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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Commission Regulation (EU)

amending Annex III to Regulation (EC) No 1925/2006 of the European Parliament and of the Council as regards trans fat, other than trans fat naturally occurring in animal fat, in foods intended for the final consumer

{C(2019) 2902 final} - {SEC(2019) 187 final} - {SWD(2019) 161 final}

ANNEX 32: ICF Country profiles

Austria

Policy status

	Existing	Proposed/ considered
Legislation	X	
Voluntary measures		
Labelling		
Consumer information		

Description of existing measure(s)

Type of measure	Legislation
Description of measure *(if legislation paste exact text of legislation)*	Ministerial Decree No. 267 of 20 August 2009 on trans fatty acids content in food (267. Verordnung des Bundesministers für Gesundheit über den Gehalt an trans-Fettsäuren in Lebensmitteln)
Scope of measure	The decree prohibits the production or marketing of foodstuffs with a trans fatty acid content exceeding 2 g per 100 g of total fat content. The limit value can be exceeded in the case of processed foodstuffs made from several ingredients, provided the total fat content of the foodstuff is less than 20% and the trans fatty acid content does not exceed 4 g per 100 g of total fat, or provided the total fat content is less than 3% and the trans fatty acid content does not exceed 10g per 100g of total fat. This limit is also applicable to imported food.[309] The underlying motivation for the introduction of the measure is indicated as a public health measure following a precautionary approach (protecting the most vulnerable such as socially disadvantaged groups more exposed to trans fatty acids in their diet).[310]
FBOs covered	N/A

[309] https://www.konsument.at/presse/transfette-in-lebensmitteln-erhoehter-gehalt-bei-importprodukten-moeglich-26-02-2014

[310] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

Derogations *(e.g. low fat products, local products)*	This regulation does not apply to milk and milk products which have naturally occurring trans fats content.[311]
Share of SMEs involved *(in case of voluntary measures)*	N/A
Length and characteristics of transition period	(1) Fats and oils as well as other foodstuffs which do not comply with the Ordinance, but which have hitherto been allowed, may be placed on the market until stocks are reduced. (2) Foodstuffs may be produced and placed on the market from or with fats and oils in accordance with paragraph 2 of the Ordinance, a maximum of twelve months after the entry into force of the Regulation.
Arrangements for measure enforcement and compliance monitoring	According to an interview with Austrian Food Industry representatives, companies did not have to report. The regulation applied and businesses had to comply with the provisions of the regulation. The Food Inspectorate carried out regular studies (by sampling) from the beginning. There have been no major infringements. The number of samples was later reduced.
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	No information found.

[311] http://www.forum-ernaehrung.at/artikel/detail/news/detail/News/trans-fettsaeuren-unter-beschuss/

Tests used to assess trans fats content	From October to November 2014, 71 products were examined for their trans fat content in supermarkets, retail stores and in various restaurants.[312] The results of the tests were assessed according to the British traffic light model: Green light was only available for products containing less than three grams of fat per 100 grams or a maximum of 1.5 grams of saturated fats per 100 grams. The yellow light flashes at grease contents of three to 20 grams per 100 grams or a maximum of five grams of saturated fats. All values above have a warning red. Main results: All samples tested stayed within the limits defined by the trans fatty acid regulation; The fear that the reduction in trans fatty acids is at the expense of an increase in the content of - also undesirable - saturated fatty acids has not been confirmed. The content of saturated fatty acids has largely remained the same as in 2007. Therefore, the content of many product groups (in particular pastries, doughs, snacks, biscuits) is still to be assessed as high. Two-thirds of the examined snacks, such as popcorn and biscuits, half of baked goods and three-quarters of the doughs were classified as "red" due to the total fat content. Of the 71 investigated products, on average, one in three would be labeled "red." According to the Austrian Ministry of Health, until 2012 a test specific to trans fats was used, but since then this test has been integrated into a general test for fatty acid methyl esters. The current test works as follows: The fatty acids (extracted directly from oil or from a fat-containing foodstuff), which are present in the form of triglycerides, are subjected to an alkaline transesterification to extract fatty acid methyl esters from the fat. The obtained fatty acid methyl esters are identified by gas chromatography through a flame ionization detector (FID). The individual trans fatty acids are summed and this content is compared to the overall fat content of the sample.
Steps taken to raise consumer awareness	According to the Austrian Ministry of Health, since the implementation of the legislation it has become increasingly unlikely that consumers are exceeding the daily limit for trans fats. Due to this, they have not felt it necessary to take steps toward raising consumer awareness.

[312] See: http://www.konsumentenfragen.at/cms/konsumentenfragen/attachments/1/5/7/CH0948/CMS1424769941810/transfettsaeuren_2015.pdf

Guidance provided to affected businesses	According to the Austrian Ministry of Health, they provided no specific guidance to businesses. They have a section of their website dedicated to information on trans fats.
Effectiveness of the measure	The legal limit imposed in Austria was considered effective in achieving the desired reduction in food trans fats levels and hence population trans fats exposure.[313] Market control actions (2011 and 2013) found that no product contained more than 2% trans fats (based on total energy intake), although bakery products, popcorn or sweet spreads were investigated. In doughnuts less than 0.5 g/100 g or in Danish or puff pastry less than 0.2 g/100 g trans fats were found. Data from national food consumption surveys in Austria suggest that there were no differences in populationsaturated fat intake before and after the introduction of the legal limit in 2009.[314] The Austrian Ministry of Health tested a variety of foods between 2008 and 2013 for trans fat contents. An evaluation of the results is forthcoming.
Describe (if any) other measures that are currently being considered	No information found.

TFAs in foods and diets

[313] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p. 36-37

[314] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf p. 34

TFAs content in food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	- Before the TFA-Regulation trans fats content in certain problematic food groups was as follows:[315] - Doughnuts: 2.36 g TFA/100 g - Puff pastry spread: 0.56 g TFA/100 g - Danish pastry spread: 0.44 g TFA/100 g - French fries: 0.18 g TFA/100 g 42% of the samples showed a trans fats content over 2%, more than 10% were even higher than 10% of total energy. [Information provided did not specify whether g TFA/100 g refers to g total fat or g product]
Variation in TFAs content in food after implementation of measure	See above: Results of market control actions (2011 and 2013) proved that no product contained more than 2% trans fats (based on total energy intake), including bakery products, popcorn and sweet spreads among others. In doughnuts less than 0.5 g/100 g or in Danish or puff pastry less than 0.2 g/100 g trans fats were found. Data from national food consumption surveys in Austria suggest however that there were no differences in populationsaturated fat intake before and after the introduction of the legal limit in 2009.[316]
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	No information found.
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	- Average trans fats intake 0.97± 1.3 g/day - High trans fats intake (P95) between 2-11.5 g/day [year of analysis: 2008]

