



COUNTDOWN TO 2023:

WHO REPORT ON GLOBAL TRANS FAT ELIMINATION 2019



World Health
Organization



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EXECUTIVE SUMMARY

Intake of *trans*-fatty acids (TFA) is associated with increased risk of heart attack and death from heart disease (WHO, 2019a). TFA intake is estimated to be responsible for more than half a million deaths from coronary heart disease each year around the world (Wang et al., 2016). Replacing industrially produced TFA with healthier oils and fats is feasible without changing the taste of food or its cost to the consumer.

In May 2018, the World Health Organization (WHO) launched the REPLACE action package to support governments to eliminate industrially produced TFA from the global food supply by 2023. The package calls for replacement of TFA with healthier oils and fats, to be achieved through policy and regulation, while establishing monitoring systems and creating awareness among policy-makers, industry and the public.

Momentum around TFA elimination has been growing as more countries begin to take action by adopting and enforcing policies. Mandatory TFA limits or bans on partially hydrogenated oils are currently in effect for 2.4 billion people in 28 Member States (31% global population coverage). Since the beginning of 2018, mandatory TFA limits have come into effect in six additional countries and have been passed in 24 additional countries. Some multinational companies have committed, and taken steps, to eliminate industrially produced TFA from global product lines.

Although this progress is encouraging, the vast majority of countries still do not have policies in place to protect their citizens from the harmful effects of TFA. Therefore, there is still a long way to go to achieve global elimination by 2023. To meet this target, WHO will strengthen its support to countries in eliminating TFA and overcoming any challenges they may be facing, including by developing and providing regulatory capacity-building training.

WHO also recommends that the following actions be taken by countries to create a global movement on TFA elimination.

- Develop and implement mandatory TFA limits.
- Share experiences and best practices in TFA elimination, and consider regional or intercountry networks to enhance actions.
- Renew support and strengthen commitment for eliminating industrially produced TFA by 2023 to achieve the first elimination of a risk factor for noncommunicable disease.

Actions are also required by countries and other concerned stakeholders to ensure that the world is free from industrially produced TFA by 2023. WHO expects the industry groups to implement the firm commitments they have made to eliminate industrially produced TFA from product lines.





I. INTRODUCTION

Cardiovascular disease is the leading killer globally, causing more than 18 million deaths every year. Elimination of industrially produced *trans*-fatty acids (TFA) is a target that is within reach and can have large-scale impact in preventing heart disease. Half a million people die each year because of TFA in their food. Just 10 countries make up 80% of the burden in low- and middle-income countries (Wang et al., 2016) (Fig. 1). Replacing industrially produced TFA with healthier oils and fats is feasible and cost-effective, and will save lives.

TFA elimination is increasingly becoming a priority across the globe. Following the first national policy to eliminate industrially produced TFA in Denmark in 2003, a growing number of countries have taken policy action to protect their citizens from TFA. During the past 15 years, 28 countries have implemented mandatory TFA limits, covering 2.4 billion people (31%) across the globe (UN DESA, 2017).

As well, a growing number of regional regulations are in place that aim to eliminate industrially produced TFA. They include TFA limits by the Eurasian Economic Union, the Gulf Cooperation Council (GCC) and the European Union (EU). These three regional policies have the potential to reach 41 countries and protect more than 700 million people.

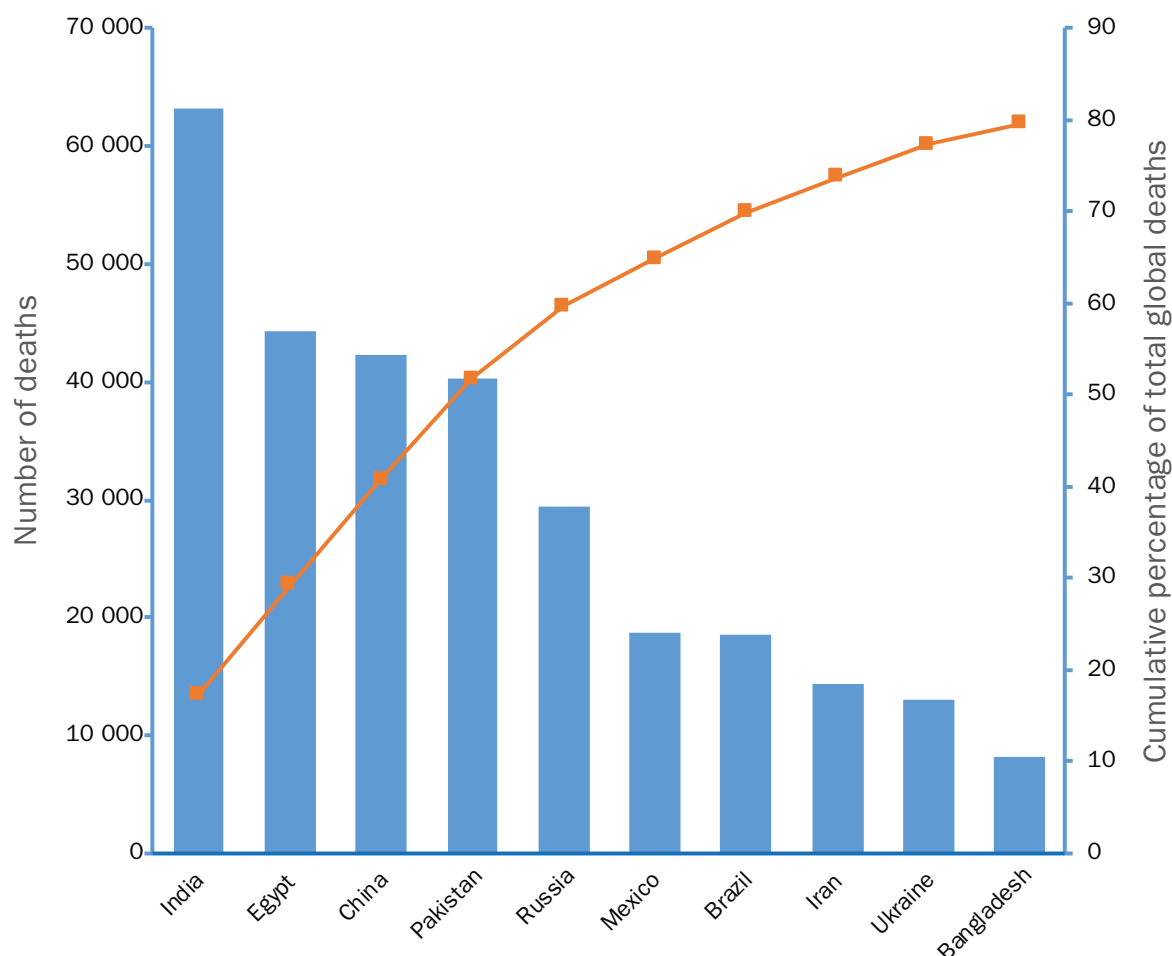


Figure 1. Estimated number of annual deaths from coronary heart disease per million population due to TFA intake (>0.5% energy) in adults 25 years and older, low- and middle-income countries, 2010 (adapted from data in Wang et al., 2016)

Civil society organizations are advocating for, and supporting, governments to set mandatory TFA limits in many countries. With the extensive and incontrovertible evidence of the health harms of TFA and the growing attention to this important issue globally, TFA in food supplies have received significant media attention in the past year.

The food industry is also increasingly receptive to replacing industrially produced TFA in their products with healthier oils and fats. The International Food and Beverage Alliance (IFBA), an association representing 12 of the largest international food and non-alcoholic beverage companies globally, reported a worldwide reduction in industrially produced TFA in their products to less than 1 gram per 100 grams of product by the end of 2018 (IFBA, 2018).







Healthier replacements are available and accessible. To maximize the impact on population health, TFA should be replaced with healthier oils and fats – that is, fats high in polyunsaturated fatty acids (PUFA) and low in saturated fatty acids (SFA). Appropriate replacements depend on the functionality needed for specific uses of partially hydrogenated oils (PHO). When liquid oils are needed, those that do not oxidize quickly (for example, high oleic canola oil or high PUFA oil with antioxidants) are good replacement options. For products that require harder fats, replacement options include interesterified and blended oils. All these replacements maintain functionality of the oil, preserve the taste of food and save lives.

The 13th General Programme of Work of the World Health Organization (WHO), which was endorsed by the 71st World Health Assembly in May 2018, highlighted the elimination of industrially produced TFA as a priority target to be achieved by 2023. This has prompted increased attention and accelerated actions during the past 12 months by WHO and its Member States, as well as other stakeholders and partners, to eliminate industrially produced TFA. Launching of the REPLACE action package in May 2018 contributed to the growing momentum.

The REPLACE action package serves as a roadmap for countries to implement actions to reduce and eliminate industrially produced TFA. It outlines six strategic action areas to support the prompt, complete and sustained elimination of industrially produced TFA from the food supply (Box 1). It also brings together the lessons learned from countries that have successfully removed industrially produced TFA from their food supplies. The package calls for policy actions to eliminate TFA, while establishing solid monitoring systems to measure progress over time.

Terms used in this report are described below.

