



Codex and the SDGs

How participation in Codex Alimentarius supports the 2030 Agenda for Sustainable Development



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How participation in Codex Alimentarius supports
the 2030 Agenda for Sustainable Development

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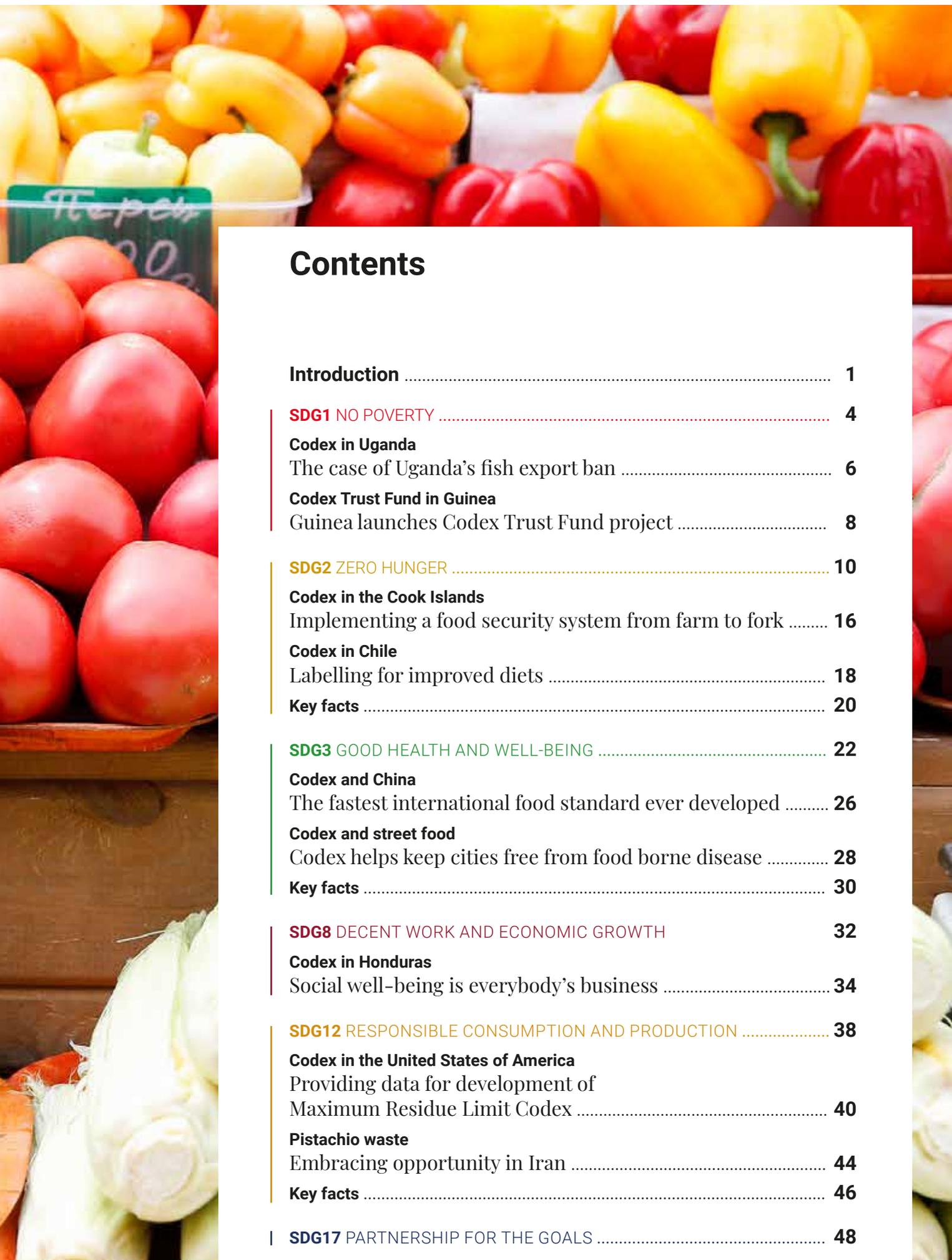
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Acronyms

AMR	antimicrobial resistance
CAC	Codex Alimentarius Commission
CTF	Codex Trust Fund
DALY	Disability-Adjusted Life Year
FAO	Food and Agriculture Organization of the United Nations
FAS	Foreign Agricultural Services (US)
FBD	foodborne disease
GAP	good agricultural practices
GHG	greenhouse gas
GHP	good hygiene practices
HACCP	hazard analysis (and) critical control points
IFAD	International Fund for Agricultural Development (UN)
NCC	National Codex Committee
NCD	noncommunicable disease
ML	maximum level
MRL	maximum residue limit
SDG	Sustainable Development Goal
SIDS	Small Island Developing State(s)
SOFI	State of Food and Nutrition in the World (report)
SCP	sustainable consumption and production
SPS	Sanitary and Phytosanitary Measures
TBT	Technical Barriers to Trade
UNICEF	United Nations' Children's Fund
WFP	World Food Program (UN)
WHA	World Health Assembly
WHO	World Health Organization
WTO	World Trade Organization





Introduction

The Codex Alimentarius is a collection of all the texts (standards, guidelines and codes of practice) adopted by the Codex Alimentarius Commission (CAC). CAC is the central part of the joint Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO) Food Standards Programme and was established by FAO and WHO to protect consumer health and ensure fair practices in the food trade. It first met in 1963.

Codex texts are based on sound scientific evidence provided by independent and impartial scientific expert bodies convened by FAO and WHO. The risk assessments carried out by these bodies form the basis for the risk management work that takes place in the technical committees of CAC. They deal with ‘horizontal’ issues (e.g. ‘general subjects’ such as food hygiene, food additives and contaminants, pesticide residues and nutrition) or ‘vertical’ issues (e.g. commodities such as fresh fruits and

vegetables, fats and oils and spices). The CAC today has a membership of 188 Member Countries and one Member Organization (the European Union). Over 230 organizations, including UN organizations, IGOs, NGOs and industry bodies, have observer status and may participate in the meetings. The Codex standards-development process is based on inclusivity, transparency and consensus building.

Codex food safety texts are the references for food safety used in the World Trade Organization's Agreement on Sanitary and Phytosanitary measures (WTO-SPS Agreement) which means that Codex has far-reaching implications for resolving trade disputes and ensuring that safe food is circulating fairly in global trade. The WTO Agreement on Technical Barriers to Trade (WTO-TBT Agreement), though not making explicit reference, relies on Codex standards as the benchmark for international harmonization in the area of food such as quality and consumer information standards.

In 2003, the Codex Trust Fund (CTF) was established by FAO and WHO to support eligible developing and transition economy countries to build stronger, sustainable national Codex systems that will make it possible for all countries to participate fully and effectively in Codex. Funded by contributions from Codex Members, the CTF supports countries to strengthen their national Codex structures and build their capacity to participate more effectively in the development of international food standards.

In 2015, the UN Member States adopted the 2030 Agenda for Sustainable Development. This includes a set of 17 Sustainable Development Goals (SDGs), divided into 169 specific targets and agreed with the ambition 'to leave no one behind'. The SDGs

particularly aim at improving opportunity for those across the world who currently face disadvantages caused by poverty, hunger and malnutrition, poor health, climate change, inequality due to gender or ethnicity, inadequate access to education and energy and insufficient rights at work. As prominent international organizations and world leaders in their respective fields of expertise, both FAO and WHO have been entrusted with the custodianship of a number of the indicators that enable global monitoring of progress towards achieving the SDGs.

The achievement of the Sustainable Development Goals depends on countries implementing integrated policies and programmes tailored towards the key targets identified for each SDG. Codex provides the global community with science-based standards that can help countries to meet a number of those targets. The Codex Trust Fund plays an important role in providing financial and technical support to eligible countries, ensuring that the benefits of Codex standards are available to all and that no one is left behind.

This publication shows how the twin Codex mandate of setting standards to protect the health of consumers and ensuring fair practices in the food trade contributes to helping countries achieve the SDGs, with a focus on six specific SDGs and their interconnections with other SDGs. In some cases, there are clear linkages between Codex work and SDG targets, while in others the pathways through which Codex work makes a contribution are less direct. SDGs are interconnected and mutually reinforcing; success in one of these goals can also generate change in others less directly associated with Codex work.



1 NO
POVERTY



Sustainable Development Goal 1 (SDG1) aims at the eradication of extreme poverty by 2030.

In the same timeframe, this goal aims to at least halve the proportion of people living in poverty in all its dimensions. In 2015, approximately 10 percent of the world's population – 736 million people – lived on less than USD 1.25 a day, the internationally recognized threshold for extreme poverty. Over half of these people live in sub-Saharan Africa and the majority live in rural areas and depend upon agriculture for a living.



“Food safety intersects with poverty in two critical ways: the poor as consumers of food and as agents in agri-food value chains.” – *The Food Safety Imperative*, World Bank, 2019

Those living in poverty or extreme poverty particularly rely either on primary food production for a living, or they rely on some form of work within the agriculture sector. Thus, any means of making the food sector in countries more reliable and profitable holds out the prospect of helping to reduce poverty, while simultaneously improving the food security and health of poor populations.