[315] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf
[316] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf p. 34

Variation in TFAs intake after implementation of measure	TFA exposure was reduced to under the legal limit but data from national food consumption surveys in Austria suggest that there were no differences in populationsaturated fat intake before and after the introduction of the legal limit in 2009.[317]
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	More than half (55%) of Austrians cannot provide an estimate on which fatty acids are healthy or unhealthy in their diet, as evidenced by a survey conducted by the Forsa Institute on behalf of Unilever. There is considerable educational demand with regard to unhealthy fatty acids, such as saturated or trans fatty acids. In addition, the health effect of poly-unsaturated fatty acids is underestimated by respondents. According to the study, the average Austrian consumes about 6.2 kg of fat per year - and far more unhealthy than healthy fatty acids. 67% of the respondents have heard of healthy poly-unsaturated fatty acids, but only 40% can assess their effects correctly. The respondents were most aware of Omega-3 fatty acids and these are regarded as healthy by 84% of respondents. Less known, however, are omega-6 fatty acids, with only 46% of respondents aware of their existence. Nevertheless, 57% of the respondents attributed a positive effect to these fatty acids. About half of the Austrians surveyed, on the other hand, know of trans fatty acids and over half (54%) already know about their harmful effects.[318]

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	No information found.

[317] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf p. 34
[318] http://www.agrar.basf.at/agroportal/at/de/aktuell_at/ps_news_agro_market/ernaehrung-226820.html

Evidence of FBO sector facing specific challenges	Some smaller industries expressed concerns during the discussion phase of the regulation. The soup industry, for example, where soup cubes might have a fairly low fat content overall, had problems with the reduction. It was later decided to construct the regulation to differentiate requirements depending on fat content: for certain products with a lower total fat content, higher trans fat contents are allowed. For frying fats, it is technologically relatively easy to replace fats with palm oil or vegetable oils (sunflower oil ("high oleic sunflower") and rapeseed oil). These fats are solid or liquid. There were some problems with this transition as frying fats need to be as tasteless and as odourless as possible. In Austria, these fats are of particular importance due to the tradition of baking goods. For the production of margarine the process was relatively complicated because crystallization of fats is complex. In the commercial (B2B) sector, it was more difficult. The measures taken were similar: partially hydrogenated fats had to be replaced with alternative fats (palm oil and palm oil derivatives, rapeseed oil, sunflower oil). This was associated with high technological effort. Derivatives of palm oil do not crystallize as well, therefore more complex machines with a smaller flow rate are needed. From the perspective of raw materials, the switch did not necessarily result in more costs because palm oil costs either the same or is cheaper. The additional cost was in the processing. Today, palm oil is no longer desired by all consumer groups. Between 2005-09, this was not yet an obstacle. Costs would have been higher had palm oil not been an option. In the commercial margarine sector it was a relatively long process (4-5 years of development) until the new margarines were available. In the household sector (B2C) it was somewhat easier: good taste, good nutritional values are the most important consumer factors. The development phase took around 2-3 years. The margarine market in Austria is not very heterogeneous (Senna and Unilever dominate). Both companies implemented this at the same speed and all measures were implemented before the regulation was introduced. This had a positive effect on competition within Austria because all companies had the same basic conditions. The same conditions of competition also apply to importers.

For which oils/fats was there a reduction in use and with what were they replaced?	The reduction in trans fatty acids at the expense of an increase in the content of saturated fatty acids (such as palm oil) has not been confirmed.[319]
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	According to one Austrian margarine producer, it was "cost-neutral for raw materials if you can use palm oil. If not then the costs are significantly higher. Personnel expenditure for the development can only be estimated: In the 4-5 years which were necessary for the development of alternatives we had two persons (8-10 man years). Further processing also has development costs, but these are estimated as less. The greatest effort was certainly in the commercial margarine sector but also in the household margarine sector. Investment expenditure: Machines had 20-30% lower performance with the alternative fats. To restore the machines' performance to their old condition required additional investment. That is because partly hydrogenated fats crystallize more rapidly than palm oil and palm oil derivatives." For the small bakery interviewed, costs were minimal. The bakery worked with their supplier to find appropriate solutions, and the costs for this were carried by the supplier. For the reformulation of recipes themselves, only a few man hours were needed.
Cost of understanding / learning the measure for FBOs	Big margarine and oil producers anticipated the transition following the Danish regulation. This led to voluntary measures so that these producers were already compliant by the time the regulation came into effect. According to the margarine producer interviewed, these companies then bore the brunt of the burden, as they then produced products that were compliant and could be used by their commercial customers.

Consumer prices and choice

319 http://www.konsumentenfragen.at/cms/konsumentenfragen/attachments/1/5/7/CH0948/CMS1424769941810/transfettsaeuren_2015.pdf

Evidence of changes in the price of reformulated products	According to one Austrian margarine producer, there was probably a slight price increase (somewhere around 8-12%). No statistics are available. Consumer prices are always dependent on the broader market situation. The price effect would have been influenced by the replacement oil used (palm, rapeseed, sunflower). According to the small bakery interviewed, there was a slight price increase at the time of the switch but this would have happened with or without the change in trans fats.
Evidence of price differences between products with iTFAs and alternatives	Not applicable.
Evidence of changes in the range, quality or taste of products available	No information found.
Evidence of changes in TFAs consumption	No information found.
Effect on consumer information and awareness	Following the regulation, there has been less negative press around margarines and their bad reputation regarding trans fats has disappeared.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	According to the Austrian Ministry of Health, a study is currently being undertaken by WHO Europe to address this question. The results of this study are not yet available.
Evidence of change in saturated fats intake	No information found.