DEFINITIONS

	National policy commitment to eliminate TFA: National policies, strategies or action plans express a commitment to reduce industrially produced TFA in the food supply.
	Other complementary Measures: Legislative or other measures have been adopted to encourage consumers to make healthier choices with regard to industrially produced TFA (for example, mandatory declaration of TFA on nutrition labels, front-of-pack labelling system that includes TFA, reformulation) or mandatory limits on industrially produced TFA in foods in specific settings (for example, public institutions).
	Less restrictive TFA limits: Legal measures have been adopted to limit industrially produced TFA in foods in all settings, but these are less restrictive than the recommended approach (for example, 2% industrially produced TFA limit in oils and fats only; 2% industrially produced TFA limit in oils and fats, and 5% limit in other foods; 5% industrially produced TFA limit in oils and fats).
	Best-practice TFA policies: Legislative measures have been adopted to limit industrially produced TFA in foods in all settings, and these are in line with the recommended approach. The two alternative best-practice policies for TFA elimination are: 1) mandatory national limit of 2 grams of industrially produced TFA per 100 grams of total oils and fats in all foods; and 2) mandatory national ban on the production or use of PHO as an ingredient in all foods.
	Best-practice TFA policy passed but not yet in effect (as of May 2019): Best-practice policies have already passed but not yet come into effect as of May 2019.
	Mandatory TFA limits: This broader term refers to “Best-practice TFA policies” and “Less restrictive TFA limits”.
	Monitoring mechanism for mandatory TFA limits: A mechanism exists to monitor the legislative measures for mandatory TFA limits.

Released one year after the launch of the REPLACE action package in May 2018, this progress report aims to track and accelerate progress towards the goal of global elimination by 2023. It is planned that an annual progress report will be prepared that will:

- describe the current global, regional and national situations and changes during the past year;
- track progress of key policy outcomes and milestones;
- discuss challenges and opportunities for future action;
- highlight enablers and blockers of TFA elimination at the country level; and
- recommend strategic priorities for the next 12 months to achieve the 2023 target.

In addition, this report highlights five countries in different WHO regions that have completed assessments to develop country roadmaps for the complete and sustained elimination of industrially produced TFA from their national food supplies.

BOX 1. REPLACE ACTION PACKAGE STRATEGIC ACTION AREAS

REPLACE					
REVIEW	PROMOTE	LEGISLATE	ASSESS	CREATE	ENFORCE
dietary sources of industrially produced TFA and the landscape for required policy change	the replacement of industrially produced TFA with healthier oils and fats	or enact regulatory actions to eliminate industrially produced TFA	and monitor TFA content in the food supply and changes in TFA consumption in the population	awareness of the negative health impact of TFA among policy-makers, producers, suppliers and the public	compliance with policies and regulations

II. GLOBAL PROGRESS

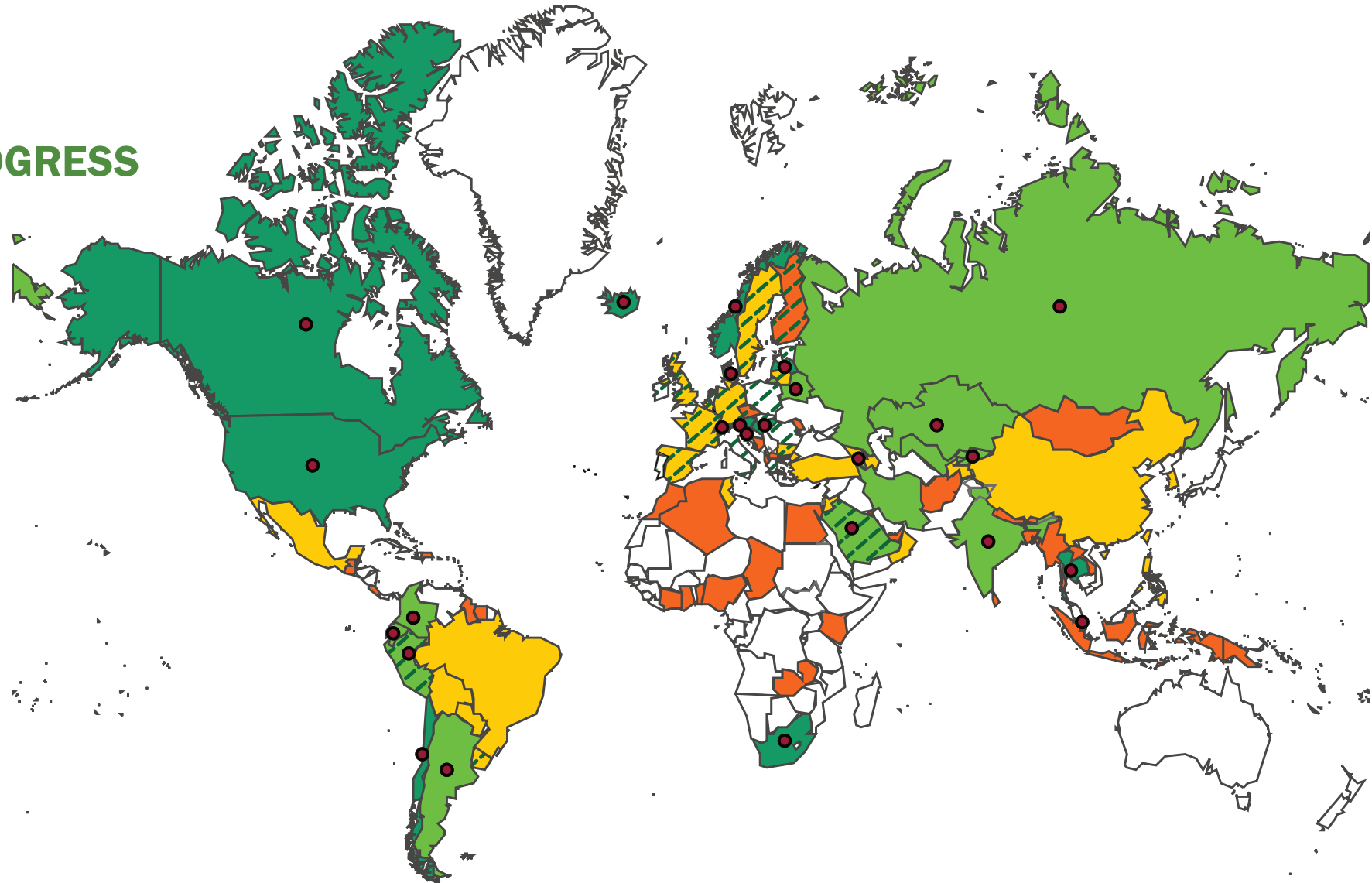
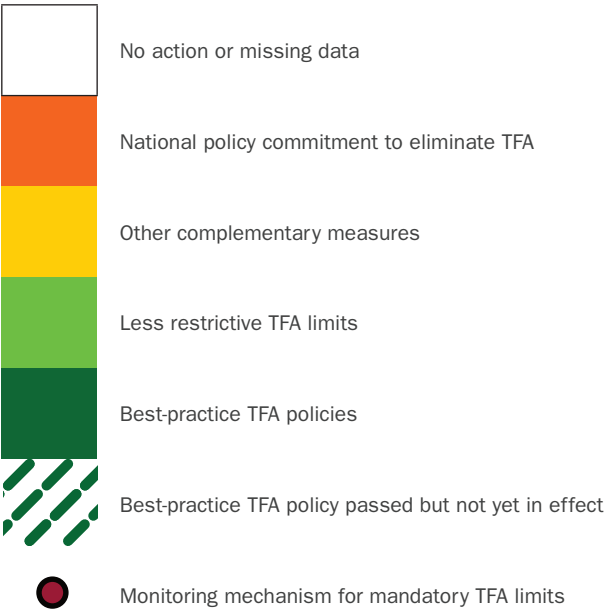


Figure 2. TFA policy implementation: map of country performance^a



^a This is based on the data currently available in GINA as of 19 May 2019.

1. CURRENT SITUATION

Mandatory TFA limits are currently in effect for 2.4 billion people in 28 countries (31% of the global population in 2019). Of these, only 12 countries have best-practice policies, covering 540 million people (7% of the global population). Additional 24 countries have enacted mandatory TFA limits that will come into effect within the next two years. In addition, 26 countries have other complementary measures in place, and 49 countries have a national policy, strategy or action plan in place that expresses a commitment to reduce TFA in the food supply. For the remaining 67 countries, there is either no action or the status is unknown

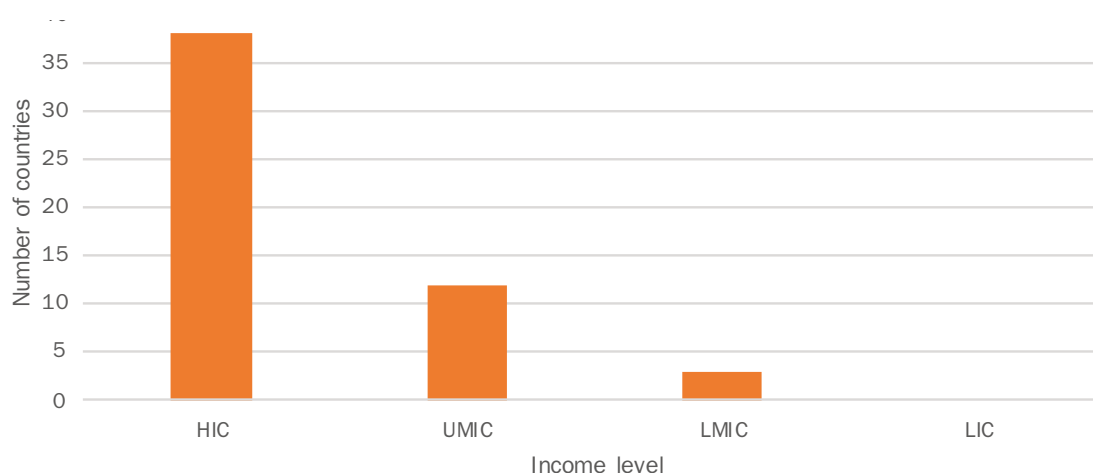
The map below (Fig. 2) shows the status of countries with mandatory TFA limits. The map is based on a country performance scorecard developed by WHO and data from the WHO Global database on the Implementation of Nutrition Action (GINA) (<http://www.who.int/nutrition/gina/en/>).ⁱ The live map is accessible on the GINA and REPLACE webpages (<https://www.who.int/nutrition/topics/replace-transfat>). Furthermore, Appendix 1 provides the information on TFA burden and the status of TFA policies which are in place and are currently being implemented as well as those which are scheduled to be enacted soon by countries.

