehensive response to food fraud, guided by food systems thinking may benefit from the creation of a robust legal response. Different countries have encountered success in countering food fraud with a variety of legal responses. Depending on the national context, these approaches, alone or in combination, can provide the regulator with a toolbox to counter food fraud. For the legal responses to be successful, they need to be consistent, and to sit well with the national legal system so as to avoid fragmentation.

Modern food safety legislation offers many advantages in countering food fraud. Such legislation tends to take a holistic approach to the food chain, leaving few gaps for fraudsters to exploit. It also highlights the role of food business operators and makes them responsible for ensuring the safety and authenticity of food products. Other tools include mechanisms to set food identity standards, which can be used as yardsticks to measure the authenticity of a food. Similarly, such legislation can require the information on the labels to be truthful, since not misleading consumers offers another avenue to curbing fraud. While food safety and quality legislation does establish rules for traceability and quality control which can help detect food fraud, fraudsters often remain ahead of the regulator.

In some jurisdictions, other areas of law may also play a role. Consumer protection legislation can allow regulators to target the specific moment in time when food items reach their final consumers. Such legislation typically prohibits misleading practices and creates avenues for consumers to seek remedies. Food fraud frequently also entails a breach of contract – as the fraudster would be providing goods not in conformity with their contract – thus bringing it under the purview of domestic contract law and allowing for private enforcement. Criminal law can also be a valid avenue for the prosecution and sanctioning of food fraud, with food fraud sometimes incorporated in national criminal codes.

Laws alone, however, are not sufficient. It is crucial to match ambition with available resources to ensure that the rules adopted are implementable and enforceable.

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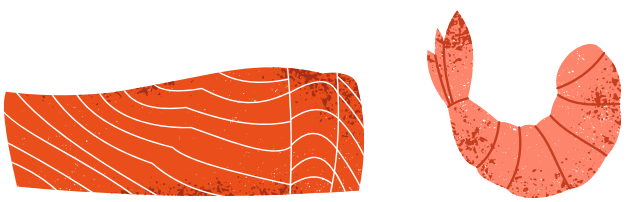
Modern food safety legislation offers many advantages in countering food fraud. Such legislation tends to take a holistic approach to the food chain, leaving few gaps for fraudsters to exploit.

This requires, first and foremost, using a participatory approach when crafting rules, so that the voices of all stakeholders are reflected in the legislative process, and that an open and transparent conversation is had on the available budget and implementing capacity. Modern food safety laws increasingly assign a greater role to the private sector to combat fraud – placing more responsibility on its shoulders but also providing it with the necessary resources to be effective in this space. Private-sector actors have both the knowledge and motivation to act effectively to curb food fraud, as this ensures fair competition.

Another useful approach is for regulators to support private-sector strategies that seek to control and mitigate fraud in national, regional and global value chains. There is ample room for the strategic use of private initiatives to control food fraud, especially with regard to transnational contracts. Self-regulation, co-regulation, as well as other cooperative approaches amongst private and public sector actors, can be a helpful complement to the more classic legislative approaches. They can take the form, for instance, of the development of best practices by food companies. Private-sector strategies should be developed using voluntary, participatory, and transparent processes, so as to effectively responded to the multifaceted problem of food fraud.



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1. *Proposed Draft Guideline on the Prevention and Control of Food Fraud*, CAC document CX/FICS 23/26/6, 26 June 2023.
2. *Ibid.*
3. A national food control system ensures that food available within a country is safe, wholesome and fit for human consumption, conforms to food safety and quality requirements and is honestly and accurately labelled as prescribed by the law.

CHAPTER 5

A snapshot of illegal practices in the trade in seeds and associated challenges

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Abstract

Seed is the most important input in crop production. Reliable, high-quality seeds are vital to agriculture and the food supply chain. High-quality seeds enable farmers to boost crop productivity, improve livelihoods and feed a growing world population. In recent years, there has been an increase in illegal seed practices. Many of these practices constitute a violation of intellectual property rights, such as trademark infringements, including the production of counterfeit seeds, the illegal reproduction of seeds in violation of a plant breeder's right (PBR) and the theft of proprietary material.

This chapter demonstrates through three case studies the impact of illegal practices on breeders, farmers, consumers, the seed value chain and the entire agricultural production process. It highlights the need for cooperation among all actors involved in the global seed supply chain, emphasizing the crucial role that must be played by regulatory authorities at the national, regional and international levels and the actions required to better combat illegal seed practices in future.

Introduction

Seed is often referred to as the heart of agriculture. It is the foundation on which global food production depends. The genetic potential and quality of the seed directly influences crop yield and crop resilience and with that farmers' capacity to grow their yields and cope with climate change. High-quality seeds are thus essential to providing a solution to environmental and societal challenges and to meet the ever increasing demands of a growing population.[1]

However, a concerning rise in illegal seed practices threatens global food security, the livelihood of farmers and trust in a professional seed industry.[2] Furthermore, illegal practices impact worker safety, and illegal work practices can violate labour laws. Sometimes such occurrences are also associated with other forms of illegal activities, such as tax evasion and the circulation of fraudulent crop inputs (e.g. fake crop protection products and seed treatments).

Seeds are unlike other agricultural inputs. Seeds have great economic value derived from the high investment in R&D required to breed them and the innovation they embody, as well as their societal value to farmers and food systems (IHS Markit, 2019). At the same time, seeds – and the plants grown from them – are self-reproducing material, which makes them easy to copy and thus vulnerable to intellectual property infringements and other illegal practices. Therefore, seeds require intellectual property protection, which is mostly provided through plant breeder's rights (PBRs), and breeders must apply for such protection as a first line of defence against infringement.

For many crops, the seed production and distribution chain is long and involves multiple actors until the seeds reach the grower or farmer. This further complicates the situation and increases the likelihood of illegal practices. The global dimension of the seed sector acts as a further layer of complexity, since the different phases of breeding and seed production can occur in different locations around the world.

Diversity of illegal seed practices

Several decades of experience have shown that fraudulent seed practices are extremely diverse and are often not limited to a single *modus operandi* but instead encompass a spectrum of illicit activities. In addition, fraudsters are constantly in search of new and innovative ways of engaging in illegal practices, making this a challenge for regulatory authorities.

While it is clear that growers and breeders suffer from illegal seed practices, many illegal practices also end up deceiving farmers who buy fraudulent seed products in the belief that they are genuine. Historically, the seed sector has been founded on trust and confidence, with farmers believing in the quality of the seeds that they purchase. However, the yields that fraudulent seeds deliver are sometimes only a fifth of their real potential for certain maize varieties or a third in the case of rice. The trustful relationship between the seed supplier and the farmer is harmed, and the livelihood of a smallholder farmer can even be put at risk when such scenarios materialize.

While there is no global overview of the extent and diversity of illegal seed practices, a study conducted by the ISF in 2018 showed that in some countries during recent growing seasons, more than 50 per cent of seeds sold to farmers were illegal or counterfeit.[3]

The diverse illegal seed practices require different ways to address them. The following list provides an overview of the types of illegal seeds practices witnessed in recent years, which can be divided into two broad categories: intellectual property infringements and regulatory offences.

Examples of intellectual property infringements include:

- trademark infringement (i.e. unauthorized use of protected labels, logos or other signs for labelling, packaging, advertising or selling of seeds – be it domestically or by import/export);
- violation of a PBR (e.g. unauthorized reproduction/ propagation, distribution or sale of seed protected by a PBR).

Examples of regulatory offences include:

- mislabelling of seed bags with false variety names;
- misrepresentation of grain harvested from hybrids and its sale as genuine hybrid seed (without the use of the original parent line);
- selling of seeds with false seed certificates with minimum seed quality standards being unmet, such as varietal purity or germination thresholds (i.e. certificates not issued by a governmental authority);
- commercialization of seeds not registered in the national or regional variety catalogue despite the market authorization requirements in place.

Consequences of illegal seed practices

Fraudsters within the global seed supply chain are often actors that no one would suspect. They can be fraudulent companies that have managed to insert themselves in the supply chain and that free ride on the investments made by professional seed companies, or even their customers. Occasionally, seed fraud is part of larger organized crime operations. The consequences of illegal seed practices are manifold and extend far beyond the immediate economic losses incurred by breeders. Illicit activities threaten consumer health, global food security, sustainable agriculture in several ways (see Table 1). Moreover, these practices are often connected with criminal activities, such as tax evasion, corruption, economic espionage or even labour exploitation, all of which can impact societies negatively.