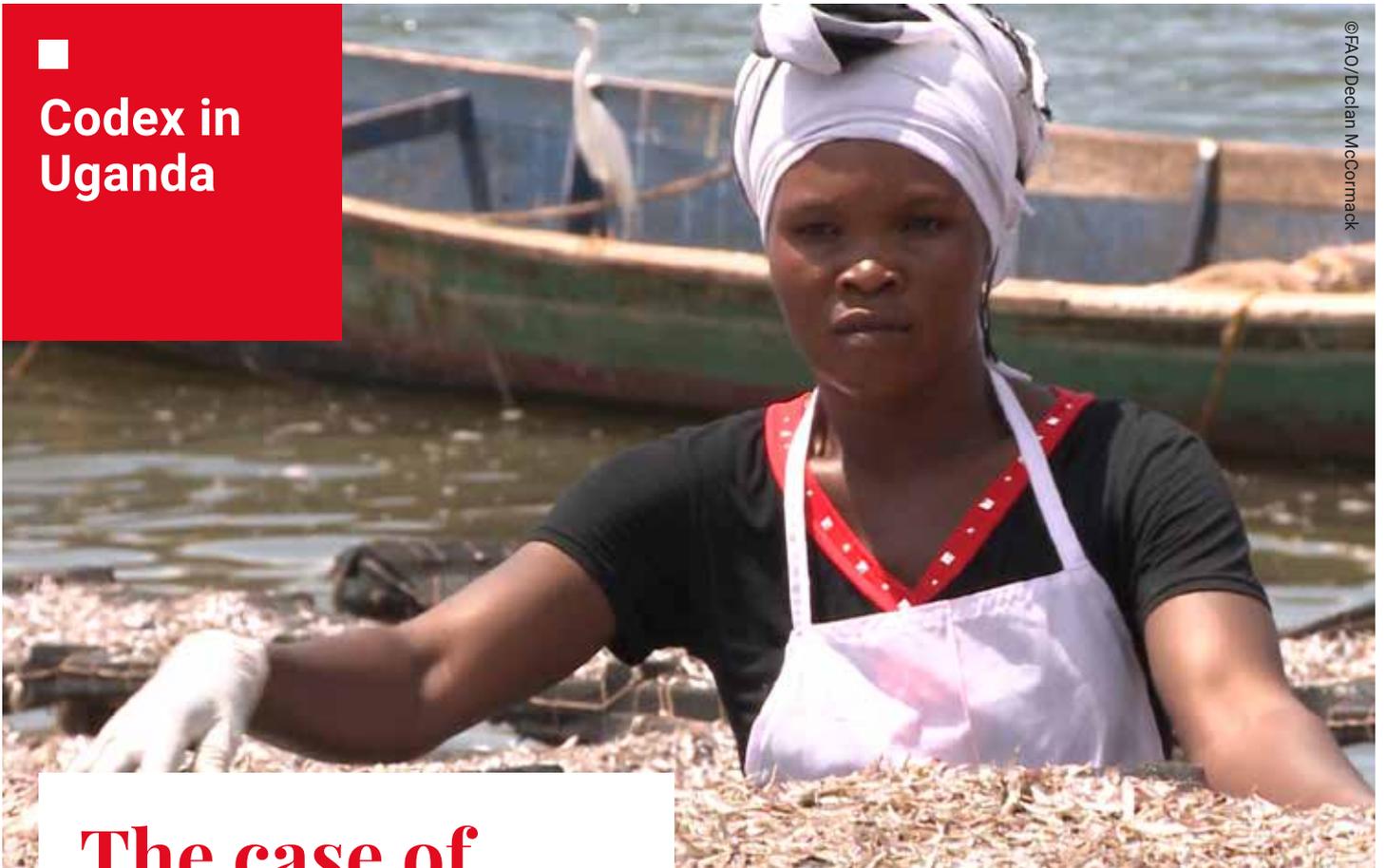
Many complex and interrelated factors contribute to the alleviation of poverty. Codex contributes by making relevant standards available for use by all 189 members, which can be important in enhancing the trade and export potential of their food sectors as well as ensuring safe food and fair trade also in domestic markets. According to FAO and the ILO, it is principally at the local and rural level where agri-food workers living in extreme poverty can generate an income. Globally, more than 80 percent of smallholder farmers operate in local and domestic food markets.

With its focus on developing and transition economy countries, the Codex Trust Fund helps create the increased potential for economic development which comes with access to international trade in food. Economic development is the focus of SDG8, but it also has a significant impact on poverty reduction when it leads to job creation and job security. This is particularly important as the economy of many of the developing and transition economy countries is heavily reliant on agricultural production.

There is a clear overlap between the aims of SDG1 to reduce poverty, SDG2 on food security and sustainable agriculture and SDG3, to advance health and wellbeing. For consumers everywhere, safe food has a positive impact on income generation: a healthy individual is more able to engage in productive activities to earn a living; safe food contributes to increased nutrition, improved health and food security. Conversely, poor health can hinder people’s ability to work and this, coupled with the cost of healthcare, can push individuals and entire families into poverty. This leads to increased hunger and malnutrition resulting from reduced availability of or access to safe and nutritious food. According to WHO, the annual global cost of foodborne disease is estimated to be around USD 110 billion due to losses in productivity and trade and costs incurred for treatment of illnesses caused by the consumption of unsafe food. For those living in poverty, foodborne disease can result in a devastating loss of income or worse and it is the poor in developing and transition economy countries that bear the brunt of the foodborne disease burden.

For all nations and the millions who work in agri-food value chains, the adoption of Codex standards can improve access to global trade and consequently lead to higher and more secure incomes, as well as improve the quality and availability of food in domestic markets. On the other hand, there are many examples of the negative impacts on livelihoods that may result when countries cannot or do not apply measures to ensure the safety of food. The failure to apply such measures can result in illness or even death, as well as long-lasting consequences for entire food-based sectors and widespread job losses.

Codex in Uganda



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The case of Uganda's fish export ban

In the late 1990's, Uganda's fish sector suffered a crushing blow when Europe, its major export-market, refused to accept products from Lake Victoria in three consecutive incidents over a four-year period. Bacterial contamination and generally poor hygiene practices meant the fish repeatedly failed Europe's rigorous standards of food safety.

The United Nations Industrial Development Organization (UNIDO)

valued the losses resulting from these bans at around USD 36.9 million. "We lost the market," says Dr Ruth Nankabirwa, Uganda's Minister of Fisheries. "And regaining it was a tug of war. So, we don't want to go back to that." A significant number of workers felt the brunt of the ban. Fishing employs more than 1.2 million Ugandans, according to Dr Nankabirwa and there are more than 10 million people who eat fish regularly or benefit from the fishing industry.

The Ugandan government turned to Codex as part of its battle to win back the European market. "We now apply the Codex General Principles of Food Hygiene," says Paul Omanyi, a fisheries inspector, "as well as the Hazard Analysis and Critical Control Points (HACCP) system and the *Code of Practice for Fish and Fishery Products*, which we've made a requirement in the fishing industry."

Ugandan entrepreneur, Gertrude Nabukera owns a landing site with 90 fishing boats and employs hundreds of people locally. She was badly affected by the bans and so adopted the Codex guidelines with enthusiasm. "Quality standards of the fish should be promoted," she agrees. "We all know that it must

be kept safe so that the consumers don't have any health problems." Now she ensures her boats are kept clean, her employees wear protective clothing and that they have clean bathroom facilities available. Her site is also now fenced in and there is clean running water available to wash down all areas. Fish is cleaned and the correct temperature maintained throughout the cold chain, from the landing site to the packing factories and on to export. The government also addressed the root causes of the contamination, which were associated with irresponsible practices in local industrial and farming sectors. So, in adherence to targets of SDG6, strict regulations based partly on Codex standards are now in place to monitor and control water pollution and residues.



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“Now, we are also applying Codex standards with respect to labelling requirements,” continues Paul Omanyi. “And we’re using Codex standards for products which require additives.” Greenfields Uganda, Ltd, is an Entebbe-based fish exporting company, which now regularly sends samples of their products to local laboratories for analysis. “The Codex Alimentarius is *the* internationally-recognized system,” comments Philippe Borel, CEO of Greenfields. “And when the European Union sets up regulations, they don’t do it without taking that into account, because we know they are one of the main participants in Codex.”

The Ugandan experience shows how the adoption of Codex measures

impacted poverty rates by restoring international trade and securing livelihoods. However, the result of all this work was not only a lifting of the ban and resumption of exports to Europe. Local businesswoman, Peruse Lagoose, is very clear that raised awareness has allowed her to better understand the rationale behind Codex standards and their practical benefits. This has inspired her new business. She now sells *rukene* - small fish which she processes and packages for domestic consumption. This has been so successful that she has become a significant local employer. “People are no longer poor,” she says, underlining the important role that adoption of Codex texts has played in the fight against poverty.

CODEX TRUST FUND

Codex Trust Fund supports national structures to prevent food export crises

Many countries turn to Codex standards, guidelines and codes of practice when faced with export bans that result from poor food safety standards. However, a country that is aware of the importance of Codex standards and uses these as a basis for developing their national standards in a comprehensive and science-based food control system is better able to prevent such crises.

The development and reinforcement of national Codex structures that underpins much of the CTF’s work aims precisely at assisting countries to develop awareness of the importance of Codex standards among decision-makers and actors in key value chains (Guinea below is an example of this). This awareness leads to more uptake of Codex standards, which protects consumer health throughout the food chain from farm to fork and can be a powerful weapon in protecting the income of those who depend on the export or local trade of food for their livelihoods.

■
**Codex
Trust Fund
in Guinea**



Guinea launches Codex Trust Fund project

In 2019, the Government of Guinea made a successful application to the CTF and their work over the 3-year project period is aimed at developing knowledge and understanding of Codex standards and guidelines within Guinea. It is expected that this will improve the conformity and competitiveness of the nation's food trade domestically, regionally

and internationally, so that any preventable issues within agri-food value chains can and will be identified.

This will bolster Guinea's food-trading capacity, paving the way for a greater number of secure jobs and a reduction in poverty. It is an important step for a country that is grappling



with a rate of extreme poverty that currently stands at 31 percent of the population. With an estimated two-thirds of the population living in rural areas and the majority of the poor working in the agricultural sector, support to the agri-food value chain will make a significant contribution to Guinea's bid to achieve SDG1.

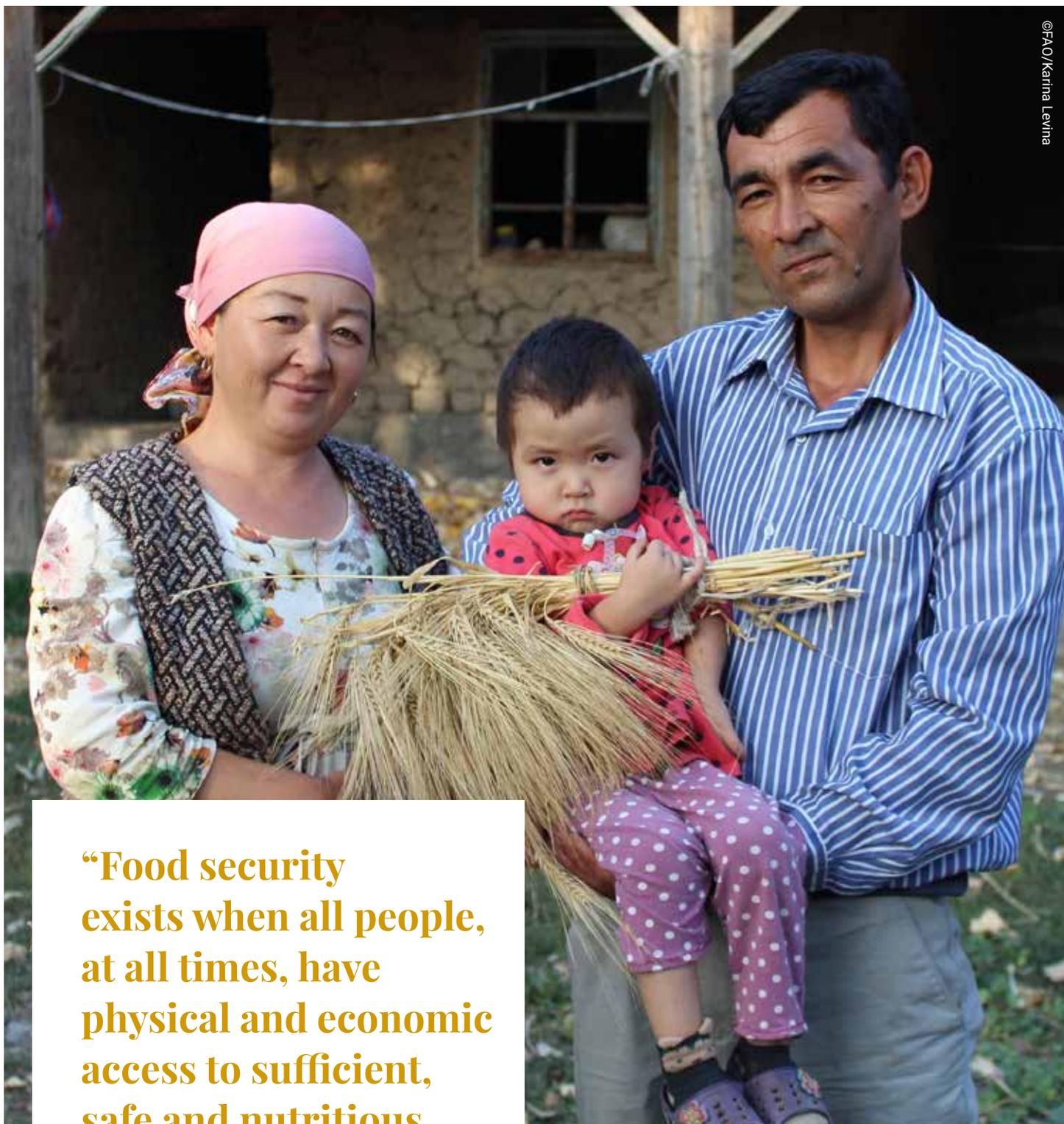
At the project launch, the Secretary General of the Ministry of Industry and Small and Medium Enterprises reminded the Codex team that their work would have a wide impact: "The tools that will come out of your work, will serve as references for strong messages to the members of the government, the technical