Fifty-three WHO Member States have mandatory TFA limits passed or in effect. This is encouraging, yet highlights important disparities in policy coverage by region and country income level. Most policy actions to date have been in higher income countries, and in the WHO regions of the Americas and Europe. No low-income countries and only three lower-middle-income countries (India, Kyrgyzstan and Uzbekistan; 45% of the total population of such countries) have adopted mandatory TFA limits. Mandatory TFA limits have been adopted by 12 upper-middle-income countries (Armenia, Belarus, Bulgaria, Colombia, Ecuador, Iran (Islamic Republic of), Kazakhstan, Peru,

Romania, Russian Federation, South Africa and Thailand; 19% by population) and 37 high-income countries (Argentina, Austria, Bahrain, Belgium, Canada, Chile, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Saudi Arabia, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States of America and Uruguay; 81% by population) (Fig. 3). Supporting low- and middle-income countries to implement best-practice policies is critical to ensure that people in all countries benefit equally from protections from TFA in foods.

ⁱ GINA is an online database of validated information on countries' policies and programme interventions relating to fortification, food labelling, marketing of breast-milk substitutes and nutrition (including TFA).

Fig 3. Number of countries with mandatory TFA limits passed or in effect, by income level^a



^a HIC= high-income countries, UMIC = upper-middle-income countries, LMIC = lower-middle-income countries, LIC = low-income countries.

2. GROWING MOMENTUM

Meaningful progress in TFA elimination has been made globally in the past year. Since 2018, new best-practice policies came into effect in five countries (Canada, Latvia, Slovenia, Thailand and the United States). In April 2019, a policy was passed in the EU that is also applicable to the European Economic Area (EEA) (representing 23 additional countries that had not previously had a best-practice policy in place). Similarly, best-practice policies were passed in Peru, Saudi Arabia and Uruguay. Peru and Saudi Arabia already had

in place a policy with less restrictive limits (Table 1). This brings the total number of countries with mandatory TFA limits currently in effect to 28 (Fig. 4). Furthermore, two countries notified draft best-practice TFA policies for public comment. The Member States of the Pan-American Health Organization (PAHO) (35 countries) mandated PAHO to develop a “Regional plan of action to eliminate industrially produced trans fatty acids 2020–2025 in the Americas”; the plan will be submitted to PAHO’s 57th Directing Council in September 2019.

Table 1. Progress in mandatory TFA limits since beginning of 2018

Best-practice TFA policy			Less restrictive limits
Came into effect	Passed	Draft policy proposed and notified for public comment	Came into effect
Canada	EU and EEA (23 countries ^a) Peru Saudi Arabia Uruguay	India ^b	Peru
Latvia		Turkey	
Slovenia			
Thailand			
United States			

^a Excludes Austria, Denmark, Hungary, Latvia and Slovenia in the EU, and Iceland and Norway in the EEA, which already have a best-practice policy in effect.

^b Since 2011, India has had regulations that set a TFA limit of 10% in oils and fats, which was further reduced to 5% in 2015. In December 2018, the Food Safety and Standards Authority of India has proposed reducing this limit further to 2% and eliminating artificial TFA in the food supply by 2022, a year ahead of the global target. A draft notification has been issued by the government in this regard, which is pending ratification.

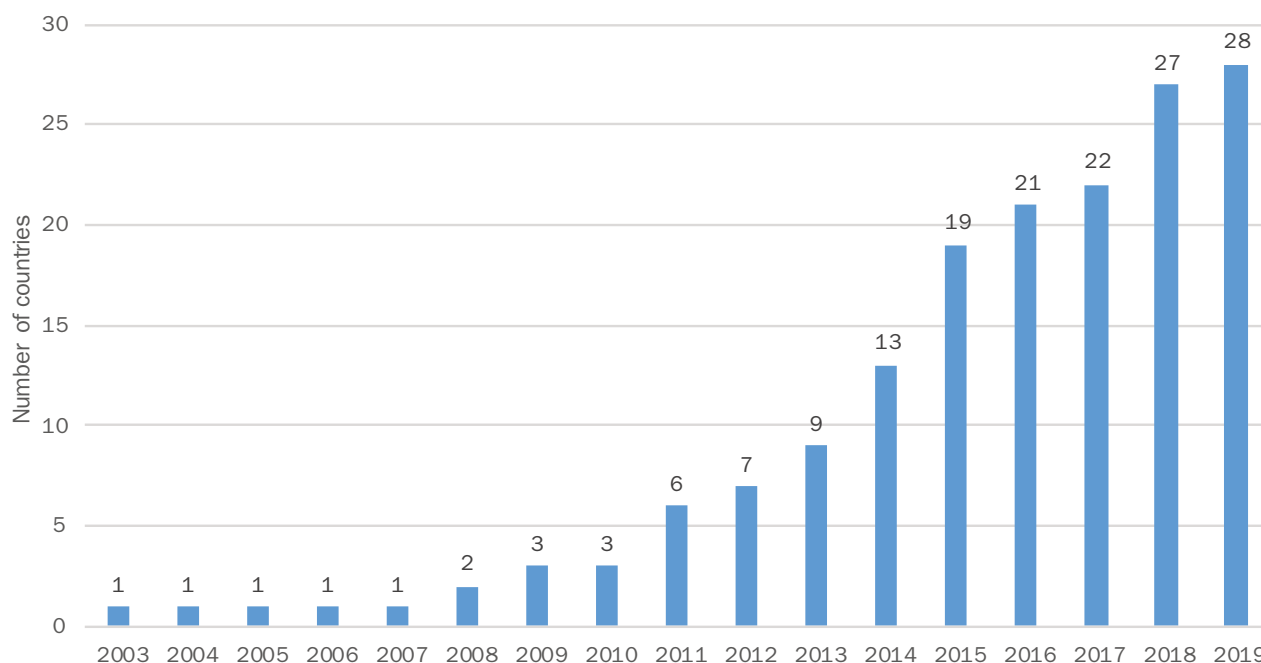


Fig 4. Number of countries with mandatory TFA limits in effect, by year

3. INDUSTRY SUPPORT FOR REFORMULATION

Elimination of industrially produced TFA requires the involvement of manufacturers of foods, and edible oils and fats. In 2018, WHO and Chatham House convened a meeting with a number of major multinational food companies, and edible oils and fats manufacturers to advance this dialogue and set expectations for industry commitments. At the meeting, WHO outlined its expectations for commitments from large multinational food manufacturers for TFA elimination. The WHO expectations are outlined in Table 2.

In May 2019, IFBA member companies committed to not exceed 2 grams of industrially produced TFA per 100 grams of oils and fats in their products worldwide by 2023, in line with WHO expectations. They have also committed to reformulating products without increasing SFA content.ⁱⁱ

IFBA has also partnered with the Global Alliance for Improved Nutrition (GAIN), as part of the Scaling Up Nutrition (SUN) Business Network, to support small and medium-sized enterprises (SMEs) in product reformulation by providing the technical knowledge to eliminate TFA from their product lines. A pilot project is currently being implemented in Nigeria and Pakistan; this will lead to the development of a knowledge-sharing platform that can support SMEs globally.

In addition to food manufacturers, edible oils and fats producers must halt the supply of TFA-containing products to clients, which include food manufacturers, restaurants and other eateries.

A priority for the next 12 months will be to obtain commitments that meet the WHO expectations from major multinational food and edible oils and fats manufacturers, and to ensure that an appropriate accountability mechanism is in place. Independent evaluation of industry actions will be crucial to ensure the progress and implementation of their commitments.

ii https://ifballiance.org/uploads/press/pdf/5ccc4b8061475_IFBA%20TFA%20Enhanced%20Commitment%2002.05.2019.pdf

Table 2. WHO expectations for industry commitments on TFA elimination

1	Reformulate foods to eliminate industrially produced TFA	<ul style="list-style-type: none"> ● Ensure that the TFA elimination target set to be achieved by the end of 2018 (by IFBA) is in line with the WHO recommendation for all food categories (<2 g per 100 g of total oil or fat), including the aim of not increasing SFA ● Implement TFA elimination across global product lines by 2023. Studies have found that the same product in different countries can have drastically different levels of TFA. Company policy should be no TFA (including PHO) in food products anywhere in the world
2	Support small and medium-sized enterprises	<ul style="list-style-type: none"> ● Share knowledge with small and medium-sized enterprises/companies through setting up a repository of methods and technological innovations, and provide technical support as required ● Assist companies with fewer resources to have the same impact as industry partners that have successfully found replacements higher in unsaturated fat
3	Label TFA content	<ul style="list-style-type: none"> ● Implement TFA labelling on pre-packaged foods by 2020 (specific timeline to be agreed)
4	Supply replacement alternatives low in SFA	<ul style="list-style-type: none"> ● Increase the supply of replacement alternatives low in SFA by oil and fat manufacturers to support the enforcement of elimination of industrially produced TFA
5	Evaluate commitments	<ul style="list-style-type: none"> ● Support the implementation of periodic independent evaluation to monitor progress and achievements under the commitments made

4. GLOBAL RESOURCES TO SUPPORT POLICY ACTION

The REPLACE modules, along with other supporting implementation resources – such as global surveillance protocols and a public service announcement – are available to support countries in developing and enforcing mandatory TFA limits. The modules provide practical, step-by-step implementation information to support governments to eliminate industrially produced TFA from their national food supplies. National policy-makers, food control authorities, subnational government bodies that play roles in implementing and enforcing food

and nutrition policies, and other stakeholders can use the modules to implement WHO recommendations and guide country action towards TFA elimination. The modules and other supporting implementation resources are available on the REPLACE webpage (<https://www.who.int/nutrition/topics/replace-transfat>).