How to address illegal seed practices: investigation, prosecution or other?

Addressing the escalating issue of fraudulent seed practices requires a clear and enabling legal and policy framework as well as concerted efforts by governments, all stakeholders in the global seed value chain and the broader agricultural community. Three case studies outline this in Boxes 1-3.

These cases studies are emblematic of weak regulatory enforcement (see Box 1) and new types of infringement committed on a massive scale (see examples of grafting in Boxes 2 and 3). They required years of organized action and collaboration between breeders to achieve an outcome. They illustrate how a few key steps which the industry has identified can play an important role in combating illegal seed practices (see Table 2).

Country preparedness

The investigation and prosecution of illegal seed practices continues to be challenging. Country preparedness falls into three broad categories:

- countries without a specific legislative framework in place;
- countries with a legislative framework in place but with limited enforcement capacity;
- countries with both a legislative framework in place and enforcement capacity, but that may still suffer from other factors which discourage enforcement.

In the first instance, infringers face zero risk. In the second instance, public authorities may lack awareness of the issues involved, and courts may not be equipped to deal with illegal seed practices. In the third instance, where police and prosecutors are aware of the risks of illegal seeds and are trained to tackle them, enforcement challenges may still persist if the cost of legal action is prohibitively high or the fines for convicted infringers are so low that they do not act as a sufficient deterrent for illegal activity.

In general, policymakers need to be sensitized to the impact of illegal seed practices and urged to put in place the necessary legislative frameworks and tools for enforcement. Considering the impact that illegal seeds have on the health and safety of human, animal and plant life, as well as their impact on the entire global agricultural value chain, it is vital that this issue be prioritized.

TABLE 1

Consequences of illegal seed practices and the effects

Consequence	Effect
Reduced crop productivity	Farmers who unknowingly purchase counterfeit seeds or seeds not meeting minimum regulatory quality requirements can experience reduced crop yields, resulting in less food production
Economic hardship for farmers	Losses incurred due to fraudulent seed practices can push farmers into financial distress, jeopardizing their livelihoods and the well-being of their families
Loss of confidence in the seed sector	The circulation of illegal seeds can erode farmers' trust in the formal seed sector, leading to decreased reliance on formal seed markets and reduced access to quality seeds
Threats to innovation	Fraudulent practices and the economic loss they generate discourage investments in seed R&D, hindering the introduction of new and improved seed varieties
Risks to plant health	Seeds moving across borders without fulfilling the necessary requirements or having the required documentation risk spreading pests and diseases
Food and feed safety risks	Seeds which do not meet minimum quality and health standards may result in crops with lower nutritional value or greater susceptible to disease, impacting the safety and nutritional content of the food and feed supply chains

TABLE 2

Combating illegal seed practices

Action	Effect
Awareness raising and education	Promoting awareness among growers and farmers of the need to respect the intellectual property of purchased varieties. Informing growers and farmers of the risks associated with fraudulent seeds and educating them on how to identify and purchase legal and high-quality seeds
Collaboration among stakeholders across the entire seed value chain	Fostering collaboration among stakeholders, including plant breeders, seed producers, processors, traders, distributors and regulatory bodies, to: ▪ share information ▪ establish best practices ▪ strengthen enforcement on the ground Encouraging international cooperation to combat cross-border seed fraud
Enhanced enforcement mechanisms	Encouraging law enforcement agencies to prioritize and invest in the investigation and prosecution of fraudulent seed practices, targeting both individuals and criminal organizations (e.g. work by the National Intellectual Property Rights Coordination Center of the United States)
Strengthened legal frameworks	Encouraging governments to establish and maintain strong legal protection for seeds and plant varieties through laws and regulations, and enforcing legal frameworks to prevent illegal seed practices
Seed certification and traceability	Implementing robust seed certification and traceability systems to ensure the authenticity and high quality of the seeds exchanged throughout the supply chain
R&D	Investing in R&D and new technologies to develop advanced seed testing and verification methods for improved detection of fraudulent seeds

BOX 1

The risks of weak enforcement

Most crops in countries across South America must be certified by the responsible governmental authorities prior to their marketing and sale. However, farmers in a number of countries have been found to sell seeds that have not undergone the formal certification process, and have also breached breeders' rights. This means that seeds can enter the marketplace without having undergone official controls, with the risk of breaching intellectual property rights, or not meeting quality and/or health and safety standards. Some farmers have also been found in violation of the national contractual systems that has been put in place to collect remuneration for the use of farm-saved seed.

Such illegal practices can be difficult to control; and while evidence of these practices have been found in South America, they exist across most continents and must be addressed.

Better enforcement can be achieved through amendments to seed laws, which permit breeders to seek injunctive relief without having to initiate an administrative procedure through competent governmental authorities, or which give breeders the right to be remunerated for the use of farm-saved seed. Beyond an improved legislative framework, developing a variety of identification methods that can be used to control the legal origin of a seed can also lead to more effective controls.

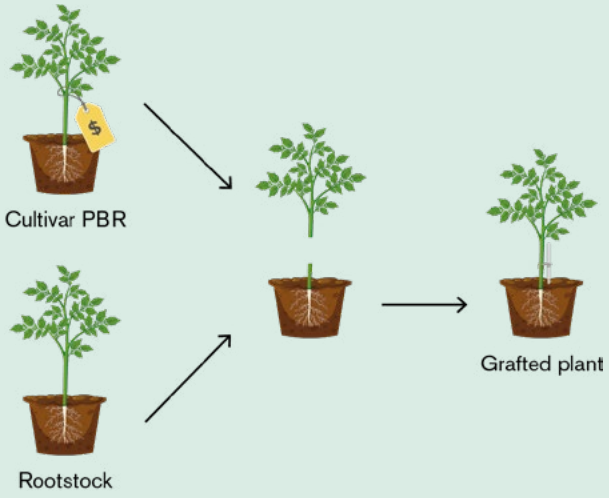
BOX 2

Cuttings and stubs used for illegal reproduction

In 2014-2015, several seed companies discovered that vegetative reproduction of their protected tomato varieties was taking place on a massive scale across several countries in Southern Europe. Careful investigation revealed that grafting by plant raisers and growers was being used for plant reproduction, which made it an illegal activity, causing significant economic damage to seed companies.

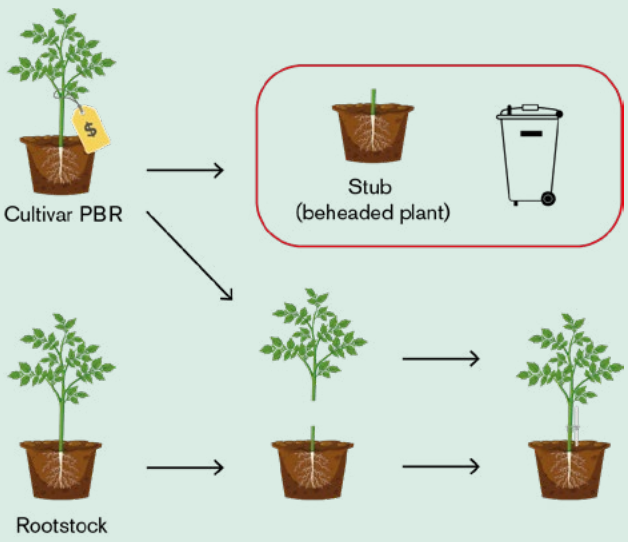
Grafting is the act of joining two plants together. The upper part of the graft (the scion) becomes the top of the plant, and the lower portion (the understock) becomes the root system or part of the trunk. It is illegal to graft tomatoes from protected varieties unless the proper process is followed (see (a)).