and financial partners and all the stakeholders for consideration in our programming, the activities of the Codex Alimentarius, its working bodies and the functioning of the National Codex Committee (NCC)."

2 ZERO
HUNGER



SDG2 aims to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture.” According to FAO, despite the availability of sufficient food for all, there are now 820 million hungry people in the world. The majority of the food insecure live in low-income or least-developed nations, and the majority of them live in rural areas. At the same time, one third of the global population now suffers from some form of malnutrition, with obesity often coexisting with undernutrition in the same household.



“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”

as agreed at the 1996 World Food Summit, FAO, and adopted as the internationally agreed definition for food security.

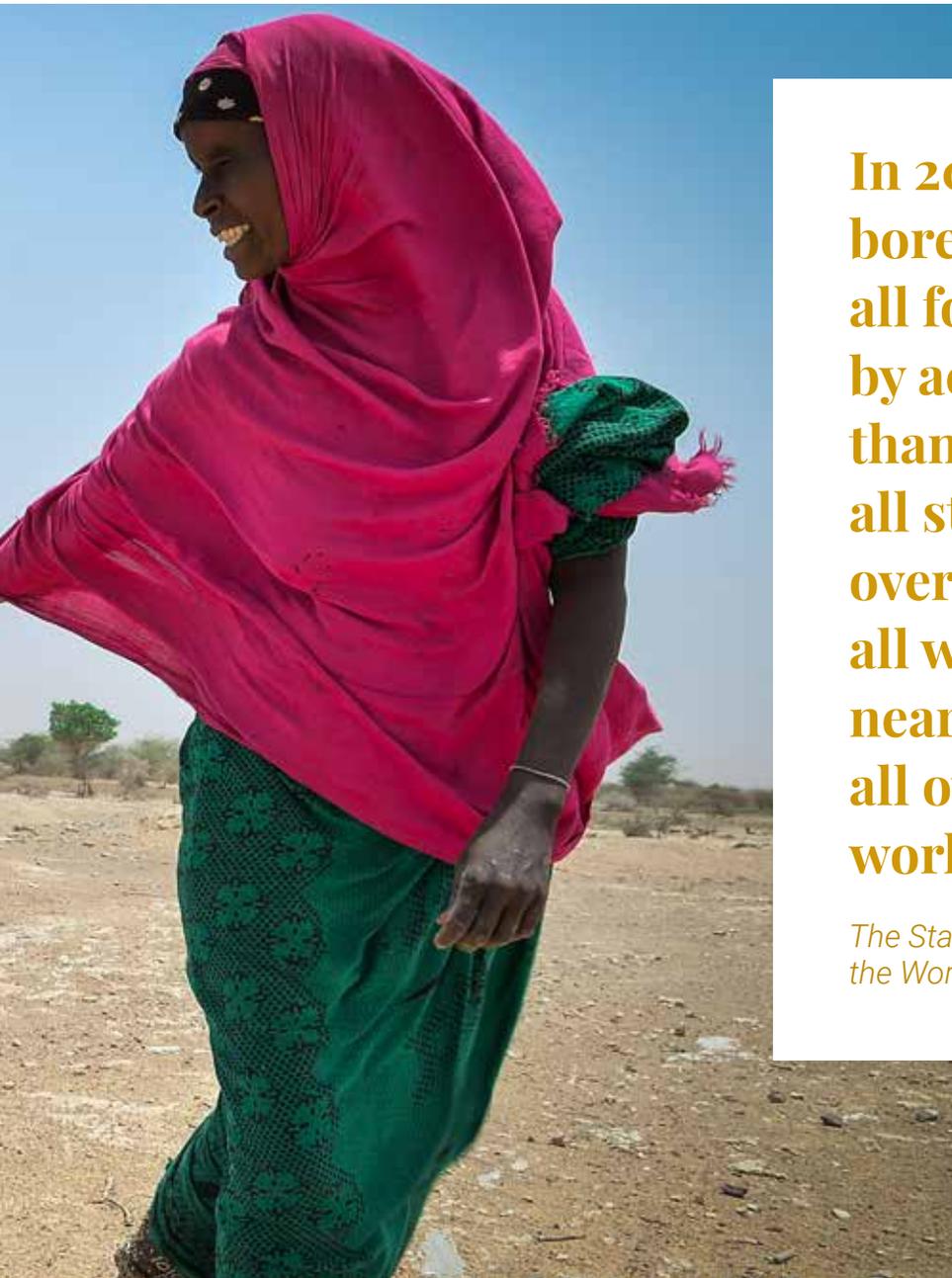
Codex was established by two of the world’s leading organizations in health and food. One of those, the Food and Agriculture Organization of the United Nations (FAO), is spearheading a worldwide drive towards zero hunger and sustainable agriculture and is custodian of 10 of the 14 SDG2 indicators, and of an additional 11 indicators across all SDGs. These indicators are related to the sustainable management and use of natural resources and ecosystem services, including water, soils, and biodiversity. Codex and the CTF help countries pursue their drive to reduce hunger by making available standard-setting tools that are vital in achieving two key elements of SDG2: food security and improved nutrition.



SOFI

Described by the United Nations as ‘an important yardstick to measure the world’s progress towards achieving Sustainable Development Goal 2, Zero Hunger, by 2030’, the annual SOFI report was ‘re-gear’d in 2017 to reflect the aims of the SDG agenda. This was the first year the three food-based UN agencies and authors of the SOFI report, FAO, IFAD and WFP, joined with WHO and UNICEF to reflect a broader view on all forms of hunger and nutrition. The report not only focuses on the two globally agreed SDG indicators for hunger, but also capitalizes on the six indicators agreed by the World Health Assembly for measuring nutrition-related targets.

The *State of Food Security and Nutrition in the World (SOFI)* report is published annually by FAO and the other UN agencies with direct responsibility for monitoring global food security and nutrition, notably IFAD, WFP, WHO, UNICEF and the World Bank (FAO *et al.*, 2019). For the first time in 2019, that report measured the state of food insecurity using both indicators referenced in SDG2 targets: the prevalence of undernourishment; and the prevalence of moderate and severe food insecurity. The 2019 report shows that 26.4 percent of the world’s population, or approximately 2 billion people, went hungry or, at some point in the previous year, had to compromise on what and how much they ate, in order to survive a ‘lean’ period.



In 2018, Africa and Asia bore the greatest share of all forms of malnutrition by accounting for more than nine out of ten of all stunted children, over nine out of ten of all wasted children, and nearly three-quarters of all overweight children worldwide.

The State of Food Security and Nutrition in the World, FAO, 2019

FIES measuring food insecurity

The prevalence of moderate or severe food insecurity is measured according to FIES: the Food Insecurity Experience Scale. 'Severe' food insecurity exists when people do not have enough to eat. 'Moderate' food insecurity exists among those who probably experience periods when they have to eat less food and less nutritious food in order to make their available stocks last the year.



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SDG2's focus is an end to hunger and malnutrition through sustainable agriculture and food systems. In order for that to be achieved, as stated in target 2.1, there is a need to "ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round." Fundamental to the 'safe' and 'nutritious' components of food security is the set of standards laid down by Codex. CTF support to lower-income nations benefits the poor, who are a particular focus of this target.

Countries are able to work towards safe food for all consumers by accessing the science-based Codex standards that address issues of contaminants in food, food hygiene, food labelling, residues of veterinary drugs in food and pesticide residues.

A common vision for global action to end all forms of malnutrition

We reaffirm that... improvements in diet and nutrition require relevant legislative frameworks for food safety and quality, including for the proper use of agrochemicals, by promoting participation in the activities of the Codex Alimentarius Commission for the development of international standards for food safety and quality, as well as for improving information for consumers, while avoiding inappropriate marketing and publicity of foods and non-alcoholic beverages to children, as recommended by resolution WHA63.14 – Clause 13f of the *Rome Declaration on Nutrition*, November 2014

The consequences of undernutrition are severe and particularly so in the young. According to the SOFI report, "[m]aternal and child undernutrition contributes to 45 percent of deaths in children under five." Chronic undernourishment and food contamination can also lead to stunting (inadequate height for age) and wasting (weight for age). A key aim of target 2.2 is to achieve the internationally agreed targets on stunting and wasting in children by 2025.

Codex is working to produce guidelines on the quality, safety and labelling of foods for children suffering from Severe and Acute Malnutrition, which will make a contribution to this target. This work follows a request from the Codex observer organization, UNICEF, to help provide guidance on technical and nutritional aspects of

the production of Ready to Use Therapeutic Foods for severely malnourished children aged from 6 to 59 months. In addition, Codex develops standards for diet-related issues aimed at the improved health of a general population and particularly, in line with target 2.2, for foodstuffs designed for babies, infants, young children and lactating and pregnant women.

Target 2.2 also aims at ending all forms of malnutrition by 2030. This includes diet-related noncommunicable diseases (NCDs). NCDs are on the rise and every region of the world is now affected by diet-related NCDs. More people in the world are now overweight and obese than underweight and undernourished. Codex works on guidelines aimed at addressing all forms of malnutrition and work on nutrient reference values and guidelines on nutrition labelling are also important weapons in the fight against NCDs.