Competition, innovation and trade

Effect on competition in the domestic market	There were no disadvantages on the Austrian market as all businesses as well as importers had to comply with the regulations.
Changes in trade of affected goods	One interviewee indicated that there was competitive disadvantage in Central and Western Europe at first, due to the higher costs and quality issues, but this disadvantage quickly dissipated. In Eastern Europe, where cheaper margarines are still on the market, however, Austrian producers are still in a poorer position. This disadvantage has been experienced for a ong time.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	No information found.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	According to an interview with a margarine producer, alternative products were provided by large companies to the small ones, so there were no major problems. The upstream suppliers bore the brunt of the regulation more than businesses further down the supply chain. The one year transition period was considered to be relatively short. The total cost to test a sample for TFAs through the Austrian Food Safety Authority is around €170. Local authorities also provide these tests with varying costs.
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	No information found.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	Initially, mostly palm oil and palm oil derivatives were used. Since 2015, however, there has been a movement against the use of palm oil (due to the impact of palm oil production on deforestation). This was noticeable too for companies that exported their products to other countries. There was a strong response in Italy, while in other countries it was more differentiated. In 2009 the plant origin of oils did not have to be listed in ingredients, but this is now obligatory and thus there is better consumer information with regard to the use of palm oil in food products. If that had already been the case in 2009, the cost would have increased greatly. There are alternatives to palm oil on the market, such as cocoa butter and shea oil. However, the markets for these fats are much smaller and the prices are difficult to calculate (the variances in demand-driven prices are very large). A good alternative, according to one margarine producer, would be to use fully hydrogenated oils that do not contain trans fats. The industry is working on such products (replacing palm oil with fully hydrogenated oils from sunflower and rapeseed oil). The capacities are currently low but can increase quickly. This would be a real alternative, as there would be no trans fats and it would be acceptable from a technical point of view.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

Additional references

https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

Canada

Policy status

	Existing	Proposed/ considered
Legislation	X	X
Voluntary measures	X	
Labelling	X	
Consumer information	X	

Description of existing measure(s)

Type of measure	Legislation/voluntary/labelling/consumer information
Description of measure *(if legislation paste exact text of legislation)*	**Labelling measures (mandatory and voluntary):** ▪ **Legislation** – mandatory nutrition labelling. Introduced in December 2002, effective December 2005, *Canada was the first country in the world to introduce mandatory labelling of TFAs.* The measure requires declaration of TFAs on most pre-packaged foods.[320] Trans fats are a core piece of nutritional information that is required to be declared in a Nutrition Facts Table (NFT): they must be declared under the "fat" declaration, in the same section as the "saturated fatty acid" declaration. The trans value is expressed in grams and the sum of saturated and trans is expressed as a percentage of the daily value.[321] However, products containing less than 0.2g of trans fat per serving are regarded as trans fat free for labelling purposes, and labels do not distinguish between naturally occurring and artificially produced trans fats.[322] Three nutrient content claims can be made on a label or in an advert for a food with trans fats: free of trans fatty acids; reduced in trans fatty acids; or lower in trans fatty acids, with strict conditions regarding when they can be used. The only health claim that can be made is that low trans fat

[320] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[321] http://www.inspection.gc.ca/food/labelling/food-labelling-for-industry/nutrition-labelling/additional-information/labelling-of-trans-fatty-acids/eng/1415805355559/1415805356965

[322] http://www.news-medical.net/health/Trans-Fat-Regulation.aspx

diets may reduce the risk of heart disease (although exact wording is prescribed in the legislation).[323]

- Voluntary guidelines developed by the Canadian Restaurant and Foodservices Association in consultation with Health Canada in 2006 to provide nutrition information i.e. trans fats content, through in-store brochures, pamphlets, posters and websites.
- In February 2007 Health Canada updated and released revised "Canada's Food Guide" which, for the first time, contains explicit recommendations to limit trans fats andsaturated fat intakes and encourages consumers to read the Nutrition Facts table on food labels.[324]

Reformulation measures (voluntary):

- In 2004, the Parliament of Canada passed a motion "to enact regulation, or if necessary present legislation that effectively eliminates processed trans fats, by limiting the processed trans fat content of any food product sold in Canada to the lowest level possible". Motion included development of a multi-stakeholder task force (the Trans Fat Task Force - TFTF), which, in their 2006 report to the Minister of Health (TRANSforming the Food Supply) recommended limiting the total amount of TFAs in foods through regulation. More specifically: **limiting the trans fats content of vegetable oils and soft, spreadable margarines to 2% of the total fat content; and for all other foods to 5% of total fat content (incl. ingredients sold to restaurants).** The recommendations were in line with nutrition labelling to help level the playing field for all players in the food industry. On June 20th 2007, the Minister of Health announced that Health Canada would adopt the TFTF's recommendations and industry was given a 2 year window to reduce trans fats to recommended levels, encouraging substitution of TFAs with unsaturated fats during reformulation. **If significant progress had not been made, the department would develop regulations to enforce the limits.** Progress towards recommendations was tracked by the Trans Fat Monitoring Programme.[325]
  - One interviewee from the National Competent Authority stressed the importance of defining the approach as a "**structured voluntary approach**". This approach must have the following components (which – it was argued - were key reasons for the success of this approach in Canada): targets must be published; the approach must have defined timelines, a clear mechanisms for public consultation and public disclosure of all data, a plan for monitoring; and the option of including a regulatory approach if the voluntary measure wasn't successful.

State/Province level legislation:

[323] http://www.inspection.gc.ca/food/labelling/food-labelling-for-industry/nutrition-labelling/additional-information/labelling-of-trans-fatty-acids/eng/1415805355559/1415805356965

[324] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[325] Ibid.

	▪ **Ontario.** On September 1, 2008 the Healthy Food for Healthy Schools Act and Trans Fat Regulation came into effect. The regulation requires schools to drop trans fat from food and beverages sold on their premises. This includes some baked goods, packaged snack food and deep fried food, among others.[326] ▪ According to the NCA interviewee, while the trans fat task force was deliberating the introduction of the voluntary national-level measure, a number of jurisdictions had already introduced measures to reduce or ban trans fats e.g. Alberta banned trans fats in French fries. These sub-national initiatives acted as a bottom-up level driver for government to introduce a national-level measure. In particular, because the labelling measure introduced in 2002 did not cover trans fats in the restaurant and food services industry, restaurant and food service establishments wanted something nationwide and standardised. Most local level measures also related to restaurants because this was the easiest sector for local governments to develop regulations for. Standardisation of these different measures was one of the strongest driving forces for the national level initiative. – VP, Canadian Restaurant and Foodservices Association: Fully supportive of the new trans fat limits*: "The restaurant industry is not usually an industry that comes before government and makes requests for regulations or government interventions per se; however, trans fat has evolved, and in a unique way, and in this case, given what has evolved in the past number of years, I want it to be on record that the restaurant industry has in fact made requests of the Government of Canada to establish a national regulatory framework so as to ensure consistency with respect to reductions in trans fat across Canada."*[327]
Scope of measure	**Labelling regulation** (to include the Nutrition Facts Table) is mandatory for most pre-packaged foods. **Voluntary reformulation** measure covers most pre-packaged foods **and** restaurant foods.
FBOs covered	**Labelling regulation**: all producers of pre-packaged foods. **Voluntary reformulation**: all producers of pre-packaged food **and** owners of restaurants and food service establishments.