(a) Legal grafting process



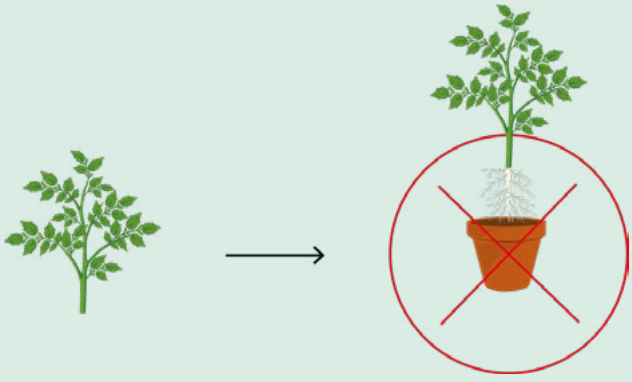
An important condition for grafting varieties protected by plant breeder's rights (PBRs) is that only one grafted plant be produced from a protected seed. If more plants are produced, this qualifies as "propagation", which requires specific authorization of the holder of the PBR. This means that when a cutting is taken from a plantlet and grafted onto a rootstock, the remaining part of the plantlet – called the stub – must be discarded (see (b)).

(b) The beheaded cultivar (stub) must be discarded after grafting



In various Southern European countries, however, the plant growers did not throw away the stubs but made additional cuttings from the cultivars and grew them, thus creating second and even third generation plants – a profitable business for infringers (see (c)).

(c) Illegal production of plants using cuttings



PBR holders suffered significant economic damage as a result of this practice, and mobilized to organize inspections at the sites of the infringement together with the local police, acquiring samples of the potentially illegal genetic material. Prior to taking legal action, breeders wanted to know that their scientific and legal understanding of the situation was correct and that this activity truly constituted an infringement of PBRs.

Three well-known agricultural universities were requested to perform technical analyses on the acquired samples to determine whether the varieties had remained the same after grafting. The three universities confirmed in parallel that the practice at issue constituted the reproduction of a protected variety. For the holders of the PBRs, it was therefore time to act.

In reaction, the breeders first sent a letter to all growers through their national associations asking them to stop the illegal practice. While some did indeed stop, many did not and therefore the breeders decided to take further action. With the help of various official institutions, such as agricultural inspectorates and public agricultural research centres that undertake DNA analysis for variety identification, breeders managed to gather sufficient evidence for the launch of criminal court cases.

A total of 18 cases concerning the vegetative propagation of tomato plants were referred to the inspection authorities in one of the countries concerned. Three-quarters of these cases resulted in an administrative sanction, while only two cases resulted in a criminal sentence. It is important to highlight that:

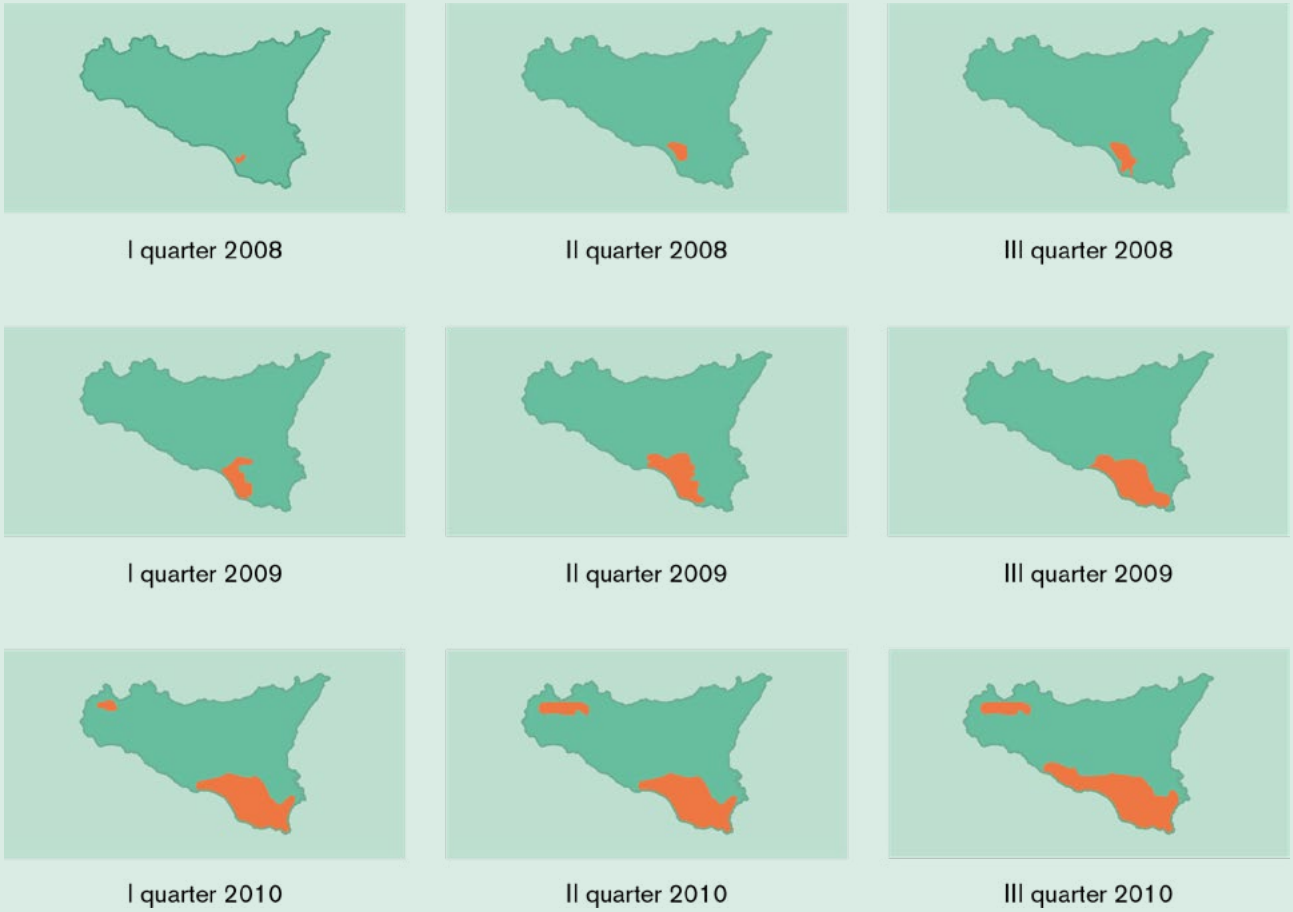
(i) most courts lacked knowledge of PBRs and how to prosecute such infringements;
(ii) the threshold for criminal sentences is generally quite high in most legal systems;
(iii) slow justice systems have sometimes meant that the cases were prescribed (i.e. the timeframe in which prosecution must take place had lapsed).

BOX 3

Spread of the Pepino Mosaic Virus in Sicily as a result of illegal vegetative reproduction

In 2008, the illegal vegetative reproduction of tomatoes in Sicily was widespread. Infringers constantly try to keep down costs, and by doing so increase the risk of illegal grafting (see Box 2). The illegally reproduced tomato varieties facilitated the quick and devasting spread of the Pepino Mosaic Virus across the main areas of tomato cultivation in Sicily, negatively impacting production for over two years.

Spread of the Pepino Mosaic Virus in Sicily, Italy, 2008-2010



Conclusion

In a world where agricultural production is critical to ensuring global food security, and where seeds are the starting point of the production process, it is crucial that illegal seed practices be weeded out. The ISF, which represents the private seed sector globally, is strongly committed to fighting infringements and seed fraud more broadly and to engaging externally with all relevant partners in doing so.

Moreover, in a world where the seed industry has gone global, joint efforts with international organizations, such as the WTO, can be particularly critical in the field of intellectual property. However, the most important actions that can be taken to combat seed fraud remain at the national level. Governments must create effective regulatory frameworks to protect the holders of PBRs and to ensure enforcement.

> "Illegal seed practices discourage innovation.

The impact of illicit trade in seeds and seed fraud can be significant for farmers, the agri-food value chain and global food security. Most importantly, illegal seed practices discourage innovation. By raising awareness of the problem, fostering collaboration across all actors in the seed value chain, strengthening legal protection and enhancing enforcement, the world can protect the integrity of the seed sector and ensure that farmers have access to reliable, high-quality seeds. Ultimately, this will be the real guarantor of a safe, stable and reliable global food system

References

Food and Agriculture Organization of the United Nations (FAO) (2018), *The Future of Food and Agriculture: Alternative Pathways to 2050*, Rome: FAO.

IHS Markit (2019), *Analysis of Sales and Profitability Within the Seed Sector*, IHS Markit.

International Bank for Reconstruction and Development (IBRD) (2017), *Enabling the Business of Agriculture 2017*, Washington, D.C.: World Bank Group.