Target 2.4 addresses the need for sustainable food production systems that, amongst other environmental aims, looks towards improved land and soil quality. Codex Maximum Residue Limits (MRLs) ensure that agricultural products are safe to eat because they are free from harmful levels of pesticides and other agrochemicals. In many areas, ensuring responsible use of these chemicals leads to a reduction in the number of applications or the concentration of product applied, meaning agricultural labourers are less exposed to harmful chemicals and soils and the environment are better protected. Indeed, reducing chemical use on soils that have been repeatedly exposed to artificial toxins is a move towards recovery and sustainability of those soils.

The Codex mandate to protect consumer health and ensure fair practices in the food trade is also a factor in progress towards target 2.3, which calls for improved incomes for small-scale and family farmers. Codex standards and guidelines help countries to ensure acceptability of their produce, thereby improving access to more lucrative markets and export opportunities through fair trade practices. The Codex mandate is also relevant to the aim of target 2b to "correct and prevent trade restrictions and distortions in world agricultural markets." Codex standards are the reference standards used by WTO to ensure fair practices in the food trade and facilitate international trade in food and, as such, contribute to countries' capacity to achieve this target.



Codex in the Cook Islands



Implementing a food security system from farm to fork

To the 130 000 tourists that visit each year, the Cook Islands are a little piece of paradise. But this nation of 15 Pacific Islands is one of the Small Island Developing States (SIDS) recognized in the declaration of the 2030 Agenda for Sustainable Development as being particularly in need of development

and vulnerable to climate change. Low local agricultural production is both cause and consequence of an upturn in the nation's heavy reliance on food imports.

All imports are subjected to rigorous biosecurity and SPS checks to ensure they meet minimum safety

standards. However, much of this is low nutritional fast food aimed at tourists, which has led to changes in diet and a consequent increase in NCDs among the local population. In the early 2010s, the health service surveyed the health of all the men across the Cook Islands. "It was not a nice picture," says Dr Rangi Fariu, Director of Public Health. "Between 80 percent or 90 percent of the men were obese. High cholesterol levels, diabetes, high blood pressure, heart problems – there were a whole lot of other issues that we found amongst the men. And of course, men were dying before their time, were dying young."

In a bid to restore the nation's health, the Government of the Cook Islands has determined to establish a national food safety system that involves all key government ministries and embraces Codex standards, guidelines and codes of practice addressing the whole gamut of issues targeted by SDG2.

Imports make up about 82 percent of the Cook Islands' food supply and this includes fresh fruit and vegetables, many of which are also grown locally. The problem is, as Mat Porea, the Secretary to the Ministry of Agriculture points out, that Cooks



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farmers cannot compete on quality and cannot guarantee the required quantities to counteract the need for imports.

However, now that the government has started implementing a programme aimed at strict adherence to Good Agricultural Practice (GAP) and relevant MRLs, things are beginning to change. Farmers have improved product quality and newly established associations are helping to ensure bulk supplies of fresh produce. A visit to a supermarket in the capital, Rarotonga, reveals, for example, that locally grown capsicums on sale are of as high quality as the imported

ones, but are a third of the price. “This is an example of import substitution,” says Mat Porea, “where we can reduce the money that is going out to buy this imported produce. So, we can compete with the New Zealand produce by applying Codex safety standards, GAP and MRLs.” In another example of sustainability, as a SIDS nation, the Cook Islands are also encouraging farmers to adopt varieties of taro and other vegetables that can better survive the changes in climate that put food security at greater risk here.

The Ministry of Health is also working towards

improved health and nutrition for islanders by launching a ‘Get Physical’ campaign to increase their weekly exercise and encouraging the consumption of five fruits and vegetables a day. Meanwhile, they have also had to ensure that the 130 000 tourists also stay healthy while on holiday. To this end, the authorities have been rigorous in their monitoring of strict food safety regulations, which have been based on the Codex General Principles of Food Hygiene. “I think it has helped to curb the foodborne disease outbreaks,” says Liz Iro, Secretary to the Ministry of Health. “Our records show

that the last foodborne disease outbreak was 2012.” It’s a sign that the status of food safety on the Cook Islands has improved for islanders and visitors alike, thanks in part to Codex standards and guidelines. It also points to the importance of SDG8 for the Cook Islands and other SIDS: target 8.9 aims for nations to “devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.” Thanks to their food safety policies, the Cook Islands would seem to be on the right track for achieving this target.

Codex in Chile



Labelling for improved diets

Chile has one of the highest rates of childhood obesity in the world and 67 percent of adult Chileans are overweight (Corvalán *et al.*, 2013). This, Professor Ricardo Uauy of the Institute of Nutrition and Food Technology at the University of Chile,

puts down to a sedentary lifestyle. He also blames poor diet. And poor diet and obesity are key contributors to the top three diseases in Chile: heart disease, diabetes and stroke.

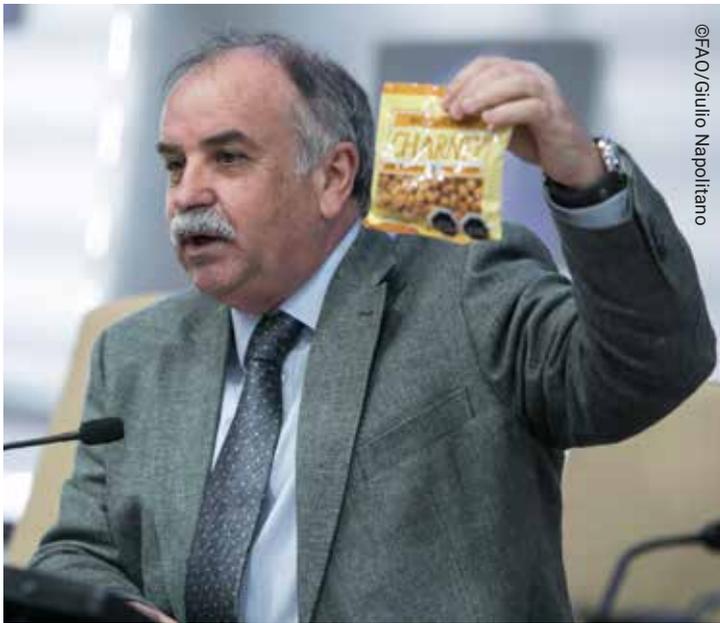
However, this may be changing because, according to Chile's

Ministry of Health, in the last two years there has been a 13 percent reduction in the consumption of sugary drinks and the reformulation of highly processed foods has led to a reduction of between 5 percent and 8 percent of sugar levels in some foods. This is a direct consequence of Law No. 20.606, passed in 2016 and in which Professor Uauy played a central role.

Law No. 20.606 is one of the most hard-hitting and, arguably, effective food

labelling laws yet seen in any country. It requires that all foodstuffs on sale bear a large black octagonal 'stop' sign if they contain more than agreed limits of sugar, sodium, saturated fats or calories and it is no longer legal to sell these products in or near schools or to target children through advertising.

Although contentious in its graphic execution and because it concentrates on certain nutrients rather than on diets, the law is based on sound science provided by FAO, WHO and



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Codex. “This is an initiative that we are really taking from the recommendations that were given at the level of FAO and WHO,” explains Professor Uauy. “Specifically, in Chile, when the time comes to discuss how much salt, how many calories, nutrient reference values had to be defined according to Codex Alimentarius principles. We don’t just make it up. The science practiced is the global science of the whole world in which not only the scientists but also the people in charge of public

policies come together, and Codex expressly fulfils this role.” It is the science-based, global and consensual nature of Codex decision-making that makes it the most impartial and reliable resource available for developing national-level legislation on food.

CODEX TRUST FUND

Providing support to African countries to help them address African issues

“One of the challenges with setting standards within Codex, particularly for issues that are important to developing countries, is the lack of data from these countries. One really critical issue is mycotoxins in food.”

Dr Sarah Cahill, *Senior Food Safety Officer, FAO*

Mycotoxins, including aflatoxins, are naturally occurring fungal toxins that can contaminate staple crops at any point along the food chain from the field to the storeroom and are one of the five major food safety concerns in Africa, where they are prevalent in maize and other staple cereal crops.

Mycotoxins are a recognized carcinogen to which both acute and long-term dietary exposure can be lethal. In children under five, there is increasing evidence on the link between exposure to aflatoxins and stunting, an indicator of chronic malnutrition in early childhood and in some countries, nearly 95 percent of children under five have aflatoxin in their body.

Data is a vital component in the bid to understand the mycotoxins that are present in staple foods and the health consequences of exposure to these. However, a lack of financial and technical resources to obtain data from low-income countries has often been a barrier to relevant research. In 2013, the CTF, with funding from the European Union, initiated a project in four countries in Africa to collect data on mycotoxins in sorghum. The results of this data collection are a valuable input to Codex work on mycotoxins. Some countries involved in the project are now using GAP to lessen the mycotoxin contamination of staple foods. CTF continues to support countries to build their capacity to understand and use data that is available, and to collect data on issues that are of high priority to the health of Africans which can be addressed in Codex standards, guidelines and codes of practice.

■
Key facts*

* www.fao.org/land-water/water/waterscarcity

Maternal and child undernutrition contributes to **45% of deaths** in children under five

49.5 million children aged under 5 are wasted



©FAO/IFAD/WFP/Peterik Wiggers



©unsplash/Fikran Jabbar

207 million adolescents (10-19 years) are overweight

822 million people are undernourished

2 billion people experience some level of food insecurity



©FAO/Christena Dowsett

20.5 million babies suffer from low birthweight



©FAO/IFAD/WFP/Peterik Wiggers



©FAO/Sue Price

2 billion adults (18+ years) are overweight

40 million children under 5 are overweight



©FAO/Declan McCormack

Anaemia affects **33% of women** of reproductive age



©FAO/Karina Levina

Obesity is projected to cost **USD 2 trillion** annually



©FAO/Sue Price

Stunting costs on average about **13.5% of GDP** per capita in developing countries



©FAO/Ariane Genton

Healthy soil produces **healthy food** and **better nutrition****



©FAO/AU/Yohannes Ziroiti

** Transforming Food and Agriculture to achieve the SDGs, FAO www.fao.org/land-water/water/water-scarcity

149 million children aged under 5 are stunted

By 2025, **1 800 million people** are expected to be living in countries or regions with "absolute" **water scarcity** (<500 m³ per year per capita)**

Africa remains the continent with the highest prevalence of undernourishment, affecting one fifth of its population (more than **256 million people**)



©FAO/IFAD/WFP/Michael Tewelde



SDG3 aims to “ensure healthy lives and promote well-being for all at all ages.” It is estimated that around 600 million people fall ill and approximately 420 000 die from foodborne disease every year. A whole range of causative agents of a bacterial, viral, prionic, parasitic or chemical nature give rise to at least 200 different communicable or noncommunicable foodborne diseases. Of those 600 million foodborne illnesses, 550 million are estimated to be related to diarrheal disease but foodborne disease (FBD) can result in a range of consequences including kidney and liver failure, brain and neural disorders and arthritis.