[326] http://www.edu.gov.on.ca/eng/healthyschools/healthier.html
[327] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence

Derogations *(e.g. low fat products, local products)*	**Labelling regulation** (Nutrition Fact Tables): Foods sold at restaurants and food service establishments fall outside of regulations (the NCA interviewee estimated this equated to around a quarter of foods consumed). However a number of restaurants committed to implementing industry-led voluntary guidelines (approximately 40% of all chain establishments).[328] ▪ The following pre-packaged products are always exempt from displaying a Nutrition Facts table (NFT): one-bite confectionary sold individually e.g. small individually wrapped mints; a pre-packaged individual portion of food solely intended to be served by a restaurant or other commercial enterprise with meals or snacks e.g. creamers served with coffee, and milk, partly skimmed milk, skimmed milk, goat's milk, partly skimmed goat's milk, skimmed goat's milk, (naming the flavour) milk, (naming the flavour) partly skimmed milk, (naming the flavour) skim milk or cream sold in refillable glass container. ▪ The following foods are specifically prohibited from displaying a NFT: formulated liquid diets, infant formula, foods containing infant formula, meal replacements, nutritional supplements and foods represented for use in very low energy diets. These products have their own nutrition labelling requirements that are different from those of the NFT.[329] The NCA interviewee also mentioned that artisanal products were excluded (but these products made up an almost negligible proportion of the food supply).
Share of SMEs involved *(in case of voluntary measures)*	For the **voluntary reformulation** measure, according to the NCA interviewee, SMEs were less engaged than larger companies. However the Canadian Department of Agriculture has a mandate to support SMEs with reformulation and the National Sciences and Engineering Research Council also supported different sectors/categories that faced particular problems. Furthermore, the interviewee said that SMEs were largely "followers" rather than "leaders". Most of the research and development and recipe testing etc for reformulation was done by the large multi-national companies and SMEs would then copy the format of these reformulated products, rather than spending money on their own research and development i.e. it was not as costly to SMEs as may be assumed. See rate of compliance section below for more info.

[328] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[329] http://www.inspection.gc.ca/food/labelling/food-labelling-for-industry/nutrition-labelling/prohibitions/eng/1386948927357/1386948928185

Length and characteristics of transition period	For **voluntary reformulation** measure, companies had two years to make changes or a regulation would be introduced. However, the Trans Fat task Force specified that: *"Extended phase-in periods [may] be specified for certain applications (e.g. baking) and for small and medium-sized firms, recognizing that in most cases the transition could be made within two years of the date of entry into force of the final regulations"*[330] (so a four year transition period in total). For the **mandatory labelling** legislation, larger companies had to comply with the legislation by December 2005, but smaller enterprises had a grace period of two years.[331]
Arrangements for measure enforcement and compliance monitoring	**Labelling measure:** the Food Inspection Association of Canada has a broad mandate to inspect food and enforce regulations. For labelling they used a risk-based approach to determine priority inspection and analysis plans (NCA interview). This was always a point of contention as it was seen as too minimal i.e. based on complaints or spot checks rather than comprehensive inspection and analysis. **Voluntary reformulation measures:** the Trans Fat Monitoring Programme (TFMP), established by Health Canada in 2007, was a two-year programme analysing the trans fat content of over 1100 foods known to contribute high levels of trans fat to the Canadian diet.[332] This programme was clearly a monitoring initiative rather than inspection (NCA interviewee). Product labels and food content were analysed in certified labs by Health Canada and results were sent to companies. Companies then had one month to review the data and provide a correction/ more up-to-date data. This process worked well (NCA interviewee). The monitoring programme was conducted twice a year for over three years. Health Canada also conducted several teleconferences with the food industry to ensure everything was compliant and offered training to businesses at no cost (three or four day course) to teach industry how to analyse their own products if they wanted to.
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	**Voluntary reformulation:** Despite the presence of the trans fat monitoring programme, the rate of compliance was not extensively monitored. The NCA interviewee said that the number of businesses achieving compliance wasn't identified, however the supplemental table S1 found in Arcand *et al*'s (2014) paper identify all of the businesses that disclosed their trans fat levels and those that did not.[333]

[330] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence.
[331] http://www5.agr.gc.ca/resources/prod/doc/agr/pdf/PotentialEconomicReport_e.pdf
[332] https://www.canada.ca/en/health-canada/programs/banning-partially-hydrogenated-oils-in-foods/consultation-document.html#c11
[333] http://ajcn.nutrition.org/content/early/2014/08/06/ajcn.114.088732/suppl/DCSupplemental

	During the monitoring programme, Health Canada looked at all the leading fast food restaurants (at least 50) and identified the foods with trans fats that took up the most space on shelves in three different cities. For some food categories this equated to 90% of the market share but their aim was to select 70-80% of the market share per category. The large majority were found to be compliant (see trans fats content section below). However, due to the research methodology, some categories may have been under-represented, meaning the compliance rate in these categories is less clear: Smaller manufacturers (although arguably most small manufacturers did not make products with different ingredient profiles to the larger manufacturers); In the second monitoring stage, the trans fat monitoring programme used the same sampling plan as the sodium monitoring programme which **picked up some additional food products that were not detected in the first monitoring phase**. These additional products were equivalent to about 7% of the food supply. Once products were identified as falling below the threshold level of trans fat content, they were no longer monitored by the programme i.e. food categories changed during each round of monitoring. **Other evidence:** Results from the TFMP suggest that while a number of popular fast-food and family restaurant chains in Canada have been successful in decreasing trans fats levels, there are still establishments that continue to offer menu items high in TFAs.[334]
Tests used to assess trans fats content	**Labelling**: The CFIA recommends using the Official Methods of Analysis of AOACR International, Official Method 996.06 to determine the *trans* fatty acid content of foods.[335] Trans fat monitoring programme for **voluntary measure**: (NCA interviewee). Health Canada's Chief Chemist was leading the testing for this programme. The interviewee was not sure of all the tests used but mentioned capillary GC testing. **Concern regarding monitoring of thepartly hydrogenated oil ban:** A representative of the baking industry mentioned that a key problem with lab testing is that no test is able to distinguish between animal fats and iTFAs. This is problematic as the new

334 https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

335 http://www.inspection.gc.ca/food/labelling/food-labelling-for-industry/nutrition-labelling/additional-information/labelling-of-trans-fatty-acids/eng/1415805355559/1415805356965

	legislation excludes animal fats.
Steps taken to raise consumer awareness	The media and other stakeholders have played an important role in raising consumer awareness by: helping to increase consumer awareness about TFA; highlight the actions taken by industry to remove trans fats from products and highlighted worst performers from the trans fat monitoring programme.[336] A representative of the baking industry mentioned that the labelling measure itself played a vital role in raising consumer awareness and put pressure on industry to reformulate as consumers wanted trans fat-free products. They argued that consumer awareness and pressure alone was the key driver in reducing trans fats, not any regulation by Governments. They think that had consumers not been so aware, the voluntary measure would have been less successful. Consumer awareness also came from a lot of prior published research from health professionals on the health effects of trans fats which was extensively spread by the media.
Guidance provided to affected businesses	Guidance on labelling was provided on the Canadian Government website.[337] Guidance on voluntary trans fat reduction: The Canadian Restaurant and Foodservices Industry developed a "how-to" guide which provided advice and counsel to members of the industry on how to actually go about reducing trans fats in their menu items and offerings.
Effectiveness of the measure	"Data published over the last decade suggest that initiatives to decrease the trans fat consumption of Canadians have been highly effective."[338] See below sections for quantitative data.