Endnotes

1. The main challenges world agriculture will face in the coming decades is producing more food for the estimated 9.7 billion people in 2050, while at the same time combating poverty and hunger, using scarce natural resources more efficiently and adapting to climate change (FAO, 2018).
2. For an overview of seed regulations, see IBRD (2017).
3. Based on survey feedback from 77 respondents.

CHAPTER 6

Protecting the international food supply chain from fraud

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Abstract

Global trade has both brought significant benefits to reducing hunger around the world, but it has also increased the complexity of the food supply chain. This complexity is a strong enabler for food fraud. The more links across the supply chain and the longer the distance between where food is originally grown or produced and finally consumed provides opportunities for fraudsters to act for their benefit. The role of the WTO is fundamental in helping to reduce fraud. The WTO's Trade Facilitation Agreement and the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement) sit at the heart of global trade in food and help, along with other international agreements, standards and enforcement bodies, strengthen our global food supply while reducing cross-border food fraud activity.

This chapter argues that it is very important for all stakeholders of the food system to work together to keep the system resilient and safe from fraudulent activity, with the final responsibility for keeping consumers safe ultimately resting with the food producer.

Introduction

Food fraud is nothing new – it has been around for centuries. Going back as far as the early 1500s and the beer purity laws in Bavaria, government and producers have been working together to combat fraudulent activities by unscrupulous actors.

Collaboration between the public and private sector is fundamental to combat food fraud and ensure the safe supply and trade of food around the world. As we work to feed the growing global population while meeting consumer demand for different types of food, trade in food and the complexity of food supply chains continues to grow. This opens the food sector up to fraudulent activity along the food supply chain, and we need to work together to reduce fraud as much as reasonably possible by strengthening the food supply system.

International food trade and the impact of food fraud

The complexity and internationalization of food supply over the last 50 years has helped feed the world. However, this complexity also opens up the food sector to fraudulent activities. There are many high-profile examples such as the horsemeat scandal in Ireland and the United Kingdom in 2013 and the toxic vegetable oil scandal in Spain in the 1980s. Economic pressures, complex supply chains, consumer demand and unscrupulous actors all played a role in many of the food fraud scandals over the past decades. But why does this continue to happen and why is it so hard to detect?

One of the aspects that makes fraud so hard to detect is that fraudsters' greatest asset is time. The longer a fraud runs, the more return they make. Therefore, it is to fraudsters' advantage when the fraud remains undetected as long as possible. This is one of the key areas where preventing food fraud and maintaining food defence differ. In food defence, the aim is to protect food products from intentional adulteration from acts to shock the general population (i.e. a terrorist attack or the poisoning of a salad bar), cause harm and undermine consumer confidence in the food system. In food fraud, the motivation is to maximize profit by disguising the act. Hence the complexity, at times, to identify fraud.

Another key challenge is testing for authenticity. Testing is a very valuable tool to identify fraud. However, the problem is that you need know what you are testing for. Furthermore, in some cases tests do not even exist. Therefore, testing alone is not a solution – "we cannot test our way out of the problem" as the saying goes. It is a very important tool in a regulator's toolkit, but it is part of a larger set of tools that needs to apply to combat fraud.

The impact of food fraud can be extensive and costly. Even though food fraud may not necessarily lead to a food safety risk or incident, the impact can be vast, resulting in financial loss, damage to brand reputation, loss of consumer trust, and inability to meet a number of the United Nations Sustainable Development Goals (including, but not limited to, SDGs 2, 3, 6 and 12).

Finally, global trade has both brought significant benefits to reducing hunger around the world but also increased the complexity of the food supply chain. This complexity is a strong enabler for food fraud. The more links across the supply chain and the longer the distance between where food is originally grown or produced and finally consumed provides opportunity for fraudsters to act for their benefit.

Therefore, it is very important for all stakeholders involved to work together to keep our food system resilient and safe from fraudulent activity. In the case of international trade specifically, when food crosses borders there is a great opportunity for intervention by national authorities. Customs authorities play a key function in helping keep our food system safe from fraudsters, as they are in a position to verify authenticity at national entry points (i.e. borders by land, sea and air). However, like with testing, customs officers cannot check every food shipment coming into a country – especially as just-in-time logistics continues to grow to improve efficiencies, ensure freshness of food products and meet customer demand for varied food products. Therefore, action is needed from all actors along the food supply chain, including the private sector.

Private sector responsibilities and action

The final responsibility for keeping consumers safe from food fraud and adulteration is the food producer. It is their responsibility to give customers what they say they are selling them. And that is true across all links of the food supply chain: whether from farmer to collection or distribution centres, ingredient suppliers to food manufacturers, or manufacturers to retailers, everyone along the food supply chain has a responsibility to ensure the authenticity of the food people consume. Customs authorities, law enforcement and regulators all have a role to play as well but the overall and final responsibility rests with the food company. And even though food fraud may not result in a food safety risk, there is a responsibility on all food companies to provide customers, irrespective of whether it is a business-to-business or business-to-customer relationship, with the food product they are being promised.

The private sector is very broad and different companies are at different stages of their journey to avoid, reduce, minimize or eliminate food fraud. Some of the actions taken by leading companies around the world include, but are not limited to, those listed in Table 1.

It is also important to recognize that food fraud does not sit in a silo. It is part of a bigger picture of food integrity (fraud, defense, safety, quality).

A great resource for information on food fraud prevention, analytical methods and food fraud incidents is the Food Authenticity Network (FAN).[1] Set up in response to the recommendation in the Elliott Review after the horsemeat scandal in the United Kingdom, FAN is a free open-source resources that both authorities and private sector companies can use as a one-stop shop for all their needs to maintain the authenticity of food products.

> “
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> The final responsibility for keeping consumers safe from food fraud and adulteration is the food producer.

Agreements, standards and compliance, and the WTO’s role

Fraud is first and foremost a legal compliance issue. It is illegal and therefore interventions require police, the courts and other authorities to work with industry to identify, investigate, arrest and prosecute offenders. This becomes more complex in terms of trade across borders as mentioned earlier. Varying legal systems, corruption, language and cultural barriers all contribute to this complexity. Nonetheless, we cannot turn a blind eye to fraud.

The role of the International Criminal Police Organization (INTERPOL) and the European Union Agency for Law Enforcement Cooperation (Europol) joint operation OPSON,[2] the World Customs Organization and the WTO is very important, acting both as a deterrent and an intervention. Cooperation and collaboration between these organizations and the food companies that are targets of fraud can significantly reduce fraudulent activities across the food supply chain.

The role of the WTO clearly is fundamental in helping to reduce fraud. The measures in the WTO’s Agreement on Trade Facilitation and the SPS Agreement sit at the heart of global trade in food and help, along with other international agreements, standards and enforcement bodies (e.g. customs, police), strengthen the global food supply while working hard to reduce cross-border food fraud activity. These two WTO agreements provide a key tool in the armour of national authorities to take action when food fraud is identified.

Beyond the legal interventions, standards play an important support role as well to reduce fraud. This starts with the Codex Alimentarius, which provides the basis for national regulatory requirements around the globe and is recognized by the WTO under the SPS Agreement as an international standardizing body. Beyond methods for sampling and testing, the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) has set up an electronic working group to review other Codex texts and to create a definition and scope for food fraud, food integrity, food authenticity and related terms. This work is currently in progress, via the electronic working group, to which SSAFE provides technical input.