In the next 12 months, WHO will develop and implement a regulatory capacity-building curriculum to train relevant government stakeholders on designing and implementing best-practice policies.





III. PROGRESS BY REGION

1. AFRICA

The Africa region (see Table 3) has the fewest number of countries with mandatory TFA limits in place. South Africa has had best-practice mandatory TFA limits in foods, oils and fats since 2011. A number of countries have adopted national plans on nutrition or noncommunicable diseases (NCDs) that include goals or strategies to eliminate industrially produced TFA. In 2018, Nigeria established a technical working group to address the need to reduce industrially produced TFA in the food supply.

No regional initiatives are currently under way. Currently, maternal, infant and young child undernutrition is a main focus and priority health issue of many countries in Africa; as a result, financial and human resources to enact

mandatory TFA limits at national levels may be limited. However, regional or subregional bodies in the region may present an opportunity to accelerate TFA elimination. These include the African Union; the Economic Community of West African States; the Southern African Development Community; the East African Community; the East, Central and Southern African Health Community; and the West African Economic and Monetary Union.

In addition to possible regional approaches, it is expected that much progress may be made in Nigeria during the next 12 months. Opportunities in Nigeria are described in Box 2.

Table 3. Summary of the TFA policy situation in Africa

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Algeria Benin Cape Verde Chad Côte d'Ivoire Eswatini Ghana Kenya Mauritius Nigeria Seychelles Zambia			South Africa		South Africa

BOX 2. NIGERIA SITUATION AND OPPORTUNITIES

TFA burden: With an estimated population of 182 million people, Nigeria is the most populous country in Africa, and the seventh most populous country in the world. NCDs accounted for 29% of all deaths in 2016; cardiovascular disease (CVD) caused more deaths than any other group of diseases (WHO, 2018). Data on the burden of TFA in Nigeria are limited. In 2010, approximately 1300 Nigerians were estimated to have died as a result of high TFA intake, and mean TFA intake was 0.9% of total energy intake (Wang et al., 2016). Nigeria's market for PHO – the main source of industrially produced TFA in food – is the biggest in Africa, with an estimated market volume of 229 000 tonnes in 2017 (roughly 8.5% of Africa's total PHO market volume) (Persistence Market Research, 2018).

Major sources of TFA: Nigeria does not have an established monitoring system for TFA in foods or human consumption. No known studies have identified the major sources of TFA in the food supply or in the population intake.

Political Environment: Nigeria currently has no policies regulating the use of PHO or the amount of TFA in food. The National Agency for Food and Drug Administration and Control (NAFDAC) has authority to issue or amend regulations that ban or regulate the levels of particular components in food; the agency may need further legislative authority to prosecute noncompliance.

As a result of advocacy by civil society, in 2018 the Federal Ministry of Health directed NAFDAC and the Standards Organisation of Nigeria (SON) to review relevant standards and regulations to drastically reduce industrially produced TFA in the food supply. NAFDAC and SON established a technical working group, which plans to finalize a policy draft by the end of 2019. A final decision on the TFA elimination policy is expected to be provided by NAFDAC by mid-2020.

In-country stakeholders have raised concerns that resources – such as laboratory capacity and personnel to monitor compliance – may not be sufficient to effectively enforce a TFA elimination policy.

Industry landscape: Nigeria's estimated PHO market volume (229 000 tonnes) comprises domestic production of palm oil (133 000 tonnes), groundnut oil (43 000 tonnes) and soybean oil (21 000 tonnes), along with palm oil imports (32 000 tonnes) (Persistence Market Research, 2018). Unpackaged oil accounts for a significant share of Nigeria's domestic edible oil consumption compared with packaged and branded products (Persistence Market Research, 2018).

Nigerian food production companies largely comprise SMEs, which has raised concerns around industry's capacity to reformulate.

Opportunities and priorities to achieve TFA elimination:

- Maintaining momentum and interest among key government stakeholders through the established technical working group to ensure passage of enforceable best-practice TFA elimination policy.
- Assessing the level of TFA in Nigerian foods to build support for policy action and to establish a baseline for measuring progress over time.
- Assessing and selecting the best policy approach that will facilitate enforcement and minimize the need for large investment to support enforcement activities.
- Assessing opportunities to increase laboratory testing capacities, including through technical assistance to develop laboratory capacity in-country or identify regional laboratories to carry out necessary testing.
- Supporting industry reformulation, with a focus on SMEs. The SUN Business Network (with in-kind support from IFBA) will work with a select number of SMEs to map the use of PHO, provide technical assistance to replace industrially produced TFA with healthier oils and fats, and create a toolbox for replacement.
- Raising awareness of TFA among the Nigerian public. Informed and empowered consumers will be key players in the effective implementation of the policy.



2. AMERICAS

The Americas region (see Table 4) has seen the fastest progress towards eliminating industrially produced TFA of any WHO region since the beginning of 2018. Mandatory TFA limits were already in place in five countries in the region, including Chile, which has a best-practice 2% limit of industrially produced TFA in oils and fats that applies to all foods, and in Argentina, Colombia, Ecuador and Peru, which have limits of 2% in oils and fats and 5% of total fat in all foods.

In 2018, best-practice policies came into effect in the United States and Canada to ban PHO as an ingredient in foods. In 2018, Peru's regulations also came into effect, setting a TFA limit of 2% in vegetable oils and margarines, and 5% of total fat in all foods. Peru will implement a second phase of the regulations to ban PHO. In Uruguay, regulations were passed in 2018 and will come into effect by the end of 2019. They limit TFA to 2% in vegetable oils and margarines, and 5% in all other foods; in 2022, the 2% limit of total fat will apply to all foods.

Table 4. Summary of the TFA policy situation in the Americas

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Barbados Belize Costa Rica Dominican Republic Guatemala Guyana Jamaica Saint Kitts and Nevis Saint Lucia Suriname Trinidad and Tobago	Bolivia (Plurinational State of) Brazil El Salvador Mexico Paraguay Uruguay	Argentina Colombia Ecuador Peru ^a	Canada ^a Chile United States of America ^a	Peru Uruguay	Argentina Canada Chile Colombia Ecuador Peru United States

^a Mandatory TFA limits went into effect after 2018

In March 2019, Brazil's National Agency of Sanitary Surveillance (ANVISA) released a timeline declaring its intention to pass TFA elimination regulations by December 2019. In 2018, Panama issued an official statement committing to the necessary steps to eliminate industrially produced TFA from its food supply.

June 2018 marked a decade since the 2008 Declaration of Rio de Janeiro pledge for cooperation between the public sector and industry to replace industrially produced TFA. Although significant progress has been made since then, the region is still not TFA-free. In 2018, Member States mandated PAHO to develop a regional Plan of Action for a TFA-free Americas. The Plan of Action is based on the evidence of health harms of TFA, prior resolutions and work of PAHO and WHO, analyses of the region's important progress to date and lessons learned, challenges encountered in both voluntary and regulatory efforts to reduce or eliminate industrially produced TFA, and extensive input from consultations with Member States. The Plan of Action will be submitted to PAHO's Executive Committee in June 2019, and finally to the 57th Directing Council in September 2019.

In the next 12 months, Member State adoption of the Plan of Action will be a priority in the region.

Opportunities in Brazil are described in Box 3.



BOX 3. BRAZIL SITUATION AND OPPORTUNITIES

TFA burden: With a population of 210 million people, Brazil is the fifth most populous country in the world. NCDs accounted for 75% of all deaths in 2016; CVD caused 28% of all premature deaths, more than any other group of diseases (WHO, 2018). In 2010, approximately 19 000 deaths were attributable to high TFA intake (Wang et al., 2016).

Recent data on the percentage of energy derived from TFA are limited; however, there are estimates using data from 2008–2010. Using data from the Family Budget Survey 2008/2009, researchers reported estimates of mean daily TFA consumption of 2.9 grams or 1.4% of the total daily energy intake (Louzada et al., 2015). A 2009 study in São Paulo city found that the mean daily intake of TFA was 5 grams, or 2.4% of the total daily energy intake. The highest consumption was observed in adolescents, with 7.4 grams per day, or 2.9% of the total daily energy intake (Castro et al., 2009).

The PHO market volume in Brazil was estimated at 517 000 tonnes in 2017 (roughly 29% of the total PHO market volume in the Americas) (Persistence Market Research, 2018).

Major sources of TFA: A recent assessment by ANVISA reported 2017 data on TFA levels on nutrition labels and lists of ingredients from products in large retail trade chains (ANVISA, 2018). Of the 11 434 food products evaluated, only 856 (6%) had significant TFA levels stated in their nutrition labels, and 2137 (18.7%) had potential sources of industrially produced TFA in the list of ingredients. According to nutrition labels, major sources of TFA include (in descending order) bakery products, cheeses, convenience foods, biscuits, meat and eggs, oils and fats, sweets and desserts, processed meats, and salty snacks. According to lists of ingredients, major potential sources of TFA include (in descending order) biscuits, bakery products, salty snacks, convenience foods, sweets and desserts, breakfast cereals and cereal bars, and sauces and seasonings.