[336] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[337] http://www.inspection.gc.ca/food/labelling/food-labelling-for-industry/nutrition-labelling/additional-information/labelling-of-trans-fatty-acids/eng/1415805355559/1415805356965

[338] https://www.canada.ca/en/health-canada/programs/banning-partially-hydrogenated-oils-in-foods/consultation-document.html#c11

Describe (if any) other measures that are currently being considered

Proposed legislation for summer 2018: Health Canada intends to implement a prohibition on the use ofpartly hydrogenated oils in foods by addingpartly hydrogenated oils to Part 1 of the List of Contaminants and other Adulterating Substances in Foods. This would mean that any food containingpartly hydrogenated oils would be declared adulterated and its sale in Canada prohibited in accordance with section 4 of the Food and Drugs Act.[339]

Regulation of the proposed measure: Food and drug regulations fall under criminal law so the Food Inspection Agency could take businesses to court after several breaches to regulation (NCA interview).

Reasons for the introduction of the legislation:

- **Further reductions in trans fats are required.** The WHO recommends that trans fat intake (from both naturally occurring and industrially produced sources) should be less than 1% of total energy intake. Despite significant progress (as highlighted in the sections on intake and content below), there are still certain food categories that continue to have large proportions of foods not meeting the trans fat targets and some subpopulations are still at higher risk.[340] In addition, the last official results from the trans fat monitoring programme (in 2008) suggest that average trans fat content was still above the WHO 1% recommendation (1.42% of total energy intake).

- **Cost savings.** A study undertaken by Gray, Malla and Perlich (2005) which examined the economic impacts of a ban on industrial trans fats, suggests that a full ban would create health benefits in an order of magnitude larger than the increase in food cost associated with the ban.[341] They estimated that several billion dollars in benefits would be forgone if trans fats reduction is encouraged through labelling alone. The present value of health cost savings of a ban to Canadians would exceed $19 billion. Oilseed growers, whose price is set in the global market, would be largely unaffected by a ban.

- **Prevent slippage.** The NCA interviewee mentioned that although most products are now trans fat-free in Canada, the regulation allows for a "mop-up" of those products that still have not reformulated. They argued that processes and products are now available in Canada for all products to be trans fat-free so products that still contain artificial trans fats are the result of laziness/lack of legislative pressure. They also mentioned it is a good way to prevent slippage. For example, after the trans fat monitoring programme her team found that some shortenings that reduced trans fat levels went back to their original levels.

339 http://www.hc-sc.gc.ca/fn-an/consult/nop-adp-c-2017-3/nop-adp-c-2017-3-eng.php

340 https://www.canada.ca/en/health-canada/programs/banning-partially-hydrogenated-oils-in-foods/consultation-document.html#b11

341 http://www.ag-innovation.usask.ca/final%20policy%20briefs/GrayMalla_TransFat10.pdf

Stakeholder views on the proposed legislation:

- "Health Canada sees the value of a regulatory approach, which may be especially beneficial in controlling the level of trans fat in oils used by the food service industry."[342]

- CEO, Heart and Stroke Foundation of Canada: progress in small and medium-sized food service operators has been slower and "frankly, we are not getting at the suppliers to that sector, and without regulation, we don't believe we can."[343] "The other issue that came up in the trans fat task force was that regulations would send a clear signal to suppliers to create healthier alternatives.

- Canadian Nutrition Society: "a prohibition ofpartly hydrogenated oils would align Canada's regulation with that of several countries in Europe and the United States who have already established this policy."[344]

- Views of industry:
  - Baking Association of Canada. From the outset, BAC supported an orderly replacement of trans fats in the food supply to alternatives that are low in trans fats and saturated fats.[345] However, in an interview with a representative from the association, it was felt that the legislation is not required as the voluntary measure already led to a reduction of trans fats to within the WHO limits across almost bakery products. They said that the baking industry has been trans fat-free for years.

Learnings for the EU. The NCA interviewee mentioned that at the time Canada's voluntary measure was introduced, legislation was decided against for political reasons i.e. it was a political decision to limit the amount of legislation introduced. However, they argued that the introduction of legislation with a three year time-lag could probably have been just as effective: it would have been more cost-effective and less labour-intensive (see administrative costs section below). They stressed that any legislative measure needs to be introduced with a measure alongside to ensure that the food supply doesn't become over-burdened with saturated fats. In the case of Canada, they were fortunate to have had good saturated fat-free replacement oils available at a good price.

TFAs in foods and diets

TFAs content in	Detailed fat analysis of over 200 locally and nationally available

[342] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence
[343] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence
[344] https://cns-scn.ca/sites/default/uploads/files/HC%20Consultation%20-CNS%20response-FINAL.pdf
[345] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence

food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	foods indicated that trans fats levels in some foods reached as high as 50-56% trans fats as % of total fat. Also large variation in trans fats levels in some food categories.
Variation in TFAs content in food after implementation of measure	Overall comments from the NCA interview and the baking industry interview indicated that the large majority of products in Canada are now trans fat-free as a result of the labelling and reformulation measures. TFAs have been reduced or eliminated in certain foods – bread products and salad dressings are now trans fats free.[346] **Labelling:** One study looking specifically at the change in fat composition of a survey of all margarines sold in Toronto between 2002 and 2006 when the new Canadian **labelling regulations** came into effect found that average amounts of *trans* fatty acids (TFA) and mono unsuaturated fats decreased, while average amounts of poly unsuaturated fats (poly-unsaturated fatty acids) increased significantly from 2002 to 2006.[347] The proportion of margarines with less than 0·2 g TFA/10 g serving rose significantly from 31 % in 2002 to 69 % in 2006. However, trans fats reductions appeared to be restricted to higher-priced margarines. Another reference noted that *"the availability of trans fat information on the Nutrition Facts table helped draw the attention of consumers and public health professionals to the presence of TFAs in pre-packaged foods, which resulted in a significant reduction of the trans fat content of these foods."*[348] **Voluntary reformulation (and labelling):** A study by Arcand et al. (2014) , updating results from the trans fat monitoring programme, found that 95% of packaged foods and 96% of restaurant foods, overall, had trans fats amounts that fell within recommended limits. When examining top contributors of industrial TFAs to the Canadian diet, there was a