TABLE 1

Solutions to help combat and reduce food fraud

Solutions	Characteristics
Vulnerability assessments	A number of food businesses undertake regular assessments of their business to identify where they may be vulnerable to fraudulent activities, both within their own organization as well as along their entire supply chain (both up and down). The Global Food Safety Initiative (GFSI) – a non-profit association of industry experts committed to improving food safety along the value chain – has made this a requirement as part of its recognized certification programme. The GFSI approves a number of food safety certification programmes covering farming, packaging, storage and distribution. To help the food industry meet these new requirements, SSAFE developed a free science-based tool, in partnership with Wageningen University, to help any food business anywhere in the world conduct a vulnerability assessment to identify where their weak spots are in terms of protecting themselves against fraud.*
Mitigation plans	Once companies identify where they may be vulnerable, they need to prepare mitigation plans to close any potential loopholes. Offsetting opportunities and motivations to commit fraud against the controls a company has in place is one of the best ways to combat fraud, assuming the control that are put in place are effective.
Testing	Testing plays a key role to verify the authenticity of food and identify potentially fraudulent activity and is used widely by leading businesses around the world. With the acceleration of technologies such as whole genome sequencing, the ability to detect fraud is improving rapidly. Testing is a key tool in the anti-fraud toolkit but, as mentioned earlier, food business cannot and should not rely on testing alone. Food businesses cannot test their way out of the problem.
Supply chain management	Supply chains play a major role in the ability for fraudsters to operate. Leading food companies around the world have developed supplier quality programmes and implemented supply chain controls to help ensure food safety but also help reduce fraudulent activities within their supply chains. Working with suppliers to raise awareness of the food fraud problem and providing guidance, where possible, helps support smaller food businesses strengthen their food authenticity processes and systems. This is important as it helps not only disseminate knowledge but also strengthen the food system along the entire food supply chain, including for smaller businesses as well as those companies operating in countries where knowledge and resources may be more limited.
Governance and risk systems	One of the key internal tools that certain leading food businesses around the world implement are effective governance systems. There is anecdotal evidence (not scientifically studied or proven) that approximately two-thirds of fraud in the private sector (not exclusive to food) occurs within the direct influence and sphere of control of the company (i.e. employees and contractors). Effective governance systems developed based on international best practices such as the International Organization for Standardization series ISO 37000:2021, *Governance of Organizations*,** (which includes management systems for anti-bribery and whistleblowing) can be of great help to the private sector.

Data and technology	Data and technology are key tools to help both the public and private sectors combat fraud. Data analytics and emerging artificial intelligence technologies are being used by leading businesses to help identify potential areas of risk as well as solutions. The sharing of data between the public and private sectors can play a key role in combating fraud. There are many new and emerging technologies that can assist in the prevention of food fraud (e.g. blockchain, predictive diagnostics). SSAFE has developed a free guide, *Industry 4.0 for Food Safety*,*** which can be of assistance in the fight against food fraud. Finally, technological advancements in testing methodologies and fraud identification systems help determine what we need to look for and identify fraudulent activity.
Education and training	Educating suppliers, employees and customers on food fraud is another tool in the toolkit to help combat fraud and is being done by leading businesses around the world. Education on how to identify fraud, spot internal weaknesses, set up mitigation systems, and how to communicate internally and externally regarding fraud can help prevent fraud from occurring or help it be identified.
Organizational culture	One of the strongest links in fraud can be found with the organizational culture – and leading businesses are working to change this culture. Since a significant amount of fraud may be caused within the direct sphere of influence and control of a food business, the stronger a food company's culture generally (and food safety culture in particular), the less likely that food fraud incidents will happen within the company itself (see Box 1).
Collaboration	Particularly in the case of trading food, collaboration between the public and private sectors is fundamental, and leading food businesses are trying to boost this collaboration. Borders provide a key opportunity for authorities to verify authenticity. Even though they cannot check everything, spot checks go a long way in helping to identify fraud. Furthermore, most companies (i.e. the good actors) appreciate the opportunity to work with authorities to help ensure their product remains safe from fraudulent activities.

* The SSAFE tool (which is available in ten languages) can be downloaded for free at https://www.ssafe-food.org/tools/food-fraud-vulnerability-assessment-tool.

** See https://committee.iso.org/ISO_37000_Governance.

*** Available from https://www.ssafe-food.org/standars/industry-4-0-and-food-safety-guide.

BOX 1

Resources available from SSAFE

To help strengthen food safety culture across the food industry, SSAFE provides a free assessment to measure the people element of a food business's culture.* Together with the British Standards Institution, SSAFE co-sponsored the development of PAS 320:2023, *Developing and Sustaining a Mature Food Safety Culture: Guide*, which is a free practical guide to implementing a strong food safety culture in a food business.**

Additional free resources from SSAFE include:

- *Food Fraud Vulnerability Assessment Tool****
- Food Fraud Vulnerability Assessment Training Modules+
- SSAFE Lecture Series in Food Crime Prevention++
- *Industry 4.0 and Food Safety Guide*+++

* *Food Safety Culture Tool*, available at https://www.ssafe-food.org/tools/food-safety-culture-tool.

** Available at https://www.bsigroup.com/en-GB/standards/pas-320.

*** Available at https://www.ssafe-food.org/tools/food-fraud-vulnerability-assessment-tool.

+ Available at https://www.ssafe-food.org/capacity-building/food-fraud-vulnerability-assessment-training-modules.

++ Available at https://www.ssafe-food.org/masterclasses/ssafe-lecture-series-in-food-crime-prevention.

+++ Available at https://www.ssafe-food.org/standars/industry-4-0-and-food-safety-guide.

Besides the Codex Alimentarius Commission, there are other standards-setting organizations that provide good practices and guides for small and medium-sized enterprises (SMEs), such as the International Organization for Standardization (ISO) and the European Committee for Standardization (CEN), the Global Food Safety Initiative and SSAFE. Most of the focus is on analytical methods, but there are good practice guides and tools available as well. These are very useful, especially for SMEs in the food sector in emerging markets, because by strengthening from the bottom up (e.g. smaller suppliers operating in developing markets), the greater is the opportunity to reduce the risk and exposure to food fraud.

Joint responsibility and public–private partnerships

Both the public and private sector have done a lot of work over the past decade to strengthen food supply chains and combat food fraud. It is important to recognize the efforts of all key stakeholder groups in the fight against food fraud:

- regulators;
- intergovernmental organizations (Codex Alimentarius Commission, Food and Agriculture Organization of the United Nations, WTO);
- law enforcement (customs, police);
- food businesses;
- suppliers;
- retailers;
- standards setters (Codex Alimentarius Commission, ISO)
- consumer groups and media.

Legal interventions play a key role in reducing food fraud. Customs and law enforcement are fundamental to the food authenticity system. A close working relationship between law enforcement and the private sector is very helpful in ensuring fraudsters, especially those operating across borders, are arrested and prosecuted, which in turn can serve as a deterrent. The higher the risk that a fraudster may be caught, the less likely they are to try to commit fraud in the first place.

Many different organizations around the world continue to work either directly or indirectly on combating food fraud. The interlinkages between many of these organizations are fundamental to help reduce the problem and impact of fraud in the food sector, and many of these organizations already work together.

Conclusion

There are many organizations working to combat food fraud around the world. The more often and the better these stakeholders work together, the more likely it is that fraudulent activities across the food sector will be reduced. This especially includes the WTO when it comes to matters of international trade. We believe the WTO can, should and does play a fundamental role alongside other key stakeholder to strengthen the supply of authentic food.

Through its Agreement on Trade Facilitation and the SPS Agreement, the WTO has an opportunity to bring together governments, the private sector, law enforcement and technical experts from around the world to work together on identifying gaps and proactively develop the necessary tools (both legislative and otherwise) to combat food fraud across international borders. Stakeholders need to work together to develop fraud prevention methods and tools that help reduce fraud because a problem for one is a problem for all. We have a joint responsibility and together we are stronger.

Endnotes

1. See https://www.foodauthenticity.global (SSAFE is a funding partner of FAN).
2. Operation Opson – which means food in ancient Greek – is an annual law enforcement operation coordinated jointly by Europol and INTERPOL that aims to remove counterfeit and substandard food and drinks from the market and dismantle the organized crime groups involved.

CHAPTER 7

Bringing criminal justice to illicit trade in food and food fraud

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Abstract

This chapter presents an overview of food fraud cases through a criminal justice lens, primarily focusing on the varied tactics employed by criminals to infiltrate the legitimate food supply chain and market fraudulent food products to unsuspecting consumers. These deceptive practices typically involve the manipulation of legal entities and operations. Our findings emphasize the need for a multifaceted criminal justice response, one that considers the complex operations of these criminals to devise effective countermeasures. The role of emerging technologies in facilitating law enforcement investigations is also highlighted, underscoring their potential to support successful criminal investigations and prosecutions.

Introduction

An analysis of food fraud cases through a criminal justice lens requires understanding the *modus operandi* used by criminals to market their food products to reach final consumers. Criminal methods not only exploit vulnerabilities in the food supply chain but also capitalize on criminal control or influence over legitimate operations within the broader economy. Understanding this background is vital to helping the WTO and other international organizations assess how best to contribute to addressing this phenomenon.