ANVISA's report concluded that TFA content decreased in industrialized (ultra-processed) foods after the voluntary agreement with industry (see "Political environment", below). Despite the progress achieved, the domestic market still has products with PHO, which may be priced lower than equivalent products without PHO.

There is also evidence that the content of industrially produced TFA in refined oils may be up to five times higher than expected. This may be the result of failures in the control of the deodorization step of the oils during their refining (Winter et al., 2006).

Political Environment: Brazil has several national legal measures relating to TFA, but none of the existing measures establish a TFA limit or PHO ban. Packaged food products must include TFA on their nutrition labels. TFA-free claims are permitted on products that have 0.2 grams or less of TFA per serving. A 2009 Ministry of Education resolution recommends a maximum amount of TFA in food in schools of 1% of total calories. Additionally, a voluntary agreement between the Ministry of Health and industry to reduce TFA in food has been in place since 2007.

ANVISA issued a report in November 2018 analysing three different options to issue a regulation: 1) limit TFA to 2% of fats in all foods; 2) ban the use of PHO in food; and 3) limit TFA to 2% in oils, fats and emulsions, and to 5% of total fat for other foods. In March 2019, ANVISA released a timeline declaring its intention to pass TFA elimination regulations by December 2019 (ANVISA, 2018).

Industry landscape: In 2007, the Ministry of Health signed an agreement with the Brazilian Association of Food Industries – the largest food and beverage association in Brazil – to limit TFA to 5% of total fats in industrialized foods, and 2% of the total fats in oils and margarines.

Industry associations participate in ANVISA meetings and discussions relating to TFA elimination, and are important as an ally. However, some companies have alleged that limiting TFA will result in job losses and have been lobbying against regulations.

Challenges, opportunities and priorities to achieve TFA elimination:

- Maintaining momentum and interest among key government stakeholders to ensure passage of best-practice and enforceable TFA elimination policy. The civil society community working on nutrition policy is well placed to support ANVISA.
- ANVISA continuing to make the health and economic case for TFA elimination in support of regulatory action. This may include further assessment of TFA levels in foods or population intake, economic analysis, and assessment of available and accessible replacement oils and fats. Because Brazil has mandatory labelling of TFA levels on pre-packaged foods, an assessment of TFA levels could be carried out quite rapidly. Additionally, Brazil has a public laboratory with capacity to test food for TFA; this would enable laboratory testing of subsamples to ensure accuracy of labelled content.



3. EASTERN MEDITERRANEAN

The Eastern Mediterranean region (see Table 5) has some of the highest estimated TFA intake globally. The average TFA intake in the region is estimated at 1.9% of total energy intake, which exceeds the WHO recommended limit of 1% of total energy. The highest TFA intakes are estimated to be in Egypt and Pakistan (6.5% and 5.7% of total energy intake, respectively) (Wang et al., 2016).

Iran was the first country in the region to take action to eliminate TFA, with a 2% limit in oils and fats that became effective in 2016. In 2015, the GCC approved TFA limits of 2% of total fat in vegetable oils and soft spreadable margarines, and 5% of total fat for other foods. Countries in the GCC (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) must each approve implementation of the GCC regulation before it can come into effect. To date, only Saudi Arabia and Bahrain have done so. By the end of 2019, Saudi Arabia will enforce a second phase of its regulation, banning PHO. Bahrain and Saudi Arabia require labelling of TFA on pre-packaged foods.

In early 2019, WHO collaborated with the governments of Egypt and Pakistan to assess TFA sources and the levels in foods in respective countries. The ministries of health are using these results to advocate for policy action at higher political levels and will hold multisectoral workshops in 2019 to discuss bringing a policy forward. Therefore, in the next 12 months, supporting mandatory TFA limits in Egypt and Pakistan will be a priority in the region.

The GCC regulations have the potential for large impact, even outside the GCC membership, because of trade with countries outside the GCC. As GCC countries adopt the regulations, manufacturers of oils, fats and foods that supply to GCC countries will need to reformulate products to continue selling in those markets. Encouraging and ensuring the adoption of GCC regulations in the remaining countries is also a priority for the next 12 months in the region.

Opportunities in Pakistan are described in Box 4.

Table 5. Summary of the TFA policy situation in Eastern Mediterranean

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Afghanistan Egypt Kuwait Lebanon Morocco United Arab Emirates	Jordan Oman Tunisia	Bahrain Iran (Islamic Republic of) Saudi Arabia		Saudi Arabia	Saudi Arabia

BOX 4. PAKISTAN SITUATION AND OPPORTUNITIES

TFA burden: With a population of approximately 200 million people, Pakistan is the most populous country in the Eastern Mediterranean, and the sixth most populous country in the world. In 2016, CVD caused about one third of all deaths in the country (WHO, 2018). In 2010, approximately 40 000 Pakistanis were estimated to have died as a result of high TFA intake (more than 40% of total deaths from CVD), and mean TFA intake was 5.7 % of total energy intake (Wang et al., 2016). The TFA burden in Pakistan accounted for approximately 8% of the global burden in 2010; Pakistan was the fifth largest contributor to total TFA-attributable deaths globally.

The market volume of PHOs in Pakistan is the highest in the Eastern Mediterranean region and sixth highest in the world (behind China, India, Indonesia, United States and Malaysia); the estimated market volume was 520 000 tonnes in 2017 (roughly 40% of the Eastern Mediterranean's total PHO market volume) (Persistence Market Research, 2018).

Major sources of TFA: According to a 2019 review of the sources of TFA in the national food supply conducted by WHO and the Pakistan Ministry of Health, vanaspati ghee, bakery shortening, hard margarines and fat spreads, along with food products made with these fats as ingredients, are the major sources of TFA consumption (WHO, 2019b).ⁱⁱⁱ The following levels of TFA were recorded in these major sources:

- vegetable ghee (mean 19.0 g TFA/100 g product; range 5.4–34.4 g/100 g product)
- vegetable shortening (mean 20.1 g TFA/100 g product; range 7.3–31.7 g/100 g product)
- margarine (mean 13.7 g TFA/100 g product; range 1.6–34.8 g/100 g product)
- snack foods, including traditional products – for example
 - doughnut (38.7 g/100 g product)
 - poori (18.5 g/100 g product)
 - cake (12.0 g/100 g product)
- French fries (range 0.11–24.0 g/100 g product)
- biscuits from supermarkets (range 9.3–34.9 g TFA/100 g fat).

Political Environment: The food regulatory mechanism in Pakistan is complex because there are both national and provincial food standards. The Pakistan Standard and Quality Control Authority (PSQCA) is the national standards body, which formulates standards based on international standards. The PSQCA regulates production and import of oils and fats in the country, and has standards for vanaspati (Pakistan Standard Specifications for Vanaspati, PS221), including a TFA limit of 10% of total energy.

Provincial governments are responsible for food safety and quality. Each province has a food safety Act. The Acts in Punjab and Khyber Pakhtunkhwa include TFA limits in shortening of 0.5% for vanaspati and 5% for margarine (Punjab Pure Food Regulations, 2018, and Khyber Pakhtunkhwa Food Regulations). Punjab has set a deadline of July 2020 to ban the trade of vanaspati ghee in the province. Sindh province follows PSQCA standards. Azad Jammu and Kashmir follow Punjab standards. Baluchistan, Azad Kashmir and Gilgit Baltistan do not have an Act that includes TFA limits.

Industry landscape: Pakistan was estimated to have a PHO market volume of 520 000 tonnes in 2017 (Persistence Market Research, 2018). According to customs import data, the majority of imported vegetable oils and fats come from relatively few countries (Malaysia and Indonesia), with small amounts imported from other countries (including India, United States, Sweden, Germany, Italy and Singapore) (WHO, 2019b). The market value of Pakistan's edible oil and fat imports was US\$ 2.4 billion in 2017–18, making it the second largest import after petroleum products. Pakistan also has a large number of SMEs, complicating issues of reformulation and enforcement.

Opportunities and priorities to achieve TFA elimination:

- Building momentum by raising TFA awareness among high-level policy-makers at federal and provincial levels to pass enforceable best-practice TFA elimination policies. Leaders from Punjab and Khyber Pakhtunkhwa can help drive broader support.
- Raising awareness of TFA among policy-makers, civil society and the public. Advocacy by consumer groups can be important to promote policy action and reformulation, because public awareness of TFA is still low.
- Assessing the level of TFA in Pakistani foods through sample collection and laboratory analysis to establish a baseline for measuring progress over time.
- Promoting a process to harmonize the food regulatory environment to ensure effective and streamlined planning and implementation of enforcement.
- Assessing the replacement options and implications for vanaspati – a central part of the Pakistani diet, especially in lower-income groups.
- Supporting industry reformulation, with a focus on SMEs. The SUN Business Network (with in-kind support from IFBA) will work with a select number of SMEs to map the use of PHO, provide technical assistance to replace industrially produced TFA with healthier oils and fats, and create a toolbox for replacement.

ⁱⁱⁱ The review looked at scientific literature (data from 2004-2012) and data from nutrition labels and lab analysis that was previously collected for industry nutrition label printing on prepackaged foods (data from 2010-2016).