[346] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[347] Ricciuto L, Lin K, Tarasuk V. A comparison of the fat composition and prices of margarines between 2002 and 2006, when new Canadian labelling regulations came into effect. Public Health Nutr 2009; 12: 1270-5 http://dx.doi.org/10.1017/S1368980008003868

[348] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

	striking improvement in the proportion of foods meeting the recommended limits, increasing from 75% in 2005-2009 to 97% in 2010-2011, particularly in the following packaged foods: croissants (25% to 100%), pies (36% to 98%), cakes (43% to 90%), and garlic spreads (33% to 100%). Most restaurant categories assessed by the TFMP had 100% of foods meeting trans fats limits. Supplementary tables provide breakdowns of fat content by product.[349] However, some categories had a large proportion that still exceeded trans fats limits: dairy-free cheeses (100%), frosting (72.0%), lard and shortening (66.7%), coffee whiteners (66.7%), and restaurant-prepared biscuits and scones (47.4%)[350]. Furthermore, among foods that exceed the trans fats limits, many contain very high amounts of TFAs (e.g., coffee whiteners, doughnuts, dairy-free cheese, refrigerated dough). Many of these were in food categories that contained a large proportion of products that meet the trans fats limits, which suggests that technologies clearly exist for reformulation. In general, pre-packaged foods have seen the greatest reduction in trans fats, with restaurants and the food service sector having less success as it is more difficult to control the level of trans fat in the final products.[351]
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	Following the TFMP which ended in 2008/9, a cost benefit analysis (CBA) was commissioned by Health Canada to estimate the potential costs and benefits of further efforts to reach the target of trans fat intake being no more than 1% of overall energy. Interviews conducted as part of the CBA indicated that some other companies were ready to introduce new products that were meeting the trans fat limits in a matter of weeks or by the end of 2009, suggesting that there were further reductions in trans fat content and intake after 2009.[352] Thus it is possible that there were further reductions since the 1.42% were calculated, however decreases are likely to be lower given that most companies have already implemented measures to reduce trans fats content. **The authors of the CBA estimate average trans fat intake in 2009 to be 1.35% (but 1.49% in children). Continuing with that assumption, in 2012 the level should**

[349] http://ajcn.nutrition.org/content/early/2014/08/06/ajcn.114.088732/suppl/DCSupplemental

[350] Arcand, J., Scourboutakos, M. J., Au, J. T., & L'abbe, M. R. (2014). trans Fatty acids in the Canadian food supply: an updated analysis. *The American journal of clinical nutrition*, ajcn-088732.

[351] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence

[352] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

	be 1.12% of energy and 1.27% of energy in children. However the CBA, after interviews with food industry stakeholders about their intent to make further reductions, **assumed that there would be no further decrease in trans fat intakes in Canada beyond 2009 levels.**
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	Researchers estimated that Canadians had one of the highest intakes of TFAs in the world in the mid-1990s due to widespread use of hydrogenated canola and soybean oils (8.4g/day in 1995).[353] The move to such widespread use of hydrogenated oils came in the 1970s when they were viewed as a healthier alternative to saturated fats. Trans fat intake was estimated to be 3.7% of total energy.[354] ▪ Foods contributing to the high trans fat intake included crackers, margarines, shortening, donuts, cookies, pie shells, breaded chicken, cake mixes and cakes, French fries, sauces and gravies. ▪ Information from nutrition surveys indicates that 22% of the average trans fat intake of Canadian adults (and as much as 31% in the case of males aged 19 to 30 years) is provided by foods consumed away from home, often in fast food restaurants and other food service environments.[355] Variation by sub-groups: ▪ Exposure in children tends to be higher than exposure in adults.[356] ▪ Canadian Inuit populations – over the last 5 decades or so, Inuit populations have transitioned from a traditional, marine diet to one which incorporates more processed foods, typical of a western diets. Foods containing industrially produced trans fats are also beneficial in these communities because of their storability at room temperature and a longer shelf life. A dietary survey in 2004-05 in Inuit populations from Nunavik Canada and Greenland found that despite consuming similar percentages of store-bought foods, the Nunavik Inuit were three times higher

[353] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[354] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

[355] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

[356] https://www.canada.ca/en/health-canada/programs/banning-partially-hydrogenated-oils-in-foods/consultation-document.html#c11; (see appendix 1 for breakdown by gender and age)

	than those of the Greenland Inuit (as measured by the fatty acid composition of erythrocyte membranepartly hydrogenated oilspholipids). Nunavik youth also had significantly higher erythrocyte trans fats levels than their elders (0.67% vs 0.39%).[357] The NCA interviewee said that extensive data was gathered through the 1990s, particularly the data collected through a breast milk monitoring programme, and this supported the introduction of the labelling measure in 2002. At this point, so much data had been collected there was not much objection to the introduction of the legislation because the health impacts were clear. The only objections from business were regarding how much time they had for labelling and reformulation.
Variation in TFAs intake after implementation of measure	TFA intakes have been decreasing – 8.4g/day in the mid-1990s versus 4.9g/day in 2005 (2% of total energy).[358] A 2007 assessment by Health Canada estimated that trans fat intakes for all Canadians (aged one year and older) has decreased to 1.42% of total energy (equivalent to 3.4 grams per day). The usual intake distributions of trans fat (as % of energy) were also calculated for certain age-sex groups (see Annex 2 for breakdown table). The 95th percentiles for all age-sex groups have dropped from approximately 3.00% in 2004 to 2.12% in 2008. The 95th percentile for males 51 years and older is the highest at 2.30% of overall energy. The 5th percentile for both boys and girls 9-18 years of age are reported to be 1.22% and 1.06% of energy. This indicates that almost all children and teenagers exceed the trans fat limit of 1% energy intake recommended by the WHO.[359] Subsequent study of Canadian nursing mothers showed decline in trans fat concentrations in human milk samples between 2009