This chapter presents three emblematic cases relating to the production and marketing of fraudulent food products, including beverages, which underscore the multifaceted nature of these crimes.[2] It describes the criminal justice response to these illicit activities, including successful investigations and prosecutions.[3] As the facts of each case are unique, so are the techniques and strategies employed by law enforcement agencies, tailored to the specific circumstances and national legal frameworks. Finally, the chapter also delves into the role of technology in detecting and combating food fraud,[4] demonstrating its invaluable contribution to contemporary investigative practices.

Modus operandi of emblematic cases of food fraud

Criminals engaged in food fraud do not follow a standardized approach or *modus operandi* but rather use and adapt diverse tactics for their illicit trade. Additionally, perpetrators of food fraud belong to various typologies of illicit actors, ranging from individuals setting up small individually run illicit operations to fully fledged criminal organizations.[5]

However, most illicit actors and operations of food fraud share one common element: the need to deceive consumers by presenting fraudulent food products as genuine. Given the health risks and potential dire consequences, including death, for people who consume fraudulent food products, it is improbable that consumers would knowingly purchase food or beverages of suspicious origin.[6] Beyond this common element of deception, however, the motivations, tactics and strategies of criminals pursuing food fraud activity vary widely, underscoring the complex and multifaceted nature of this category of crimes against the public.

For confidentiality reasons, the three cases[7] presented in this chapter do not indicate the country where the food fraud occurred, nor the brand of the food products discussed. Furthermore, the gender-neutral pronoun "they" is used for the illicit actors.

In analysing food fraud cases, especially when fully fledged criminal organizations are directly involved, the *modus operandi* varies depending on the primary purpose of the food fraud activity: whether the food fraud activity complements already ongoing criminal activities to maximize profits or whether the food fraud activity itself is the main goal of the criminal or criminal organization.

Examples of food fraud to maximize profits, such as Case B, often occur in geographical areas where the presence and strength of criminal organizations are traditionally high. Organized crime groups have always sought to dominate or influence legitimate business operations. Their objectives often intertwine money laundering with diversifying profit streams and investment avenues. This infiltration can take different forms, from direct or indirect control of legal businesses to seemingly legitimate acquisition of companies.[8]

Criminal reinvestments may also target whole business entities operating within the supply chain, from wholesale distribution to supermarkets and retailers. In all these instances, criminal organizations that acquire the control of legal operators in the food supply chain, including restaurants and bars, gain direct access to the food supply chain or final delivery point. This allows them to insert their fraudulent products at any stage of the food supply chain to unsuspecting consumers. While money laundering and the diversification of investments remain the primary goals of criminal groups in these instances, marketing fraudulent food products maximizes their profits, thus complementing their existing criminal investments.

In other cases where the food fraud itself is the main goal, such as in Cases A and C, criminals operate at a lower level of infiltration into the food supply chain. Criminal

BOX 1

Case A: Alcohol

This case presents a food fraud operation that was easy to set up and that capitalized on a vast network of legitimate and underground alcohol vendors for distribution. Tragically, the unsuspecting public who consumed the fraudulent alcohol faced grave health and safety consequences: dozens lost their lives, with many more suffering adverse health repercussions, such as blindness and kidney failure.

The two main illicit actors engaged in the production of alcoholic beverages* by using an ingredient not fit for human consumption. The main ingredient of alcohol is ethanol, which is prepared by fermentation. A similar ingredient, methanol, is cheaper, processed synthetically and highly poisonous for human consumption. The illicit actors created a poisonous alcoholic mixture comprised of 50 per cent ethanol and 50 per cent methanol, assuming that the presence of ethanol would eliminate the negative effects on human health caused by methanol.

The illicit production actors, who were not licensed to sell alcohol, sold several thousand litres of their poisonous mixture to another illicit actor who was an unscrupulous distributor of alcohol and alcoholic beverages. The unscrupulous distributor then resold the poisonous mixture as genuine alcohol fit for human consumption to several operators, some legitimate and others operating on the black market. As a result, the poisonous mixture was widely distributed, with several legitimate operators using it to produce alcoholic beverages that reached supermarket shelves. Meanwhile, operators on the black market, either knowingly or unknowingly, also sold illicit alcoholic beverages that were produced using the poisonous mixture. More than 20 defendants were successfully prosecuted and found guilty when the case was presented in court.

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Tragically, the unsuspecting public who consumed the fraudulent alcohol faced grave health and safety consequences: dozens lost their lives, with many more suffering adverse health repercussions, such as blindness and kidney failure.

This case shows a *modus operandi* which was easy to implement. Launching the criminal operation simply required the two main illicit actors to find an unscrupulous distributor who was willing to illegally purchase their poisonous mixture and redistribute it as genuine alcohol, with grave and far-reaching consequences for public health.

* On the overall issue of fraudulent alcoholic beverages, INTERPOL created a dedicated web page, available at https://www.interpol.int/Crimes/Illicit-goods/Shop-safely/Unsafe-alcohol.

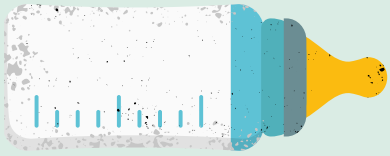
BOX 2

Case B: Baby formula

This case presents a complex food fraud operation managed by a criminal organization intent on successfully implementing their food fraud scheme. It shows the transnational nature of the crime and highlights serious health consequences for the public.

The criminal organization produced a counterfeit baby milk formula* intended for toddlers aged one to three years old. They produced their counterfeit baby formula on a large scale and sold it online, bypassing traditional legal channels and controls. Simultaneously, the criminals produced and stored their fake baby formula in one country, whilst setting up multiple delivery points for their online products in other countries.

To facilitate distributions, the criminal organization established focal points in each country responsible for local and national markets, who recorded online orders and ensured distribution to each online customer. Frequently during online sale distributions, these local focal points, called dropshippers, were also responsible for the final packaging and delivery of the fake baby formula. A dropshipper can be a single person or entity, such as a fully fledged criminal organization. In this case, each local focal point imported the counterfeit baby milk formula together with cardboard boxes and inner packaging already bearing the names and logos of well-known brands. They then manually filled the inner packaging with counterfeit baby formula, sealed it with glue and stored it in a warehouse pending online orders and product distributions.



The criminal organization respected no standard health or hygiene regulations for processing baby milk formula throughout their entire process. Each national criminal group acting as local focal point chose the brands to affix on their packaging for the counterfeit formula depending on its popularity in their country, and the main criminal organization supplied all requested packaging.

The counterfeit baby milk formula presented serious health and safety risks, since it contained no nutrients for babies or toddlers, while consumers purchased it to feed and sustain growth of young children. Furthermore, the counterfeit product's manufacturing, storage and packaging processes were fraught with contamination risks from different materials and pollutants. Investigations confirmed that the perpetrators were longstanding criminals known as members of organized criminal groups in different countries.

> "The counterfeit baby milk formula presented serious health and safety risks, since it contained no nutrients for babies or toddlers, while consumers purchased it to feed and sustain growth of young children.

* Cases of fraudulent baby formula have been registered in several countries from at least 1996 onwards (see also UNICRI, 2008: 140, 144).

BOX 3

Case C: Ground biscuits

This case presents a straightforward food fraud operation set up by an individual. This illicit actor manufactured and sold a counterfeit version of a well-known ground biscuit for children, enriched with vitamins and served with milk to create creamy porridge. The illicit actor, which infringed on the intellectual property rights of the legitimate trademark owner of the genuine product, targeted this brand because of its good reputation and popularity.

The relative ease of producing, packaging and selling the counterfeit ground biscuit is notable:

- For the counterfeit production, the illicit actor bought large quantities of both the target brand and a cheap, low-quality similar product sold at local wholesale markets. They combined the two products with a mixing machine they purchased online, which included a conveyor belt and packaging accessory.
- For packaging production, the illicit actor provided an acquaintance, who owned a small printing shop, with an example of the original packaging of the genuine ground biscuit and asked them to reproduce an imitation that included the original brand name and logo.
- For the production and packaging process location, the illicit actor rented a warehouse where they installed the required equipment and stored their ingredients and packaging for their counterfeit production.
- For sales and distribution, the illicit actor carried this out themself. The illicit actor was known in the local markets since they had previously sold other food products.

The illicit actor targeted vendors in local open-air markets and small stores, ensuring a modest production volume.