Children under five years bear a disproportionate share of the burden of FBD, accounting for 9 percent of the global population, but 38 percent of all cases of illness... An estimated 30 percent of premature deaths due to FBD are of children under age five.

The Food Safety Imperative,
World Bank, 2019



WHO, as the leading authority mandated to protect global public health, has the major responsibility in supporting SDG3 targets. WHO is custodian of 19 of the 26 SDG3 indicators. In the area of food safety, WHO aims to achieve a world capable of preventing, detecting and responding to public health threats associated with unsafe food. The international food safety standards developed in the Codex Alimentarius Commission are key to this work which WHO carries out in close collaboration with FAO.

The increasingly globalized nature of the food trade has led to the growing potential for developing countries' inclusion in international agri-food chains, but with this opportunity comes an increased expectation that these new, traditionally less regulated markets, should be made safer. Developing economy countries need to adopt suitable measures and build capacity to both open up this access and ensure that consumer health is protected domestically and throughout the global food trade.

Codex provides the science-based standards, that can form the basis of legislation and food safety and quality management for all countries. These texts are based on transparent, objective and 'state-of-the-science' risk assessments provided by independent international expert groups: the Joint FAO/WHO Expert Committee on Food Additives (JECFA); the Joint FAO/WHO Meeting on Pesticide Residues (JMPR); and the Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA).

Food safety has a key role to play in achieving target 3.3, which calls for the end of epidemics such as AIDS, tuberculosis, malaria and neglected tropical diseases, as well as combatting hepatitis, water-borne diseases and other communicable diseases. A number of communicable diseases, including hepatitis A and many water-borne diseases are known to be related to food. FBD is a major problem, as shown by the burden of FBD which was conservatively estimated at 33 million



Disability-Adjusted Life Years (DALYs) in 2015. A DALY equates to one lost year of “healthy” life and the term is used to help quantify losses caused by illness. Losses caused by FBD can be compared with 2015 estimates of 40 million DALYs for tuberculosis and 66 million for malaria.

Codex texts offer a comprehensive farm-to-fork approach to addressing the burden of disease from foodborne causes. Codex texts help equip all countries with proper information and tools to promote better handling of food and can be used as the basis of government legislation in low-resource settings. Key core Codex texts such as the internationally recognized *General Principles of Food Hygiene*, with its associated HACCP system approach, offer governments and the food industry the information they need in the broader fight against FBD and, in particular, microbial pathogens which are associated with about 80 percent of FBDs. Codex also produces Codes of Hygienic Practice for a range of different foodstuffs to amplify the hygiene requirements specific to those areas. It additionally issues guidelines on microbial and viral hazards as well as food safety control measures.

SDG3’s target 3.2 focuses on reducing preventable deaths of children aged under five. Codex has elaborated texts on infant formula and other foods aimed at the very young, including the *Code of Hygienic Practice for Powdered Formulae for Infants and Young Children*, which offers guidance on addressing foodborne risks to infants and children, and helping reduce the number of preventable deaths.

Codex also plays a role in helping countries to address food related NCDs as part of target 3.4. When countries base national standards on Codex standards that address risk factors for NCDs, this can be an important factor in reducing morbidity and mortality in their populations. Similarly, target 3.9 calls for the substantive reduction in the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. Food contaminated with heavy metals or with naturally occurring toxins can cause long-term health problems including cancer and neurological disorders.

Risk assessments carried out by the expert committees establish the levels at which chemical contaminants are harmful to human health and these are used as the basis

for establishing MRLs to protect health and help prevent NCDs. A notable example of this is the Codex work on methylmercury in fish. WHO considers mercury among the top 10 chemicals of major public health concern as it can have toxic effects on the nervous, digestive and immune systems of humans, and on lungs, kidneys, skin and eyes. To protect human health against high exposures of mercury in food, in 2018 the Codex Alimentarius Commission established new limits for methylmercury found in fish. Codex also sets MRLs on pesticide residues, food additives, and residues of veterinary drugs. In conjunction with Codex guidelines for *Good Husbandry and Good Agricultural Practices*, these are important tools to limit exposure to substances harmful to health in food and feed and thus contribute to achieving SDG3.

All of this work is science- and evidence-based and represents a vital resource for all countries and particularly those that do not yet have the finances or capacity to gather scientific data and undertake costly risk assessments. This is particularly important since many of those under-resourced countries are the same developing or transition economy countries that suffer the greatest FBD burden.

The world is now facing new and emerging risks that need to be identified and addressed quickly and effectively and managed globally. One such risk is from antimicrobial resistance (AMR), which has become a potential threat to humanity on a similar scale to that of climate change. Target 3d aims to “[s]trengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.” The work undertaken in Codex Task Forces such as the Task Force on Antimicrobial Resistance (TFAMR) and the capacity-building supported by the Codex Trust Fund contribute to international efforts to address these global threats.

Antimicrobial resistance poses such a significant global risk that at its 51st session, held in New York in March 2020, the United Nations Statistical Commission agreed a new SDG indicator for AMR. Under target 3d the text for the additional indicator reads: “Reduce the percentage of bloodstream infections due to selected antimicrobial resistant organisms”.



**CODEX
TRUST FUND**

All nations need to be able to contribute to the fight against antimicrobial resistance

Antimicrobial resistance (AMR) represents one of the most significant global health risks of the 21st century and is “estimated to cause at least 700 000 deaths around the world each year. That figure is predicted to rise to 10 million, alongside a cumulative cost of USD 100 trillion, by 2050 if no action is taken.” (UK Government, 2019). According to Tom Heilandt, Secretary of Codex, “Resistant bacteria can send us back to the 19th century and before, where many infectious diseases were untreatable.”

Codex is playing a key role in the global fight against AMR by developing science-based guidance on the management of foodborne AMR, which can occur through the dissemination of AMR microorganisms and determinants from animals and food crops to humans, via the consumption of food. Its 2011 *Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance*, drawn up by the TFAMR, follows the 2005 *Code of Practice to Minimize and Contain Antimicrobial Resistance*, which focuses on veterinary drugs. Work in the Codex task force is taking into account the *WHO Global Action Plan on Antimicrobial Resistance* and other relevant international standards to update the 2005 Code and produce

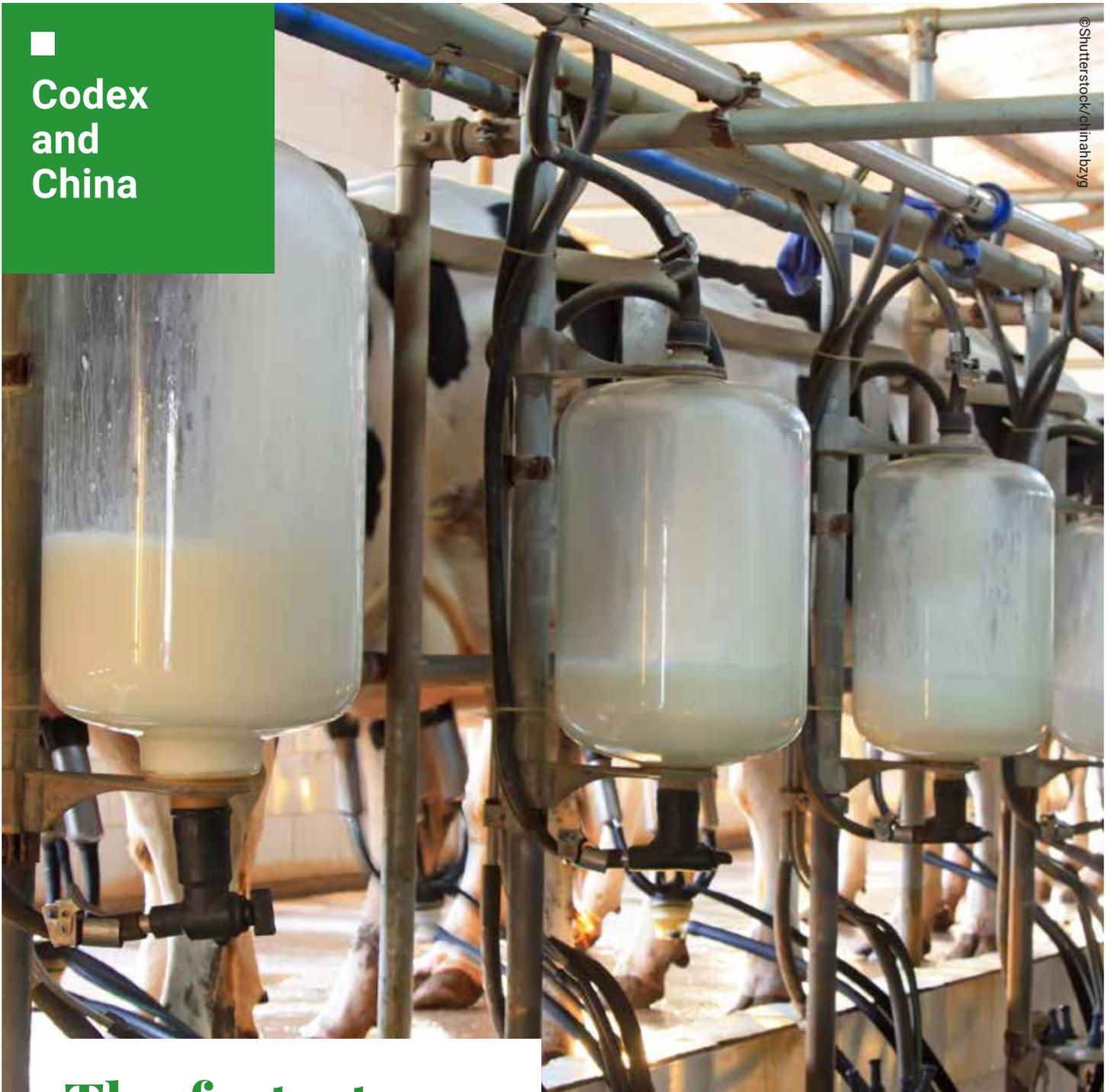
guidelines on integrated monitoring and surveillance of foodborne antimicrobial resistance.

Developing countries lack the capacity and resources required to establish the necessary surveillance infrastructures for monitoring antimicrobial use and its impacts. However, strenuous efforts are being made. In Kenya, for example, an awareness campaign run by the Kenya Medical Research Institute (KEMRI) is encouraging farmers in Good Husbandry Practices to reduce infection and the need for antibiotics. Kenya is also co-chair of one of the TFAMR working groups.

Through CTF support, the National Codex Committee in Ghana is building capacity to contribute to the TFAMR review and participate in electronic and physical meetings of the TFAMR. The team is learning how to engage in a national-level TFAMR and is collating views on national AMR-related needs from a range of stakeholders for effective participation in the revision of the updated code of practice.