4. EUROPE

The European region (see Table 6) has the largest number of mandatory TFA limits in place. Denmark was the first country to regulate industrially produced TFA, putting into place a limit of 2 grams of TFA per 100 grams of oils and fats in all foods in 2004. Since this pioneering effort, several other European countries have followed, with similar best-practice regulations in Austria, Hungary, Iceland, Norway and, as of 2018, Latvia and Slovenia. Switzerland has a TFA limit in oils and fats only.

As of January 2018, a regulation that limits TFA to 2% in oils and fats came into effect in Eurasian Economic Union countries, including Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russian Federation, which strengthened the less restrictive limits that had been in place since 2015. In April 2019, the EU passed regulations to limit industrially produced TFA to 2 grams

of TFA per 100 grams of total fat in all food products; this will be directly applicable in all the Member States of the EU as well as the EEA and will be effective from 2021. Additionally, in 2019, Turkey notified draft best-practice TFA elimination regulations for public comment.

Regional regulations have a large impact in the European region, covering 32 countries. The European experience demonstrates the potential impact of a regional approach, which can extend beyond the borders of the blocs as a result of broader trade relationships.

In addition to increasing numbers of countries implementing regional regulations, it is expected that much progress will be made in Turkey in the next 12 months, following Turkey's recent initiation of the regulatory process (see Box 5).

Table 6. Summary of the TFA policy situation in Europe

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Albania Bosnia and Herzegovina Czechia Finland Malta Republic of Moldova North Macedonia	Azerbaijan Belgium Bulgaria France Georgia Germany Israel Lithuania Spain Sweden Tajikistan Turkey United Kingdom	Armenia Belarus Kazakhstan Kyrgyzstan Russian Federation Switzerland Uzbekistan	Austria Denmark Hungary Iceland Latvia ^a Norway Slovenia ^a	EU and EEA (23 countries ^b)	Armenia Austria Belarus Denmark Hungary Iceland Kazakhstan Kyrgyzstan Latvia Norway Russian Federation Switzerland

^a Mandatory TFA limits came into effect after 2018.

^b Excludes Austria, Denmark, Hungary, Latvia and Slovenia in the EU, and Iceland and Norway in the EEA, which already have a best-practice policy in effect.

BOX 5. TURKEY SITUATION AND OPPORTUNITIES

TFA burden: With a population of 83 million people, Turkey is the second most populous country in Europe. NCDs accounted for 89% of all deaths in 2016; CVD caused more than one third of all premature deaths, more than any other group of diseases (WHO, 2018).

Data on the burden of TFA in Turkey are limited. In 2010, approximately 4000 deaths were estimated to be attributable to high TFA intake, and mean TFA intake was 1% of total energy intake (Wang et al., 2016). The market volume of PHO in Turkey was estimated at 128 000 tonnes in 2017 (roughly 9% of Europe's total PHO market volume) (Persistence Market Research, 2018).

Turkey is a major food exporter to Eastern European and Commonwealth of Independent State countries, where TFA levels in foods can be very high (as indicated by results from the FEEDCities surveys by the WHO European Office in Kazakhstan, Kyrgyzstan, Tajikistan and Moldova). As a result, high levels of TFA in Turkish foods are expected.

Major sources of TFA: Turkey does not have an established monitoring system for TFA in foods or human consumption. Based on recent preliminary data from the Health Institute Association study, sources of TFA include packaged and traditional cakes and desserts, traditional baked goods and other savoury puff pastry products, packaged cheese-based desserts, margarine, pizza, French fries and chips.

Political Environment: There are two current regulations relating to TFA labelling in Turkey, both of which will come into effect on 31 December 2019. One requires that TFA are declared on a product's label for all fats, margarines, saturated fats, vegetable oils and foods that contain more than 2% TFA. The second regulates health claims relating to TFA.

Currently, Turkey does not have legal measures regulating the use of PHO or the amount of TFA in food. However, in January 2019, the Ministry of Agriculture and Forestry submitted for public notice and comment draft regulations to limit TFA in all foods to 2 grams per 100 grams of fat (best practice). The Ministry of Health has also demonstrated a high level of political support for this type of measure.

Turkey's public health community and the packaged food industry supported the regulations. Approval of the TFA elimination regulations is expected by December 2019.

Industry landscape: Overall, industry is sensitized to TFA elimination and has said that it will reformulate foods. Many domestic and international food companies operate in Turkey, from fast food to packaged goods. Snack foods are a big business in Turkey, with imports totalling more than \$130 million annually.

The largest trade association – the Federation of Food and Drink Industry Associations of Turkey (TGDF) – covers 95% of the food and beverage industry in Turkey, and is represented on the government expert group responsible for preparation and supervision of food standards. The TGDF publicly supports government limits on TFA and proposed an even stricter 1% limit in its comments on the Ministry of Agriculture and Forestry draft regulation.

An association of kitchen products and margarine manufacturers in Turkey – Mutfak Urunleri ve Margarin Sanayicileri Dernegi – covers 90% of the edible oils and fats market in Turkey, and has made a voluntary commitment to reduce TFA in its products.

Opportunities and priorities to achieve TFA elimination:

- Maintaining momentum and interest among key government stakeholders to support passage of the draft regulations. Advocacy by nongovernmental public health expert groups may help promote policy and reformulation of packaged foods. The public can also play a role in creating demand for healthier foods.
- Disseminating data on the sources of TFA in the food supply, and available healthy replacement oils and fats (including cost and technical implications) to support the case for passing the draft regulations.
- Further reviewing the suppliers of high TFA foods found in bakeries and street food vendors to accelerate action.
- Dialogue with industry to facilitate successful implementation of the regulations and industry compliance. This dialogue should present information on available replacement oils and fats, understand industry concerns and necessary support for reformulation that minimizes replacement of TFA with oils and fats with low SFA, and determine a feasible timeline for reformulation.



5. SOUTH-EAST ASIA

The South-East Asia region (see Table 7) has made important strides in TFA elimination policies since 2018. In 2011, India set a TFA limit of 10% in all oils and fats, which was further reduced to 5% in 2015. In December 2018, the Food Safety and Standards Authority of India proposed reducing this limit further to 2% and eliminating

artificial TFA in the food supply by 2022, a year ahead of the global target. A draft notification has been issued by the government in this regard, which is pending ratification (FSSAI, 2018). In 2019, Thailand put into place a ban on PHO.

Opportunities in Bangladesh are described in Box 6.

Table 7. Summary of the TFA policy situation in South-East Asia

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Bangladesh Bhutan Indonesia Maldives Myanmar Nepal Sri Lanka Timor-Leste		India	Thailand ^a		India Thailand

^a Mandatory TFA limits came into effect after 2018.

BOX 6. BANGLADESH SITUATION AND OPPORTUNITIES

TFA burden: With a population of 168 million people, Bangladesh is the second most populous country in South-East Asia and the eighth most populous in the world. NCDs accounted for 67% of all deaths in 2016; CVD caused 30% of all premature deaths, more than any other group of diseases (WHO, 2018).

In 2010, approximately 8000 deaths were attributable to high TFA intake, and mean TFA intake was 2.4% of total energy intake (Wang et al., 2016). The market volume of PHO in Bangladesh was estimated at 242 000 tonnes in 2017 (roughly 7% of South-East Asia's total) (Persistence Market Research, 2018).

Major sources of TFA: Bangladesh does not have an established monitoring system for TFA in foods or human consumption.

Political Environment: The Food Safety Labelling Regulations, 2017, under Bangladesh's Food Safety Act, 2013, give manufacturers "the option to declare" the TFA content on food labels. However, the regulations do not prescribe an upper limit of TFA in foods, fats or oils.

The National Heart Foundation, a civil society organization, hosted a national consultation around TFA elimination in January 2019, which was attended by key policy officials whose support is needed to move TFA policies forward. There was consensus among the key policy-makers that regulations are needed to reduce or eliminate TFA consumption; however, the consultation also highlighted key data gaps, including the TFA burden and sources of TFA in the country. Stakeholders raised concerns about the limited availability of resources to effectively enforce a TFA elimination policy, including laboratory capacity and personnel to monitor compliance.

Industry landscape: Bangladesh has a US\$ 2.2 billion and growing food processing sector (Hussain & Leishman, 2013). The food industry employs 8% of the manufacturing labour force. Bangladesh has a large informal food sector, presenting additional challenges around enforcement of food regulations. There is also a large SME market.

Opportunities and priorities to achieve TFA elimination:

- Assessing the level of TFA in foods to support policy action and establish a baseline for measuring progress over time.
- Assessing the policy approach that will be most suitable to the country in eliminating intake of industrially produced TFA.
- Assessing opportunities to increase laboratory testing capacities, including developing laboratory capacity in-country or identifying regional laboratories to carry out necessary testing.
- Improving knowledge and awareness on TFA among the public and relevant stakeholders, and explore options for engaging with PHO suppliers regarding replacement of PHO in oils and fats. This can ensure that food vendors and other food service establishments have access to PHO-free oils and fats. A landscape assessment will help understand the scope of this potential challenge.







6. WESTERN PACIFIC

In the Western Pacific Region (Table 8), Singapore has mandatory 2% limits for TFA in oils and fats, and mandatory labelling of TFA on packaged edible oils and fats. China, Republic of Korea and the Philippines have mandatory labelling of pre-packaged foods, including TFA and other nutritional information. No new TFA policies have been introduced or became effective since January 2018.