> “Fortunately, no consumers or children in this case suffered serious known health effects from consuming the counterfeit product, although they were deprived of its expected nutritional value.

This strategy allowed them to insert their counterfeit product at the final stages of the food supply chain, directly before reaching the end consumer. Several small operators bought the counterfeit biscuit product. Some questioned the low price, which was explained, but none asked for paperwork to verify the origin of the goods. The counterfeit ground biscuit were further distributed to other shops when some small operators resold them.

Fortunately, no consumers or children in this case suffered serious known health effects from consuming the counterfeit product, although they were deprived of its expected nutritional value. The illicit actor was successfully prosecuted by national authorities.

organizations may substitute the imposition of protection money upon restaurants and food stores with the imposition to purchase specific counterfeit food products from them to resell as genuine. There are no quality controls or sanitary guarantees on how these food products were produced or stored before reaching the restaurant or food store, and the risks to consumers are high.

From a broader perspective, the prevalence and success of both these criminal *modus operandi* point to the emerging risk of criminals acquiring control of or infiltrating the food supply chain for mass-market food products – which are usually not a priority for law enforcement, although they can reach many consumers over vast geographic areas. A further issue of special concern is the online sale of fraudulent food products, such as in Case B, which can easily go undetected for long periods of time, impacting many consumers across countries and even continents before the food fraud is discovered

Investigation, prosecution and the role of technology

When conducting a criminal investigation and prosecution of a food fraud case, there are various techniques and strategies law enforcement authorities can utilize that are beyond the scope of this chapter. The best way to investigate and prosecute specific illegal activity must be chosen on a case-by-case basis according to the facts and evidence of the case.[9] In addition, law enforcement authorities should consider the consequences of the fraudulent food activity on the health and safety of consumers, as well as any involvement of criminal organizations, as these considerations increase risks for the public at large.

When criminal organizations use food fraud to maximize profits within their larger criminal schemes aimed at infiltrating the legal economy, official criminal investigations into food fraud activities often start incidentally.[10] Law enforcement may discover the food fraud while they are investigating overall criminal activities, both licit and illicit, involving the criminal organization. This occurs, for example, when criminal operations impose specific food products on shops, restaurants or bars in lieu of payment of protection money, and these shop keepers or restaurant and bar owners cooperate with law enforcement.

In other cases where food fraud is the main goal of the criminal operation, detecting the involvement of a criminal organization as early as possible can prove to be a key element in uncovering the scope and scale of the criminal scheme. This may occur, for example, as law enforcement analyse seized computers and communications, financial transactions or other documentary evidence. When law enforcement investigates a criminal organization, as opposed to an individual criminal, they usually have additional investigative techniques and resources available to them, such as phone interceptions and test purchases, that can increase the efficiency of the investigation. This is especially the case when the facts establish the elements of more serious violations of the criminal code that foresee high criminal sentences measured in terms of maximum deprivation of liberty or prison time. Law enforcement may further uncover links to other types of serious crimes, such as money laundering or financial fraud, which may raise the profile – and complexity – of the criminal case.

Returning to the cases presented above regarding typical *modus operandi* to implement food fraud, it is further instructive to consider how law enforcement can use technology to identify the fraudulent activity and its perpetrators, as well as to facilitate investigative steps in food fraud cases and identify health risks for consumers. In this manner, technology can increase the likelihood of a successful investigation and prosecution in different types of food fraud cases.

Technology is also an important tool to combat online food fraud. Given the growth of e-commerce, consumers today are increasingly purchasing food and beverage products online, while criminals exploit vulnerabilities and opportunities in these online commercial platforms to sell their fraudulent food products, such as occurred in Case B. In response, some countries have established cyber patrols that utilize emerging technology such as artificial intelligence to identify suspicious online products and investigate online fraud. Once identified, the authorities can then request e-commerce platforms to remove fraudulent food products offered for sale, thereby preventing further harm to consumers' health.

BOX 4

Investigation of Case A: Alcohol

Given the immediate health and safety risks and dire consequences to human life, law enforcement focused its investigation on endangerment of public health, which was intrinsic to the criminal scheme. The poisonous alcoholic mixture sold on the market caused deaths and injuries to consumers. Accordingly, authorities complemented the criminal investigation with a public health response, aimed at reducing the total number of victims as much as possible.

Technology played a key role in both aspects of the response. Composition analysis on collected samples of the fraudulent alcoholic beverages allowed investigators to isolate the contaminant (methanol) and determine the percentage of its presence in the fraudulent beverage. This allowed them to prepare the public health response to focus specifically on methanol poisoning.

In addition, the technical analysis gave law enforcement key information on the composition of the poisonous mixture that allowed them to progressively retrace the distribution chain of the fraudulent alcoholic beverage. They employed progressive comparison of collected and analysed samples up to the warehouse where the criminals stored their poisonous product in bulk containers. This comparison of samples was also key evidence during the criminal trial, since it allowed prosecutors to establish, beyond a reasonable doubt, that the main illicit actors were the source of the poisonous alcoholic beverage.

Based upon the evidence collected and the overall circumstances of the case, the prosecutor brought charges against the criminals for serious endangerment of public health, resulting in severe convictions against the defendants.

BOX 5

Investigation of Case C: Ground biscuits

The trademark owner of the genuine ground biscuit brand filed a criminal complaint following a thorough preliminary investigation, and law enforcement opened a criminal investigation. Technology played an important role throughout the investigation and prosecution.

After the trademark owner received quality complaints from some of its sellers, they conducted a technical analysis on the external appearance of the counterfeit product packaging and the composition of the ground biscuit ingredients. The analysis of the product packaging revealed key differences and inconsistencies between the original and imitation packaging. This enabled law enforcement to recognize easily the counterfeit packages during inspections and raids. Similarly, the composition analysis of the ground biscuit ingredients showed that the counterfeit product lacked nutrients in the same quantities as the genuine product; importantly, it further excluded the presence of any toxic substance that would have been dangerous for consumers or children.

During the criminal investigation, law enforcement targeted shops and sellers operating in the specific areas where the quality complaints had originated, progressively intensifying investigations and tracing back the food supply chain. Based upon the evidence shared by the trademark owner and collected by law enforcement, the prosecutor brought charges for criminal trademark infringement, relying on intellectual property laws and related articles in the criminal code for infringement, resulting in a successful prosecution against the individual defendant.

Conclusion

The three emblematic cases presented in this chapter highlight the serious risks to consumers' health and safety that can be caused by food fraud activities, ranging from simple substitution of quality ingredients to sale of poisonous goods. They further showcase that food fraud activities may occur at any stage in the food supply chain, from production to final distribution to the consumer. Because of these elements, we advocate for law enforcement around the world to increase the prioritization of food fraud cases in the public interest.

Timely, thorough investigations are key to disrupting all types of food fraud: criminal investigations identify the illicit actors, uncover the fraud scheme, and most importantly, expose any risks to the public health and safety caused by consuming the fraudulent food product. This, in turn, can inform the public health response and prevent additional fraudulent food from being consumed by the unsuspecting public. Technology, including traditional and emerging technology, is particularly instrumental in food fraud cases, as shown in the three cases.

While not all cases of food fraud involve criminal organizations, law enforcement is well advised both to look into the role of criminal organizations in food fraud cases and to consider food fraud activity in broader investigations into organized criminal enterprises and schemes. The two often go hand in hand, as shown in the cases. The involvement of criminal organizations further increases the risk to public health and safety and provides law enforcement with additional techniques and resources to effectively investigate and successfully prosecute food fraud. In this manner, the criminal justice response must be at the heart of national efforts to combat all forms of food fraud.