Support for poorer nations is of direct benefit to those that are more privileged, as AMR does not recognize borders and a global effort is therefore needed to minimize its impact.

■ Codex and China



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The fastest international food standard ever developed

In 2008, 290 000 babies in China suddenly fell ill, 50 000 were hospitalized and 6 died. The outbreak of illness spread panic across China, putting excessive pressure on the public health system, terrifying parents who understood only that infants were falling ill on a drastic scale and causing suffering among the population's most vulnerable citizens.

The source of the problem was soon identified as powdered infant formula, putting pressure on international food suppliers, who sourced constituents of powdered milk and milk-based products from the same places as the producers of the contaminated Chinese infant formula. An international alert was

issued through INFOSAN¹, the FAO/WHO International Food Safety Authorities Network. “This was the tool that we used to find out all the products that were affected and to inform countries. Countries then informed each other how the distribution chains were working,” explained Angelika Tritscher, former Coordinator, Risk Assessment and Management, Department of Food Safety and Zoonoses at WHO. “It’s

only if we have an existing network like this, where people can very rapidly exchange information and communicate with each other, that you can try to contain and limit the impact of such an event.”

As the panic spread, WHO was being asked by governments, industry, the public how they could manage the situation. What was safe? What was the problem? A scientific expert consultation was rapidly convened, with generous funding from the Canadian government. The problem was identified as melamine adulteration and it quickly became

clear that the global community needed science-based information on what levels of this contaminant are safe in infant formula. Responding to the emergency situation, Codex was able to adopt the Maximum Level for *Melamine in Liquid Infant Formula* in record time.

The adulteration was criminally motivated and allowed fraudsters to dilute dairy milk with water. It worked because melamine in diluted milk produces nitrogen, which is what inspectors test for when they analyse milk for its protein content.

“These were technical people. They knew about chemistry,” says Dr Chen Junshi, Senior Research Professor, National Institute for Food Safety Risk Assessment in China. “This kind of adulteration is high tech. Very high tech.”

This was a robust risk management operation. The collaboration of the Chinese authorities, the contribution from Canada, the joint expertise of international scientists and the urgency with which Codex processed a standard to safeguard global health also provide an example of partnership as promoted by SDG17.

¹ See also Codex’s *Principles and Guidelines for the Exchange of Information in Food Safety Emergency Situations*. [online] www.fao.org/input/download/standards/36/CXG_019e.pdf



@Flooded Cellar Productions

■
**Codex
 and street
 food**



Codex helps keep cities free from foodborne disease

Codex's Asia region is home to over half the world's population. In response to growing rural poverty and livelihoods threatened by climate change, people are shifting on a large scale from rural to urban areas. However, many cities are poorly equipped to cope with such growing populations. This puts pressure on infrastructure and the sanitation and health of

urban populations, which helps to explain the need for SDG11, that aims to "make cities and human settlements inclusive, safe, resilient and sustainable." From a Codex perspective, one way in which SDG11 intersects with both SDG3 and SDG2, is in the growing demand for street food.

Street food is increasingly recognized as a source of food security for urban populations and

a vital source of income for vendors and those actors in the supply chains upon whom they depend. In Malaysia, for example, street food is a multi-million US dollar business, which provides over 100 000 vendors with employment and results in an estimated gross annual sales volume of 2 billion US dollars (Dawson and Canet, 1991).

However, environmental, chemical and microbial food safety risks are to be found throughout the sourcing, preparation and sale of street food. Vendors tend to be poorer and more likely to, knowingly or otherwise, compromise on the safety of the ingredients they use, so that sub-standard

agricultural produce easily finds its way into this sector. Many street vendors have been found to use inadequate, if any, storage facilities for food and unhygienic handling together with contaminated points of sale also contribute to a perfect storm of food safety risks. Ineffective regulatory regimes and poor oversight only contribute further to these hazards.

The regulation of street food has had a chequered history. In 1993, Codex was compelled to abandon efforts to produce an international code of hygienic practice for street foods because of the complexity of the issues involved. However,



“74% of countries reported street-vended foods to be a significant part of the urban food supply.”

Survey of street-vended foods, WHO, 1996

Codex Members were subsequently able to adopt regional guidance for Africa, Latin America and the Caribbean and the Near East in 1991, 2001 and 2013 respectively. Meanwhile, FAO reported in 1994 that Thailand had introduced a ten-point code of practice for vendors that has been widely used. Also, WHO's *Five Keys to Safer Food* have been taken up by countries, often with WHO support. Vietnam was one country that worked with WHO using the *Five Keys* as part of what became its revised 2011 food safety law, which involves a robust approach to training, compliance monitoring and sanctions for any contraventions. Malaysia, the Philippines and India

are other countries that regulate to protect street vendors.

The adoption in 2017 of the *Regional Code of Hygienic Practice for Street-Vended Foods in Asia* was a welcome move. The code of practice outlines the responsibilities not only of vendors, but also of consumers and competent authorities, calling for licencing, training and monitoring, as well as the provision of adequate facilities.

Thailand is one country that has been rigorous in its efforts to apply the practices outlined in this code of practice as well as to incorporate Codex's *General Principles of Food Hygiene* into national

legislation. One indication that regulatory efforts are bearing fruit in the street food sector, can be seen in a 2018 survey conducted across over 400 vendors in China, Greece, Poland and Thailand.

The survey measured hygiene practices against the Codex Code and concluded: “the most complete implementation of personal hygiene principles was found in Thailand” (Trafialek et al., 2018).



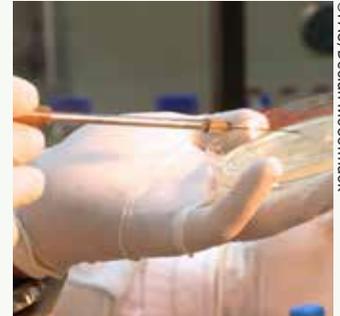
■
Key facts

Children under 5 years of age carry **40% of the FBD burden**, with **125 000 deaths** every year.



© FAO/BernaMilia

Almost **80% of the burden of FBD** is associated with microbial pathogens



© FAO/Declan McCormack

Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes **more than 200 diseases** – ranging from diarrhoea to cancers.



© FAO/Nozimir Kalandarov

An estimated **600 million** – almost **1 in 10 people** in the world – fall ill after eating contaminated food and **420 000 die every year**, resulting in the loss of **33 million healthy life years (DALYs*)**.



© FAO/Declan McCormack

* DALYs: "One DALY can be thought of as one lost year of "healthy" life. The sum of DALYs across a population is a measure of the burden of disease and can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability." – World Bank, *The Food Safety Imperative*



©FAO/Declan McCormack

Food supply chains now cross multiple national borders. Good collaboration between governments, producers and consumers helps ensure food safety.



©FAO/Mohammad Rakibul Hasan

Food safety, nutrition and food security are inextricably linked. **Unsafe food creates a vicious cycle of disease and malnutrition,** particularly affecting infants, young children, elderly and the sick.



©FAO/Manan Vatsyayana

Diarrhoeal diseases are the most common illnesses resulting from the consumption of contaminated food, causing **550 million people** to fall ill and **230 000 deaths** every year.



©FAO/Riccardo Gangale

Access to **sufficient amounts of safe and nutritious food** is key to sustaining life and promoting good health.

FBD impede socioeconomic development by straining health care systems, and harming national economies, tourism and trade.

98% of the FBD burden falls on developing countries



©FAO/Sue Price



SDG8 aspires to “promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.” In 2016, international trade in food was worth USD 1.6 trillion. Globally, there are 1.1 billion people working in agriculture alone, with many millions more relying for their livelihoods on work further along the agri-food chain, in processing, packing and retail as well as many other associated industries.



Global food production is a significant and growing economic sector and occupies many of the world's poor. Of those living in extreme poverty, 75 percent are in rural areas and depend on agriculture for their living. For many developing countries, a lucrative export market is available if they can comply with the exacting regulatory environment that governs trade in food. When a country adopts the science-based standards that are made available by Codex, it can gain access to that market and contribute to target 8.1, to "[s]ustain per capita economic growth in accordance with national circumstances," and thereby also promote the livelihoods and incomes of small scale producers and family farmers, which contributes to both SDG1 and SDG2.3.

FAO, WHO and CTF offer support to developing and transition economy countries to build capacity and establish and maintain national Codex structures. Such structures can contribute to a robust national framework

allowing participation in international standard setting relevant to a country's food trade interests and can help to ensure regulation of national-level food safety measures. This helps to sustain good oversight of food exports and the safety of the food-based economy at home, which also supports SDG3. All these factors strengthen prospects for sustained economic growth.

In many developing countries, the majority of the population works in primary food production, often in precarious, underpaid and seasonal jobs and with few rights. In South Asia, 62 percent of the population is engaged in agriculture and in sub-Saharan Africa, the figure is almost 66 percent. In many countries, the majority of agricultural workers are women. Growing the food-based economy in a sustainable way in these countries holds out the prospect of achieving "full and productive employment and decent work for all women and men" in accordance with target 8.5.

Codex in Honduras



Social well-being is everybody's business

In Honduras, 63 percent of the population lives in poverty and around 6 in 10 rural households subsist in extreme poverty. About 39 percent of the population is engaged in agricultural work, which includes coffee and banana production as top export earners. And it includes melon farming, which had an export value of USD 72 million in the first quarter of 2019.

Many agricultural workers are employed by the large, often foreign-owned companies that dominate the sector. This labour can involve workers in excessive use of agrochemicals, causing health problems and importantly from a Codex perspective, resulting in chemical residue levels that may exceed established MRLs. Furthermore, some of these workers are paid



@FAO/Declan McCormack

new possibilities, according to Yolandina Lambur Valle from SENASA, the national plant and animal health service and also the Codex focal point: "It affected us economically and socially," she says, "but it was also an opportunity to improve our production process and now we've regained the confidence we had lost."

In partnership with local private-sector companies,

the Honduran government set about establishing its own standard for melon production, based on the *Codex Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003)*¹. In this partnership, the private companies ensure strict adherence to MRLs, hygiene training and cleanliness among employees, which requires

¹ Annex IV for Melons (2017 revision)

hygiene facilities at work and provision of appropriate workwear. For its part, the government ensures regular monitoring and field visits, which gather samples for analysis both of residues in the melons themselves and of the cleanliness of factory surfaces, to protect against foodborne diseases such as salmonellosis, E. coli infections and listeriosis.



@FAO/Ubirajara Machado

less than the minimum wage, forcing them to live below the poverty line.