Table 8. Summary of the TFA policy situation in Western Pacific

National policy commitment to eliminate TFA	Other complementary measures	Less restrictive TFA limits	Best-practice TFA policy	Best-practice TFA policy passed but not in effect (as of May 2019)	Monitoring mechanism for mandatory TFA limits
Fiji Lao People's Democratic Republic Mongolia Papua New Guinea Samoa	Brunei Darussalam China Philippines Republic of Korea	Singapore			 Singapore



IV. GLOBAL CHALLENGES, OPPORTUNITIES AND PRIORITIES: THE ROLE OF WHO TO FILL GAPS

Despite encouraging levels of country interest and will to act on TFA elimination, progress in implementing policy actions has been slow. Common challenges identified in implementing TFA elimination are described below, as well as opportunities and priority areas for overcoming the challenges and accelerating action in TFA elimination.

1. ASSESSMENT:

Raising TFA elimination on policy-makers' agendas often relies on an understanding of the in-country burden due to TFA, and TFA content and levels in foods, requiring food sampling and laboratory testing. To appropriately assess food for TFA levels, there are minimum requirements for laboratory equipment, laboratory technician training and capacities, and access to standard reference materials for quality assurance and quality control. Many countries lack laboratory capacities to assess TFA content and levels in foods.

To provide support to countries and promote harmonized methods, WHO has developed global surveillance protocols for measuring TFA in human samples and food samples. The protocols are available on the REPLACE webpage (<https://www.who.int/nutrition/topics/replace-transfat>). Furthermore, global training resources will be developed to strengthen laboratory capacity. The possibility of establishing regional laboratory hubs is also being explored.

2. REGULATORY CAPACITY:

To strengthen countries' regulatory capacities to develop effective policy measures for TFA elimination that can be implemented and sustained, WHO, in collaboration with partners and relevant experts, is developing a training curriculum. It is planned that the first regulatory capacity-building training workshop will be organized for countries in the Eastern Mediterranean region at the end of June 2019.

3. ENFORCEMENT:

A TFA elimination policy is only effective if it is enforced. Enforcement capacity is related to regulatory capacity. Designing policies that are

enforceable and sustainable could be challenging, given the limited human and financial resources in some countries to monitor compliance and hold violators accountable. Additionally, many countries have sizeable informal food sectors that are largely unregulated and for which there may be no existing enforcement infrastructure to build on.

To address this issue, the regulatory capacity-building curriculum that is being developed and ongoing technical support to countries will provide clear guidance on enforcement options that are accessible at different resource levels; they will also consider challenges of enforcement in informal food sectors. Guidance and protocols that have been published on assessing TFA in informal food markets (FEEDCities) are also available. Using these protocols, periodic audits of the informal food sector can be built into enforcement and assessment plans.

4. HEALTHIER REPLACEMENTS:

Many countries and regions are addressing TFA elimination for the first time and have not assessed the availability of healthier replacement oils and fats. This is a challenge, particularly in low- and middle-income countries. In these countries, SMEs often comprise a large share of the edible oils and fats and manufactured food market, and may have limited resources and capacities to reformulate. Palm oil is often the most available and affordable alternative that meets many of the functional needs of TFA. However, palm oil is high in SFA, and replacement of TFA with oils and fats high in SFA should be minimized.

To address this issue, GAIN, as part of the SUN Business Network, is piloting a project with SMEs in two emerging markets (Nigeria and Pakistan) to develop knowledge and resources to support context-specific reformulations and replacement solutions. IFBA and member companies have

committed to providing in-kind support for this project, including providing technical expertise to SMEs on TFA replacement, and establishing and delivering a sustainable programme to transfer expertise and build capacities among SMEs broadly. Additionally, countries could explore feasibility of strategies – for example, government subsidies and agricultural policies – to support replacement with oils and fats other than those high in SFA, and work with large companies to understand the feasibility, challenges and necessary conditions for replacement with healthier oils and fats.

5. PERCEIVED BURDEN:

If countries perceive the risk of TFA to be low, TFA elimination will not be a priority issue for investment of time and resources.

To address this issue, WHO will continue to advocate for TFA elimination with policy-makers, including through framing TFA elimination as a preventive measure to avoid vulnerability to the harms of TFA, as a priority action to promote healthy diets, and as part of a broader NCD prevention initiative. An additional rationale for taking policy action when the perceived TFA burden is low is that enforcement of mandatory TFA limits is easier when the burden is relatively low, because there are fewer high-risk products to monitor. As well, acting to ban PHO or limit TFA before they comprise a large share of the market can facilitate passing the policy as an effective measure for improving the food environment to promote healthy diets and prevent an increasing burden of NCDs. To this end, WHO will continue to highlight examples of how countries with lower TFA burdens (such as Thailand) can easily and rapidly take action, and the effective strategies used in such countries.

Civil society, academics, and advocates for nutrition and cardiovascular health also have an important role in building public debate and political will.

6. INDUSTRY:

Industry can be influential in countries and can hinder public health policy-making. This is partly due to a lack of technical knowledge on reformulating, and concerns that TFA elimination will disproportionately favour multinational companies and negatively affect SMEs. Several large multinational food manufacturers have committed to eliminating PHOs; however, there is no mechanism in place to monitor adherence.

To address this issue, WHO will guide countries on how to strategically engage with stakeholders during the policy progress, including key industry players. Additionally, the GAIN pilot project can provide knowledge to governments on existing replacement technology that can be adopted by SMEs (not just large multinationals).

At the global level, an independent monitoring mechanism is being set up to track industry performance against commitments.



V. CONCLUSION AND RECOMMENDATIONS FOR ACTION

Momentum for TFA elimination is growing, with an increasing number of countries taking action and adopting policies. However, the vast majority of countries still do not have policies in place to protect their citizens from the harmful effects of TFA. WHO has called on countries to eliminate industrially produced TFA from the global food supply by 2023. There is still a long way to go in this countdown to 2023. WHO will strengthen its support to countries in eliminating TFA and overcoming any challenges that countries may be facing, including by developing and providing regulatory capacity-building training.

WHO also recommends that the following areas of action be taken by countries to create a global movement on TFA elimination.

- Develop and implement mandatory TFA limits.
- Share experiences and best practices in TFA elimination, and consider regional or intercountry networks to enhance actions.
- Renew support and strengthen commitment for eliminating industrially produced TFA by 2023 to achieve the first elimination of a risk factor for NCDs.

Actions are also required by countries and other concerned stakeholders to ensure that the world is free from industrially produced TFA by 2023. WHO expects industry groups to implement the firm commitments they have made to eliminate industrially produced TFA from product lines.



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APPENDIX 1

TFA BURDEN AND THE STATUS OF TFA POLICIES BY COUNTRY

COUNTRY	PROPORTION OF CHD DEATH (%) DUE TO TFA INTAKE (> 0.5% ENERGY) ^a	SCORE ^b	DETAILS OF THE IMPLEMENTED POLICY ^c	NOTE
Egypt	44.7	1	National policy commitment to eliminate TFA	
Pakistan	40.9	-	-	
Bahrain	25.4	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	
Canada	24.7	4	Mandatory national ban on PHO	Monitoring mechanism for mandatory TFA limits
Mexico	23.9	2	Mandatory limits on industrially produced TFA in foods in specific settings; reformulation	
Nepal	18.7	1	National policy commitment to eliminate TFA	
Bhutan	18.5	1	National policy commitment to eliminate TFA	
Bangladesh	16.9	1	National policy commitment to eliminate TFA	
Iran (Islamic Republic of)	16.3	3	2% industrially produced TFA limit in oils and fats only	
Peru	14.5	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	Monitoring mechanism for mandatory TFA limits; Best-practice TFA policy passed but not yet in effect
Netherlands	14.4	-	-	Best-practice TFA policy passed but not yet in effect
Kuwait	13.0	1	National policy commitment to eliminate TFA	
Qatar	12.9	-	-	
Oman	11.8	2	Reformulation	
Brazil	11.5	2	Mandatory declaration of TFA on nutrition labels; reformulation	
Iraq	10.9	-	-	
Paraguay	10.1	2	Mandatory declaration of TFA on nutrition labels	

Saudi Arabia	10.0	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	Monitoring mechanism for mandatory TFA limits; Best-practice TFA policy passed but not yet in effect
Jordan	9.9	2	Mandatory declaration of TFA on nutrition labels; reformulation	
Sao Tome and Principe	9.6	-	-	
Yemen	9.5	-	-	
Lebanon	9.4	1	National policy commitment to eliminate TFA	
Marshall Islands	8.9	-	-	
Comoros	8.3	-	-	
Syrian Arab Republic	8.2	-	-	
Costa Rica	8.1	1	National policy commitment to eliminate TFA	
El Salvador	8.0	2	Mandatory limits on industrially produced TFA in foods in specific settings	
Honduras	7.9	-	-	
Kiribati	7.7	-	-	
Kenya	7.6	1	National policy commitment to eliminate TFA	
United Arab Emirates	7.6	1	National policy commitment to eliminate TFA	
United Kingdom	7.6	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Venezuela (Bolivarian Republic of)	7.6	-	-	
Iceland	7.5	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Timor-Leste	7.4	1	National policy commitment to eliminate TFA	
United States of America	7.2	4	Mandatory national ban on PHO	Monitoring mechanism for mandatory TFA limits
Slovenia	7.0	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Côte d'Ivoire	6.8	1	National policy commitment to eliminate TFA	