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Endnotes

1. Ms De Meo's term as Director of UNICRI ended in February 2024.
2. The complexity of food fraud monitoring and related law enforcement responses also derive from myriad applicable legislation regulating the production, distribution and marketing of food products. It is a somewhat unique situation where legislation on setting standards for quality control of food products and their packaging often intersects with legislation protecting industrial property rights, such as in a case of trademark protection, as well as with legislation protecting the public health. Furthermore, criminal law and procedure govern investigations carried out by law enforcement (see also UIBM/UNICRI, 2016).
3. Food fraud activities managed by criminals at different levels have reached an impressive scope and scale. This led the International Criminal Police Organization (INTERPOL) and the European Union Agency for Law Enforcement Cooperation (Europol) jointly to set-up a yearly operation, Operation Opson, aimed at tackling food fraud networks on a consistent basis (see https://www.interpol.int/Crimes/Illicit-goods/Food-crime-operations and https://www.europol.europa.eu/operations-services-and-innovation/operations/operation-opson).
4. In relation to the overall role that technology can play to facilitate monitoring, investigation and prosecution of food fraud and other crimes relating to infiltration of the legitimate supply chain, see UNICRI (2021).
5. For an overview of food fraud related *modus operandi*, see UNICRI (2021: 18-23).
6. The wide variety of fraudulent food products available in the market is highlighted by the results of the INTERPOL and Europol Opson operations (INTERPOL/Europol, 2016).
7. For incidents, cases and articles on food fraud at the global level, see the repository regularly updated by the European Commission, available at https://knowledge4policy.ec.europa.eu/food-fraud-quality/monthly-food-fraud-summary-reports_en.
8. On the infiltration of organized crime into the legal economy, see also UNICRI (2016).
9. The European Union Intellectual Property Office (EUIPO) launched an initiative, within the framework of the 2022-2026 European Multidisciplinary Platform Against Criminal Threats (EMPACT) cycle and in cooperation with the European Union Agency for Law Enforcement Training (CEPOL), the European Union Agency for Criminal Justice Cooperation (Eurojust), Europol and the European Union Anti-Fraud Office (OLAF), to create an intellectual property crime investigation handbook (EUIPO, 2016). The handbook will present best practices on investigative channels, techniques and tools for law enforcement to successfully investigate intellectual property crimes, including food fraud. UNICRI is responsible for drafting this handbook for EUIPO through 2026.
10. For an overview of organized crime involvement in counterfeiting activities in the European Union, see EUIPO/Europol (2022: 13-16) on food and drink.

Conclusions

The WTO has a key role to play in combating illicit trade in food and food fraud

As the only global organization dealing with the rules of international trade, the WTO has a key role to play in members' efforts to tackle illicit agri-food trade through its rules and institutional framework. The WTO offers members a variety of tools and best practices to fight illicit trade in food, as well as the opportunity to exchange information and implement policies both within and at the border to mitigate this phenomenon. For example, regular committee work of the WTO can be used by members to exchange information and facilitate the coordination of measures taken to address illicit agri-food trade.

Several WTO agreements can contribute to identifying fraud once it occurs, such as the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement). Both agreements are fundamental in reducing illicit trade in food. They help, along with other international agreements, standards and enforcement bodies, to strengthen the global food supply while simultaneously reducing cross-border food fraud activity.

The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) and the Agreement on Trade Facilitation (TFA) also sit at the heart of global trade in food. The TRIPS Agreement is key to preventing counterfeit products and fraud in the area of food and beverages which hurt businesses and consumers. Fully utilizing the TFA would help to eliminate excessively cumbersome customs procedures and red tape at borders, which present opportunities for exploitation by fraudsters and smugglers. A useful exercise would be to identify the WTO rules that could further boost the prevention of illicit trade in food and food fraud.

Illicit trade in food and food fraud threatens the achievement of many of the United Nations Sustainable Development Goals

The global cost to the food industry of illicit trade in food is estimated at US$ 30-50 billion per year – and when losses associated with illicit trade in alcoholic beverages are included, the estimated losses are even higher. Although precise figures are difficult to determine given the inherently clandestine nature of illicit trade, the detrimental effects are clear. Illicit trade in agri-foods and beverages, including fraud, undermines farming, destabilizes rural economies, distorts markets, threatens consumers' health and jeopardizes production and delivery of fair, safe and sustainable food and beverage supplies.

Strong, healthy agricultural sectors are vital to achieving the United Nations Sustainable Development Goals, especially in developing economies. Illicit trade in agri-food prevents the benefits of the legal trade in food being realized – such as the progress made to eradicate hunger and poverty, to improve the health and well-being of billions of people, to strengthen consumers' ability to make educated and eco-friendly decisions, and to generate sustainable economic growth.

Regulatory solutions to combat food fraud require strategic cooperation among all stakeholders

Regulatory solutions to combat food fraud need to involve all of the people and activities that play a part in growing, transporting, supplying and consuming food – known as the agri-food system. This approach requires strategic cooperation among all stakeholders, a regulatory response (i.e. modern food safety legislation) led by the competent authorities, and private-sector strategies to limit and mitigate fraud.

International trade in food, globalization, the lengthening of food supply chains, the fast growth of e-commerce and vast informal food economies all provide opportunities for fraud. Food fraud is high on the agenda of the Codex Alimentarius Commission. The Codex Committee on Food Import and Export Inspection and Certification Systems is developing guidelines on the prevention and control of food fraud for competent authorities and food business operators on the detection, prevention, mitigation and curbing of food fraud to help protect the health of consumers, and to ensure fair practices in food and feed trade.

There are other standard-setting bodies that provide good practices and guidelines for small and medium-sized enterprises, such as the International Organization for Standardization, the European Committee for Standardization, the Global Food Safety Initiative and SSAFE. The final responsibility for keeping consumers safe rests with food producers, who must strengthen their supply chains and internal systems (i.e. organizational culture, vulnerability assessments, testing and verification) to avoid fraud from occurring.

Curbing illegal seed practices is vital to ensuring global food security

Reliable, high-quality seeds are vital to agriculture and the food supply chain. High-quality seeds enable farmers to boost crop productivity, improve livelihoods and feed a growing world population. In recent years, however, there has been an increase in illegal seed practices. Many of these practices constitute a violation of intellectual property rights and various regulatory offences, spanning numerous issues covered by the WTO rule-book.

Joint efforts between the seed industry and the WTO and other international organizations can be critical in securing the global seed supply chain and boosting innovation, in particular with regard to intellectual property rights.

Customs authorities play a key function in helping keep our food system safe from fraudsters

Customs and law enforcement are fundamental to the food authenticity system, as they are in a position to verify authenticity at national entry points (borders by land, sea and air). However, customs officers cannot check every food shipment coming into a country – especially as just-in-time logistics continues to improve efficiencies, ensure freshness of food products and meet customer demand for varied food products. Therefore, action is needed from all actors along the food supply chain, including the private sector.

Timely and thorough investigations are key to disrupting all types of food fraud

Criminal methods exploit vulnerabilities in the food supply chain and often use and adapt diverse tactics. While not all cases of food fraud involve criminal organizations, their presence can further increase the risk to public health and safety and requires additional techniques and resources to effectively investigate and successfully prosecute. Timely and thorough investigations are key to disrupting all types of food fraud. Food fraud and illicit trade have impacted all continents and most agri-food sectors and must be taken seriously.

The best way to combat illicit trade in food is to prevent it from occurring

The best way to combat illicit trade in food lies in crime prevention. Governments have finite resources, with prevention being more cost effective. However, the clandestine nature of food crime means that governments find it difficult to model solutions for what they do not know exists.

Catching fraud can deter further fraud from occurring. However, certain additional steps could help to eliminate the opportunities for fraud. Ongoing WTO agriculture negotiations, which aim to reduce trade-distorting subsidies and to address import and export restrictions, among other things, could help to reduce the incentives for smuggling and illegal trade.

Abbreviations

CAP	conformity assessment procedure
CVA	Customs Valuation Agreement
Europol	European Union Agency for Law Enforcement Cooperation
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
IP	intellectual property
IPPC	International Plant Protection Convention
IPR	intellectual property right
IUU	illegal, unreported and unregulated
LDC	least-developed country
PBR	plant breeder's right
PSI Agreement	Agreement on Preshipment Inspection
SDG	Sustainable Development Goal
SPS	sanitary and phytosanitary
SPS Agreement	Agreement on the Application of Sanitary and Phytosanitary Measures
TBT Agreement	Agreement on Technical Barriers to Trade
TFA	Agreement on Trade Facilitation
TRACIT	Transnational Alliance to Combat Illicit Trade
TRIPS Agreement	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNICRI	United Nations Interregional Crime and Justice Research Institute

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International trade in food has helped to reduce global poverty and hunger. However, illicit trade in food and food fraud undermine the global food system and endanger public health.

This publication looks into the challenges of combating illicit practices, such as smuggling and counterfeiting. Contributors examine the topic from a variety of perspectives, discussing how best to address illegal food trade and the role the WTO could play.