357 https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

358 L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

359 https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

	and 2011, suggesting further declines since the 2007 assessment (at least in this population).[360] However, in 2011 a risk assessment conducted by Health Canada showed that some sub-populations were at risk of higher trans fat intake including: children and teens, Canadians living in remote areas, price-sensitive consumers (i.e. lower income groups) and those who regularly consumed foods remaining high in trans fats.[361] Similarly, a 2012 study looking at the amount of trans fatty acids in Canadian adults between 2004 and 2010 found that, relative to 2004, total trans fats levels were significantly lower in 2005-2009, however not in 2010, suggesting that young Canadians may still remain vulnerable.[362]
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	45% of Canadians in 1995 claimed that they have heard or that they understand the term "trans fat" compared to 79% in 2005.[363]

Measure impacts

Business responses and costs

Number of business that reformulated their products	Most of the top fast food and restaurant chains in Canada have been successful in reducing trans fats from menu items that were previously high in trans fats (e.g. French fries, chicken products, fish products and pizzas):[364]

[360] Ratnayake WMN, Swist E, Zoka R, Gagnon C, Lillycrop W, and Pantazapoulos P. (2014). Mandatory trans fat labelling regulations and nationwide product reformulations to reduce trans fatty acid content in foods contributed to lowered concentrations of trans fat in Canadian women's breast milk samples collected in 2009-2011. American Journal of Clinical Nutrition, 100 (4):1036-1040.

[361] https://www.canada.ca/en/health-canada/programs/banning-partially-hydrogenated-oils-in-foods/consultation-document.html#c11

[362] https://www.ncbi.nlm.nih.gov/labs/pubmed/28401129-circulating-concentrations-and-relative-percent-composition-of-trans-fatty-acids-in-healthy-canadian-young-adults-between-2004-and-2010-a-cross-sectional-study/

[363] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[364] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

(if possible differentiate by large and small companies)	▪ 78% of restaurants and fast food chains had French fries that met the 5% trans fats limit by 2007-08, 59% had chicken products, 100% had pizzas and 85% had fish products. In response to the Minister of Health's recent commitment to introduce tougher measures to eliminate industrially produced trans fats in the food supply, Health Canada launched a Call for Data in 2016 to collect information on the current use ofpartly hydrogenated oils in the food supply. Data was submitted by seven manufacturers, two fats and oils processors, one restaurant, two industry associations and one academic. Many respondents indicated that they were moving away frompartly hydrogenated oil use, however the response rate was low. President and CEO of the Vegetable Oil Industry of Canada: "*Overall, our industry has developed formulations to allow bakeries, margarine companies, the food service sector, and virtually all food companies to provide products with no trans fats and, in most cases, lower saturated fat. To give you some details, today virtually every national fast-food outlet is using a trans-fat-free frying oil. Trans-fat-free, low-unsaturated-fat margarines now have the largest market share in Canada. Virtually all the large bakeries in Canada are using trans-fat-free formulations. Many of the facilities within our industry that produce hydrogenated oil, which is the source of trans fat, have either been closed or converted.* *The acreage dedicated to producing high-stability oil that does not create trans fat has substantially increased. High-oleic canola now comprises 900,000 tonnes of Canada's canola production, and is expected to increase to 3.75 million tonnes, or 25% of production, by 2015. We estimate that more than 80% of the market is now meeting the task force trans fat limits of 2% for liquid oils and 5% for all other foods."*[365]
Evidence of FBO sector facing specific challenges	The interviewee from the baking industry in Canada identified the following challenges, noting that overall the challenges of moving to trans fat-free foods were substantial: Finding a hard fat for some products e.g. those that use laminated doughs. Butter is not usually used as it is expensive and is often hard to procure. Palm fats were identified as the best substitute in most cases. Industry suppliers were making inaccurate claims about the functionality of new products meaning that they were not effective when used in bakery products. Functionality is particularly important for icings and laminate doughs. SME costs were not particularly out of line with larger producers; the main problem for SMEs was finding the in-house technical resources and time to do the reformulation.

[365] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence

	Butter is still being used as a trans fat alternative but this is problematic because it is expensive and causes problems for vegans/individuals of particular religious backgrounds. VP of the Canadian Restaurant and Foodservices Association: "*The challenges during the transition period were significant for food service"* including: ■ Supply challenges: challenges in getting adequate online supply of oils from national chain operators. "*I want to be clear that it was not easy. Our member companies put a lot of resources, both human and fiscal, into their efforts to reduce trans fats."* ■ "*The food service industry is and has been uniquely challenged because of the nature of Canada's food regulatory regime; that is, the jurisdictional purview for enforcement and compliance around these kinds of issues is such that restaurants really have been singled out as policemen, if you will, to police the entire Canadian food supply with respect to trans fat. This has posed significant challenges for our members across the country. In response we have come back to the federal government. We have made our case, in this instance, to have a consistent national regulatory framework so that we can ensure that our members are operating in an environment in which they have a level playing field with their direct competitors along the food value chain."*[366] VP, Food and Consumer Products of Canada: (represents the food manufacturing industry in Canada): "*Despite significant investment by industry, government, and academics, challenges still exist to find the appropriate substitute ingredients for some products and to ensure that reformulated and new products meet consumers' expectations for taste, texture, and quality."*
For which oils/fats was there a reduction in use and with what were they replaced?	In 2013 a total of just over one million (1,080,885) metric tonnes of vegetable oils were consumed in food in Canada. Of that total, approximately 20 per cent was soybean oil. The remaining 50 per cent comprised canola (42 per cent) and high oleic low linoleic canola (HOLL – at eight per cent). The residual was imported oils and blends from 11 other plants such as palm, olive, coconut and corn. Canola, soy and flax oils – otherwise classified as "omega 3" oils – comprise 62 per cent of the oils in Canadian foods. Corn, cotton and sunflower ("omega 6" oils) make up five per cent, and HOLL, olive and peanut oils ("omega 9" oils) comprise another 12 per cent. Paska noted HOLL canola oil has a growing presence in Canadian food. In 2010, HOLL canola represented only four per cent of the oil used in Canadian food; by 2013, that had increased to 11.5 per cent. HOLL oil has gained popularity because it replaces hydrogenated vegetable oils that were once more commonplace in baked goods.[367]

[366] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence
[367] http://www.foodincanada.com/food-in-canada/the-other-big-oil-132907/