This level of hardship among poor melon workers was further exacerbated in 2008, when the US put an export ban on the Honduran melon sector following a number of cases of salmonellosis. Although challenging for the Honduran government, this crisis has opened up



Now some private companies have taken things even further. “In the fields we have a large workforce,” says José Annibal Motz of melon production company, Agrolibano, “many of our workers are youths and women. This has a direct impact on the local economy and really helps to support families in this rural area.” In recognition of their social responsibilities,

Agrolibano has provided the poorer families with materials and labour to build chicken coops, which keep chickens from contaminating melon fields and dwellings. They provide nutritious meals at a subsidized works canteen and price reductions at the company store - which supports the aims not only of SDG8 but also SDGs 2 and 3. For the very poorest of workers, they have built

houses. “We were living in a house made of cardboard when they came here to see us,” says company employee, Juan Espinal, “and now my family will have a proper home”. The company has also invested into local education.

“Food safety promotes the development of communities and the development of a person’s understanding,” explains Yolandina Lambur,

“because by applying Codex standards we not only improve the production plants but also people’s homes. And we need to continue teaching our children and all the family, so they can improve their quality of life.” And it is public-private partnership that made these successes possible, which serves to underline the importance of SDG17.



**CODEX
TRUST FUND**

Growing developing economies through Codex Trust Fund

In 2018, Honduras was granted funding for their CTF project. This will strengthen their capacity to establish a comprehensive and sustainable National Codex Program, helping to link Codex standards and structures with food safety policy in Honduras. Through improved food safety and compliance with globally accepted food standards, the Honduran government aims explicitly at increasing food exports, which will contribute to economic growth. According to Mirian Bueno, Assistant Director General, Sub-Directorate General for Food Safety in Honduras, it is hoped this will also help improve social and economic conditions in a sustainable way, especially for small businesses.

These policy aims are directly linked to the ambitions of the CTF project to help achieve SDGs 1, 2, 3, 8, 12 and 17

in Honduras. In relation to SDG8, the nation generates more than 14 percent of its GDP through agricultural production, with the sector making up 72 percent of exports in 2019. With more robust national Codex structures and alignment with international standards, that figure is expected to grow to 75 percent by 2022. The growth in the agricultural economy will also help reduce unemployment. According to Ms Bueno, unemployment reduced from 5.7 percent to 5 percent in 2019.

In a clear example of the mutuality of the SDGs, the government's aims to grow the economy and achieve SDG8 through improvements in the food sector will, at the same time, impact on poverty levels, food safety and security, health and food waste.



Sustainable Development Goal 12 intends to “[e]nsure sustainable consumption and production (SCP) patterns.” Food is a critical focus of this goal: despite producing more than enough to go around, we live in a world where over a quarter of the population is or could be hungry. Given that a third of the food produced globally is lost or wasted, responsible consumption and production could go a long way to resolving issues of hunger. Sustainable consumption also extends to responsible use of water, for example in agriculture (SDGs2 and 6), use of energy (SDG7), responsible fisheries (SDG14) and use of land and environmental resources (SDGs2 and 15).



More than 1 billion metric tons of food per year is never consumed in a world where one in nine people are still undernourished

The future of food and agriculture, FAO, 2017

Poor food safety leads to food loss and waste. However, Codex texts define conditions for ensuring food is safe and of the expected quality. These include maximum limits for pesticides and contaminants, guidelines on food handling, storage post-harvest and correct labelling, various Codes of Practice and Good Practices at different critical points in the food chain. Safe food not only has a positive impact on health but also on sustainable consumption and hunger: applying Codex measures can help ensure food is not spoiled due to contamination, poor storage and unsafe levels of processing agents, among other factors. Codex work can therefore help countries achieve target 12.3, which aims to “halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses,” and FAO is responsible for measuring the progress for this target.

While maximum limits contribute to both SDG2 and SDG3, as well as contributing to the sustainable management and use of natural resources (including water, energy, soils, and ecosystem services), they also play a part in achieving target 12.4, to “achieve the environmentally sound management of chemicals and reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.” Pesticide MRLs curb excessive use of chemicals in agriculture, thus making produce safe for human consumption and aiding sound environmental management. The reduced risk of contamination through responsible application of agrochemicals also enables more

sustainable and efficient management of natural resources: soils, for example, can suffer losses of biota as a result of excessive chemical use and can store and accumulate chemicals applied to them over a long period of time. Codex has also produced a Code of Practice promoting responsible use of antimicrobials, the application of which can ensure sustainability of both food and feed.

Codex bodies are also responsible for recommending safe maximum levels and specifications for food additives and for proposing relevant standards to the CAC for adoption. While it is vital that maximum levels need to be established to protect consumer health, there is little doubt that food additives have transformed the way we can preserve food to ensure maximum shelf life and reduce loss and waste. In addition, Codex produces advisory documents on accurate food labelling, which is another key factor in reducing waste: appropriate date marking and product information, for example, reduce the likelihood of foodstuffs spoiling before they are consumed, or of them being thrown away before they need to be.

It is in the interests of the food industry to avoid food waste and the open-source nature of Codex work gives companies access to science-based guidance. This, therefore, directly contributes to target 12.6, which aims to: “[e]ncourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.”

Codex in the United States of America



Providing data for development of Codex MRLs

In Hood River, Oregon, farmers grow an awful lot of pears and cherries. Robert Wymore, VP of operations at the Diamond Fruit packing cooperative in Hood River, estimates that his facility packs around USD 50 million worth of fruit a year. About 35 percent of that produce is exported to dozens of countries around the world.

Just like all responsible fruit producers around the world, the growers and packers of Hood River must ensure their product is free from pests so that quality is maintained, and the fruit does not spoil and go to waste. Food standards at home and abroad require them to control pests in a way that ensures their fruit is safe for human consumption, and exporters need to also



understand relevant food regulations in destination countries.

“We need to understand the standards that are in place in many countries around the world,” says Jason Sandahl of the US government’s Foreign Agricultural Service (FAS). “And many of the countries we export to rely on Codex standards to develop their own food law.” Codex is

additionally significant for food exports because, while countries often develop their own national food laws, for food that enters international trade, Codex standards are the reference standards.

Codex does not consider developing an MRL unless the relevant product is licensed in at least one country. It is therefore in the interests of wealthier

nations to test and, if appropriate, licence, new pesticides, which then helps Codex to establish internationally acceptable safe residue limits. One way in which the US helps develop these MRLs is in data collection, which is an expensive and specialized process that often only wealthier nations have the resources to carry out.

At a University of Oregon research station, Dr Joe de Francesco of Oregon University is gathering data on the safety of an as-yet unlicensed pesticide. His work will eventually make its way to the Codex Committee for Pesticide Residues.

Ensuring that fruit does not get rejected and go to waste due to the application of unsafe



levels of pesticides requires large-scale data collection and meticulous documentation of multiple variables. “These experiments are done under a lot of scrutiny and down to the millilitre,” says Dr Francesco. “It’s so important that the data is correct from the moment I step out of the truck because that’s going to influence what goes on way down the chain to the

Environmental Protection Agency (EPA), to Codex and eventually, to the food people eat. We have a notebook that we have to fill out hundreds of pages with details of the weather, the soil type, the stage of the growth of the tree or the vegetable – all the parameters that might affect the residues.”

Data collection can be a challenge, especially for

low- and middle-income countries. “It’s very expensive to generate this data on your own and it takes a lot of expertise,” says Jason Sandahl. “To establish a Codex MRL, work needs to be very rigorous. You need to have a distribution of locations and you need to conduct many field trials.” The FAS is involved in supporting resource-challenged nations to build data



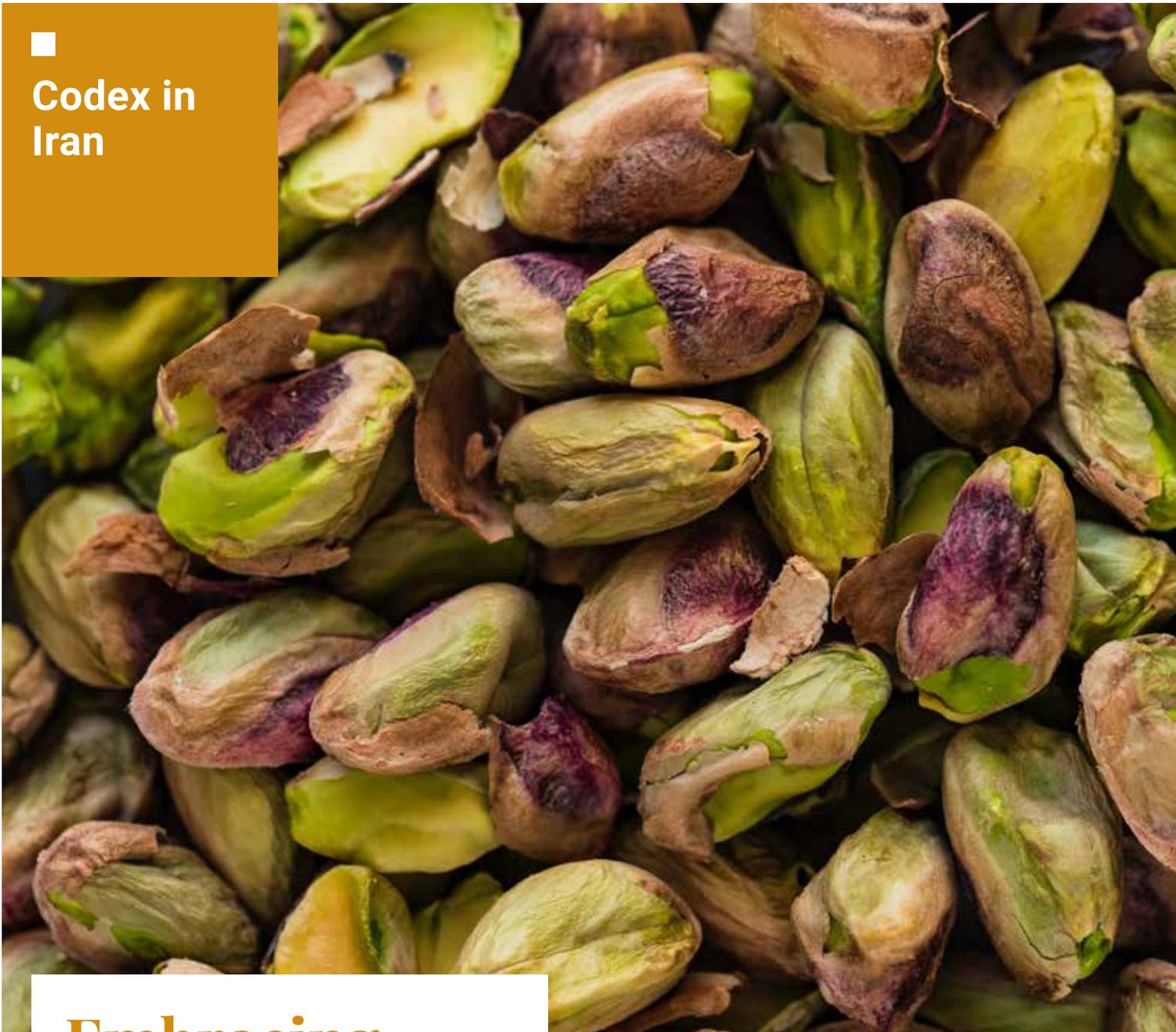
“Bruce is my chemical field man. And in order for us to use as few chemicals as possible and to minimize the disruption to the natural insect cycles, we do several things that he helps keep track of. He monitors the orchard and counts the number of eggs or small insects that he finds of various types of pest. And we try to time our sprays so that we use the least disruptive chemicals at the most effective time.”