Austria	6.6	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Colombia	6.5	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	Monitoring mechanism for mandatory TFA limits
Republic of Korea	6.3	2	Reformulation	
Equatorial Guinea	6.2	-	-	
Latvia	6.2	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Brunei Darussalam	6.1	2	Front-of-pack labelling system that includes TFA; reformulation	
Panama	6.1	-	-	
Andorra	5.9	-	-	
Australia	5.9	-	-	
Czechia	5.9	1	National policy commitment to eliminate TFA	Best-practice TFA policy passed but not yet in effect
Belarus	5.8	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	Monitoring mechanism for mandatory TFA limits
Senegal	5.8	-	-	
Sierra Leone	5.8	-	-	
India	5.7	3	5% industrially produced TFA limit in oils and fats	Monitoring mechanism for mandatory TFA limits
New Zealand	5.7	-	-	
Germany	5.6	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Papua New Guinea	5.6	1	National policy commitment to eliminate TFA	
Poland	5.6	-	-	Best-practice TFA policy passed but not yet in effect
Suriname	5.6	1	National policy commitment to eliminate TFA	
Cuba	5.5	-	-	
Lithuania	5.5	2	Mandatory limits on industrially produced TFA in foods in specific settings; reformulation	Best-practice TFA policy passed but not yet in effect
Montenegro	5.3	-	-	
Serbia	5.3	-	-	

Ecuador	5.2	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Fiji	5.2	1	National policy commitment to eliminate TFA	
Hungary	5.2	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Azerbaijan	5.1	2	Reformulation	
Maldives	5.0	1	National policy commitment to eliminate TFA	
Morocco	5.0	1	National policy commitment to eliminate TFA	
Nicaragua	5.0	-	-	
Slovakia	5.0	-	-	Best-practice TFA policy passed but not yet in effect
Algeria	4.9	1	National policy commitment to eliminate TFA	
Malaysia	4.9	-	-	
Turkey	4.9	2	Mandatory declaration of TFA on nutrition labels	
Luxembourg	4.8	-	-	Best-practice TFA policy passed but not yet in effect
Bolivia (Plurinational State of)	4.7	2	Mandatory declaration of TFA on nutrition labels; reformulation	
Chile	4.7	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Spain	4.7	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Georgia	4.6	2	Mandatory limits on industrially produced TFA in foods in specific settings; reformulation	
Greece	4.6	-	-	Best-practice TFA policy passed but not yet in effect
Indonesia	4.6	1	National policy commitment to eliminate TFA	
Philippines	4.6	2	Mandatory declaration of TFA on nutrition labels	
Portugal	4.6	-	-	Best-practice TFA policy passed but not yet in effect
Solomon Islands	4.6	-	-	
Tunisia	4.6	2	Reformulation	

China	4.5	2	Mandatory declaration of TFA on nutrition labels	
Uzbekistan	4.5	3	4% industrially produced TFA limit in all foods	
Cape Verde	4.4	1	National policy commitment to eliminate TFA	
Denmark	4.4	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Kazakhstan	4.4	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Viet Nam	4.4	-	-	
Cambodia	4.3	-	-	
Estonia	4.3	-	-	Best-practice TFA policy passed but not yet in effect
Guatemala	4.3	1	National policy commitment to eliminate TFA	
Russian Federation	4.3	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Sudan	4.3	-	-	
Dominican Republic	4.2	1	National policy commitment to eliminate TFA	
Argentina	4.1	3	2% industrially produced TFA limit in oils and fats, and 5% limit in other foods	Monitoring mechanism for mandatory TFA limits
Armenia	4.1	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Cameroon	4.1	-	-	
Croatia	4.1	-	-	Best-practice TFA policy passed but not yet in effect
France	4.1	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Lao People's Democratic Republic	4.1	1	National policy commitment to eliminate TFA	
Niger	4.1	-	-	
North Macedonia	4.1	1	National policy commitment to eliminate TFA	
Thailand	4.1	4	Mandatory national ban on PHO	Monitoring mechanism for mandatory TFA limits
Albania	4.0	1	National policy commitment to eliminate TFA	

Belgium	4.0	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Bulgaria	4.0	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Mongolia	4.0	1	National policy commitment to eliminate TFA	
Nigeria	4.0	1	National policy commitment to eliminate TFA	
Norway	4.0	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
Seychelles	4.0	1	National policy commitment to eliminate TFA	
Togo	4.0	-	-	
Ukraine	4.0	-	-	
Democratic Republic of the Congo	3.9	-	-	
Ireland	3.9	-	-	Best-practice TFA policy passed but not yet in effect
Israel	3.9	2	Mandatory declaration of TFA on nutrition labels	
Libya	3.9	-	-	
Benin	3.8	1	National policy commitment to eliminate TFA	
Bosnia and Herzegovina	3.8	1	National policy commitment to eliminate TFA	
Burkina Faso	3.8	-	-	
Guinea	3.8	-	-	
Japan	3.8	-	-	
Myanmar	3.8	1	National policy commitment to eliminate TFA	
Republic of Moldova	3.8	1	National policy commitment to eliminate TFA	
Mali	3.7	-	-	
Romania	3.7	-	-	Best-practice TFA policy passed but not yet in effect
Switzerland	3.7	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Uruguay	3.7	2	Mandatory declaration of TFA on nutrition labels	Best-practice TFA policy passed but not yet in effect
Gambia	3.6	-	-	

Ghana	3.6	1	National policy commitment to eliminate TFA	
Guinea-Bissau	3.6	-	-	
Democratic People's Republic of Korea	3.6	-	-	
Mauritania	3.6	-	-	
Central African Republic	3.5	-	-	
Congo	3.5	-	-	
Samoa	3.5	1	National policy commitment to eliminate TFA	
Sri Lanka	3.5	1	National policy commitment to eliminate TFA	
Vanuatu	3.5	-	-	
Uganda	3.4	-	-	
Kyrgyzstan	3.3	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Malta	3.3	1	National policy commitment to eliminate TFA	Best-practice TFA policy passed but not yet in effect
Singapore	3.3	3	2% industrially produced TFA limit in oils and fats only	Monitoring mechanism for mandatory TFA limits
Tonga	3.3	-	-	
Namibia	3.2	-	-	
Djibouti	3.1	-	-	
Somalia	3.1	-	-	
Italy	3.0	-	-	Best-practice TFA policy passed but not yet in effect
Angola	2.8	-	-	
Chad	2.8	1	National policy commitment to eliminate TFA	
Finland	2.7	1	National policy commitment to eliminate TFA	Best-practice TFA policy passed but not yet in effect
Gabon	2.6	-	-	
South Africa	2.6	4	Mandatory national limit (industrially produced TFA <2g/100g total oils and fats in all foods)	Monitoring mechanism for mandatory TFA limits
United Republic of Tanzania	2.5	-	-	
Botswana	2.4	-	-	
Lesotho	2.4	-	-	

Liberia	2.4	-	-	
Turkmenistan	2.4	-	-	
Zambia	2.4	1	National policy commitment to eliminate TFA	
Madagascar	2.3	-	-	
Sweden	2.3	2	Reformulation	Best-practice TFA policy passed but not yet in effect
Tajikistan	2.3	2	Reformulation	
Zimbabwe	2.2	-	-	
Malawi	2.1	-	-	
Mauritius	2.0	1	National policy commitment to eliminate TFA	
Trinidad and Tobago	2.0	1	National policy commitment to eliminate TFA	
Mozambique	1.9	-	-	
Burundi	1.7	-	-	
Eritrea	1.7	-	-	
Ethiopia	1.6	-	-	
Rwanda	1.6	-	-	
Eswatini	1.4	1	National policy commitment to eliminate TFA	
Jamaica	1.4	1	National policy commitment to eliminate TFA	
Bahamas	1.2	-	-	
Dominica	1.2	-	-	
Grenada	1.2	-	-	
Belize	1.1	1	National policy commitment to eliminate TFA	
Guyana	1.1	1	National policy commitment to eliminate TFA	
Cyprus	1.0	-	-	Best-practice TFA policy passed but not yet in effect
Saint Lucia	1.0	1	National policy commitment to eliminate TFA	
Antigua And Barbuda	0.8	-	-	
Saint Vincent and the Grenadines	0.8	-	-	
Haiti	0.5	-	-	
Barbados	0	1	National policy commitment to eliminate TFA	
Afghanistan	N/A	1	National policy commitment to eliminate TFA	

Saint Kitts and Nevis	N/A	1	National policy commitment to eliminate TFA
Cook Islands	N/A	-	-
Micronesia (Federated States of)	N/A	-	-
Monaco	N/A	-	-
Nauru	N/A	-	-
Niue	N/A	-	-
Palau	N/A	-	-
San Marino	N/A	-	-
South Sudan	N/A	-	-
Tuvalu	N/A	-	-

^a based on data from Wang et al., 2016

^b Score definition:

1 = “National policy commitment to eliminate TFA”: National policies, strategies or action plans express a commitment to reduce industrially produced TFA in the food supply.

2 = “Other complementary measures”: Legislative or other measures have been adopted to encourage consumers to make healthier choices with regard to industrially produced TFA (for example, mandatory declaration of TFA on nutrition labels, front-of-pack labelling system that includes TFA, reformulation) or mandatory limits on industrially produced TFA in foods in specific settings (for example, public institutions).

3 = “Less restrictive TFA limits”: Legislative measures have been adopted to limit industrially produced TFA in foods in all settings, but these are less restrictive than the recommended approach (for example, 2% industrially produced TFA limit in oils and fats only; 2% industrially produced TFA limit in oils and fats, and 5% limit in other foods; 5% industrially produced TFA limit in oils and fats).

4 = “Best-practice TFA policies”: Legislative measures have been adopted to limit industrially produced TFA in foods in all settings, and these are in line with the recommended approach. The two alternative best-practice policies for TFA elimination are: 1) mandatory national limit of 2 grams of industrially produced TFA per 100 grams of total oils and fats in all foods; and 2) mandatory national ban on the production or use of PHO as an ingredient in all foods.

^c PHO=partially hydrogenated oils

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