Jennifer Ewer, Farmer, Hood River, Oregon

collection capacities for products grown specifically in developing countries. “We have 20 countries around the world where we’re conducting capacity-building and we’re providing training on how to conduct residue trials. And following that we’re working with them on a residue project for tropical fruits including mangoes, papayas, lychees and other crops.”

Codex work requires scientific rigour and when countries partner up to build capacity in data collection, that can result in more robust food safety processes for trade in products from developing as well as developed nations. This US government work also shows the kind of sustainable development partnership that is promoted by SDG17.

And the data collection work to gather the science for Codex MRLs helps achieve SDG12 as well as SDGs 1, 3 and 8 for all nations.



Embracing opportunity in Iran

Iran has a long and lucrative history of pistachio production and export. However, in the mid 1990s, high aflatoxin levels resulted in an EU ban on imports of Iran's prized product. The country subsequently took an active and important role in research on safe aflatoxin levels and worked closely with Codex on what became the *Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Tree Nuts*. While this has contributed

to a lifting of the EU ban, it has meant that stricter food safety controls in the pistachio sector in Iran has resulted in a higher percentage of rejected product (Iran Pistachio Association, 2013).

While food that has failed safety tests often ends up as waste, it can also be dumped by unscrupulous traders in informal markets which are unregulated and non-transparent. The subsequent negative consequences to health



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impacts most on the poor, who inevitably shop where they can buy cheaper food.

To avoid waste and the dumping of unsafe pistachios in informal markets, Iran is now aiming to turn a negative into a positive. Aflatoxins are not soluble in oil and, as the Iran Pistachio Association (IPA) points out, “even nuts showing higher than acceptable levels of aflatoxins can be used as the raw product to derive oil from the nut.

This nut oil can be filtered through a hydrophile medium to remove all traces of aflatoxins, which are soluble in water.” Iran worked with Codex to revise the Codex Standard for Named Vegetable Oils, to include pistachio oil. “In the not too distant future,” according to the IPA, “Iran will be producing at least 5 million litres of pistachio oil annually” (Iran Pistachio Association, 2013).

CODEX
TRUST FUND

Science and data – keys to sustainable consumption and production

Target 12A: “Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.” *

Science is the basis for testing foods to ensure they are safe to eat and for establishing or prolonging their shelf-life. Developing and transition economy countries often find they are too poorly resourced to ensure they have the human, financial, structural or infrastructural resources to take charge of the science that will ensure safe and sustainable food in their countries.

Of the fourteen countries receiving support from CTF in 2019, eleven identified a lack of scientific or data-gathering capacity as priority weaknesses. These nations are improving their sustainable consumption and production (SCP) status through: twinning trips to more experienced countries; awareness-raising among stakeholders, including scientists within their nations; pooling the resources they do have; and learning how to use them to take informed positions on Codex standards.

Ghana, for example, received capacity-building support for data collection on methylmercury in tuna and contributed to the discussions on relevant new MLs in 2018. There are now clear and relevant guidelines for Ghana to know which tuna caught in their seas is not safe to eat and must be discarded and which fish is safe to eat and need not be wasted. Senegal and Mali also wanted to harness the scientific capacity in their respective nations in order to improve participation in Codex committees.

Honduras and Madagascar gained support from CTF to compile databases of scientific experts to underpin their Codex work.

Interestingly, one of Bhutan’s key scientific weaknesses was in food import controls and SPS issues. As a consequence, according to Codex Bhutan’s Kubir Nath Bhattari, the nation has become a ‘dumping ground’ for substandard food. For the safety of their population and to encourage more sustainable export practices, Bhutan sought to improve its own scientific testing capacities, for which they are now receiving CTF support.

* Sustainable Development Solutions Network (SDSN)
<https://indicators.report/targets/12-a>

Key facts

Fruits and vegetables, plus roots and tubers have the **highest wastage rates** of any food.



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Every year, **consumers in rich countries waste almost as much food (222 million tonnes)** as the entire net food production of sub-Saharan Africa (**230 million tonnes**).



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Industrialized and developing countries dissipate roughly the same quantities of food – respectively **670 and 630 million tonnes**.

The food that is lost and wasted each year accounts for an estimated **8% of annual GHG emissions**, consumes a quarter of all water used by agriculture, and requires an agricultural area the size of China.



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Roughly **one third of the food produced** in the world for human consumption every year – approximately **1.3 billion tonnes** – gets lost or wasted.

©FAO/Soojin Kim



Global quantitative food losses and waste per year are roughly **30% for cereals, 40-50% for root crops, fruits and vegetables, 20% for oil seeds, meat and dairy plus 35% for fish.**

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Food losses and waste amounts to roughly **USD 680 billion in industrialized countries** and **USD 310 billion in developing countries.**

Per capita waste by consumers is between **95-115 kg a year** in Europe and North America, while consumers in sub-Saharan Africa, south and south-eastern Asia, each throw away **only 6-11 kg a year.**

The amount of food lost or wasted every year is equivalent to more than half of the world's annual cereals crop (**2.3 billion tonnes in 2009/2010**).

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SDG17 aims to “[s]trengthen the means of implementation and revitalize the global partnership for sustainable development” and provides the backbone for the whole 2030 Agenda for Sustainable Development, identifying the complex set of Means of Implementation (MoI) required to enable achievement of SDGs. It calls for a coming together of stakeholders from across the world and from across sectors and services in the interests of all global citizens and the planet itself. It is the goal with the greatest number of targets, divided into sections, covering the many means needed to achieve SDGs (including trade, science and technology, IT and digitalization, etc.). It calls for everyone to contribute to a sustainably developed world. And it is the SDG with one of the simplest aims: partnership.



One set of SDG17 targets relevant to Codex is that of trade. When target 17.10 describes a “universal, rules-based, open, nondiscriminatory and equitable multilateral trading system” it is describing the mandate, goals and daily work of the Codex Alimentarius. This fundamental work and the additional support CTF lends to countries that would otherwise be left behind, helps to “[s]ignificantly increase the exports of developing countries, in particular with a view to doubling the least developed countries’ share of global exports by 2020,” target 17.11.

This is only possible with sound, scientific standards that are researched, evaluated and adopted in a consensual process. This work is done as a result of globally collected data sets, thanks to committees of

world-leading experts and is finally approved through consensus by 188 governments and one Member Organization of the Codex Alimentarius Commission. While responsibility on adoption of food standards always lies with Members, the collaboration of industry associations on provision of data and input on the practicality of standards is essential. The resulting standards, guidelines and codes of practice are then freely available for all governments, to inform their food laws, or for industry, to ensure compliance with international trade rules. Codex is an exemplar of what target 17.16 strives to attain in “[enhancing] the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and

share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.”

The Codex contribution to a universal trading system also involves partnership with a whole spectrum of organizations. There are over 200 recognized observer organizations in the CAC, who contribute to debate around food-related issues and specific standards and guidelines. Those organizations come from the public and private sector, represent industry interests as well as those of civil society and NGOs, and they can also be specialized international organizations.

The CTF is also the product of partnership. Donor countries contribute because they recognize the value of ensuring that developing and transition economy countries can participate fully and effectively in all aspects of Codex work. As Dr Naoko Yamamoto, WHO Assistant Director-General, has commented: “Through participation of all countries we ensure that Codex standards, guidelines and codes of practice are globally relevant and meet the needs of all countries.”

CODEX TRUST FUND

Give a man a fish...

Target 17.9 is specifically aimed at capacity building. It strives to “[e]nhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation.”

One of the crucially important facets of Codex work is that it gifts scientific research and knowledge to its members. The standards, MRLs, codes of practice and guidelines that result from expensively and expertly gathered data are available to all nations, including those that do not yet have the resources to contribute.

The Codex Trust Fund offers financial support and capacity-building to under-resourced countries so that they are not just bystanders in the standards-setting process but can participate fully and effectively and become “shapers” of those Codex standards. This is only possible when countries have strong, functioning and sustainable national Codex structures that involve all relevant stakeholders at national level in a partnership

around Codex activities. Achieving SDG17 on means of implementation and partnership starts at the national level when key government sectors, the food industry, consumers, academia, research institutions, international and non-governmental organizations work together to further Codex work as an integral part of food safety systems in countries. All Codex Trust Fund-supported projects include activities that raise awareness on the importance of Codex and the need to have sustained political and financial support. Other activities bring stakeholders together, educate them on Codex standards, the role they can and should play in Codex, and the importance of using Codex standards, guidelines and codes of practice.

For countries facing the biggest challenges described by the whole range of SDGs, access to Codex work is very important. What is also significant for those countries is that CTF helps them to take part in steering Codex work and to actively pursue their national interests on an equal footing with others.

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Codex and the SDGs

In 2015, the global community agreed on the 2030 Agenda for Sustainable Development, “a plan of action for people, planet and prosperity,” and established the 17 Sustainable Development Goals, or SDGs.

With its twin mandate to protect consumer health and promote fair practices in the food trade, the joint FAO/WHO Food Standards Programme adopts science-based food standards into its Codex Alimentarius, or ‘Food Code’, to the benefit of its 188 Member Countries and one Member Organization (the European Union). These food standards, which include guidelines and codes of practice, are a freely available resource for all countries to use as part of their domestic food safety systems and to ensure their food exports are internationally compliant. Codex standards are also a World Trade Organization reference for food trade disputes and furthermore, they represent a significant tool to help countries achieve the Sustainable Development Goals.

Countries that take advantage of Codex standards, guidelines and codes of practice are better positioned to tackle many of the SDG targets. In particular, alignment of food safety systems with the Codex Alimentarius can help countries work towards SDGs 1, 2, 3, 8, 12 and 17.

This document explains how Codex work supports countries to achieve these particular SDGs, which are interconnected with other SDGs and the 2030 Agenda generally. It also highlights how the Codex Trust Fund supports developing and transition economy countries to build food safety capacity, which helps equip them to pursue the SDGs more successfully. Through stories from different countries, the value of Codex work is illustrated and the potential for countries to achieve specific relevant targets is detailed.

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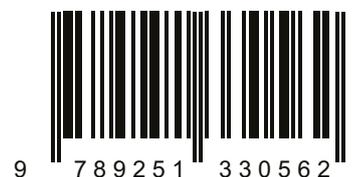
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