	The NCA interviewee mentioned that the Canadian Department of Agriculture funded a lot of research on canola oil to develop non trans fat alternatives. Once these variations were available, they were widely available to all businesses. At first they were more expensive but after a couple of years the price reduced considerably. The interviewee from the baking industry mentioned that in the baking industry, pre 2002, most oils used were vegetable oils but now they have primarily been replaced with palm fats and oils. More information in the health benefits section below on saturated fat content.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	The NCA interviewee was not aware of any studies that assessed the actual costs that occurred as a result of the labelling or reformulation measures. Data reported here are therefore qualitative or based on prediction/estimation. In reference to thepartly hydrogenated oil ban recommendation: CEO, Heart and Stroke Foundation of Canada: "*There is no evidence that regulations are cost prohibitive, that implementation costs to government are high. There is no evidence that regulations are cost prohibitive for industry.*"[368] A study undertaken by Gray, Malla and Perlich (2005)[369] which examined the economic impacts of a ban on industrial trans fats estimated that in all cases the total food costs of reducing trans fats would be less than C$ 1 billion.[370] Oilseed growers, whose price is set in the global market, would largely be unaffected by a ban. Generally, the increase in cost would occur at the crusher and food processor sectors through the cost of product reformulation and the substitution of higher cost High Oleic Canola and soybean oils. These costs would ultimately be passed on to consumers, resulting in very modest increases in consumer expenditure. The overall result would be a large economic gain over a range of plausible scenarios. The following best estimates (most realistic) of the additional cost or cost that firms would incur if different options were implemented were calculated: ▪ Voluntary labelling system: the testing/labelling cost is C$66 million while the product reformulation cost is C$295 million, which together account for C$361 million in expenditures. The CHD health benefit estimate is C$7,357 million. ▪ Mandatory labelling: The testing/labelling cost, for testing and labelling of all products, is equal to C$187 million. The mandatory labelling stimulates an increased product reformulation cost of C$471 million. Thus, the total estimated industry cost of mandatory labelling is equal to C$658 million. However, the CHD

[368] http://www.ourcommons.ca/DocumentViewer/en/40-3/HESA/meeting-15/evidence
[369] http://www.ag-innovation.usask.ca/final%20policy%20briefs/GrayMalla_TransFat10.pdf
[370] Though not indicated specifically in the source, the values are understood to be in Canadian dollars.

	health benefits are estimated at C$12.57 billion. ▪ Ban on foods with greater than 2% TFA: the testing/labelling cost is equal to C$187 million and the product reformulation cost is C$754 million, accounting for a total industry cost of $941 million. Under this scenario the CHD health benefits increase to C$19.54 billion. **Specifically within the baking sector**, the baking industry interviewee said that the average cost per SKU (Stock Keeping Unit) for updating labels is C$3000. For the general food sector, they said that reformulation costs (calculated by the US Department of Agriculture) were estimated to be USD 11,500 to 100,000 per formula, with a mid-range of USD 50,000. This includes a ten month development cycle and an eight month market cycle.
Cost of understanding/ learning the measure for FBOs	No information found.

Consumer prices and choice

Evidence of changes in the price of reformulated products	One of the top factors influencing food buying practices is cost. It was reported that margarines sold on the Canadian market that are lower insaturated fat, trans fats and the sum of saturated fat+TFA cost significantly more than margarine with higher levels of these fats.[371] More recent data is consistent with these findings. In 2002, margarines that were labelled as "trans fat free" cost $4.62 per kg and those that were not trans-fat free cost $3.05 per kg[372]. In comparison, in 2006 those that were trans-fat free cost $5.10 per kg and those that were not trans-fat free cost $3.55 per kg.[373] Similar research shows that nutritionally improved products tend to be higher in price. The baking industry interviewee also mentioned that initially there was a higher cost for trans fat alternatives and this was a challenge for industry.
Evidence of price differences between	The baking industry interviewee mentioned that when fat and oil suppliers first introduced trans fat-free products, they were also producing the trans fat versions. Splitting productions costs meant that initially the costs of trans fat-free products were high.

371 https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

372 Currency not stated in primary source but understood to be USD.

373 https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

products with iTFAs and alternatives	However now they are predominantly producing only trans fat-free products so the cost is going down.
Evidence of changes in the range, quality or taste of products available	No information found.
Evidence of changes in TFAs consumption	No information found.
Effect on consumer information and awareness	No information found.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	Heart disease has remained the second most likely cause of death for Canadians after malignant neoplasms.[374] However there has been an overall decrease in the number of deaths from heart diseases between 2000 (55,070 deaths) and 2013 (49,891 deaths). According to the CBA commissioned by Health Canada that factored in the reduced risk of CHD along with annual growth rate of heart attack cases in Canada, the further reduction of average trans fat intake to 1% of energy is conservatively estimated to prevent an average of 12,354 heart attack cases in Canada over 2010-2029.[375] A study undertaken by Gray, Malla and Perlich (2005)[376] which examined the economic impacts of a ban on industrial trans fats estimated that a voluntary labelling initiative alone would result in a present value of health cost savings exceeding C$7 billion. Mandatory labeling would increase the saving to over C$12

[374] http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1020561&pattern=&csid=

[375] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

[376] http://www.ag-innovation.usask.ca/final%20policy%20briefs/GrayMalla_TransFat10.pdf

	billion. With a ban present value of health cost savings Canadians would exceed C$19 billion. Meanwhile, the extra CHD health benefits of the mandatory labelling system are equal to C$5.21 billion.
Evidence of change in saturated fats intake	In many cases the reduction in trans fats has been achieved by finding healthier alternatives and not increasing level of saturated fat.[377] Results of the TFMP from 2005-2009 showed that industry has made progress in reducing trans fats levels in their products **while not increasing saturated fat content**, with **evidence that average saturated fat intakes of Canadians have remained constant since 2004** (an average of 25g/day on average for all Canadians aged one year and above).[378] It suggests that many food manufacturers are replacing TFAs with mono- and poly-unsaturated fats and not with saturated fats. This was confirmed through scientific assessment of the full fatty acid profile of the foods that were included for analysis in the TFMP. A second study[379] found that, among the major grocery and restaurant food products in Canada that might contain TFA, in 2005-07, nearly half (42%) contained over 5% trans fats on initial assessment. However most were discontinued or underwent reformulation (nearly three quarters had undergone reformulation with an average reduction to less than 2%). After this reformulation only one product had unchanged content of *cis* unsaturated fats; all others had increased *cis* unsaturated fats, most with absolute increase of over 10% of fatty acids and half with absolute increase of over 20%. The total fat content was generally unchanged. However, a 2014 study[380] found that saturated fat amounts were significantly higher (P , 0.05) among some foods with the lowest TFAs, such as cookies, brownies and squares, cakes with pudding/mousse, dessert toppings, and lard and shortening. Particularly within the baking industry, almost all products

[377] L'Abbe (2009) Case study – taking trans fat out of the food supply – the Canadian Experience. Health Canada (PHD presentation): available online at: http://www.pmaconference.mahidol.ac.th/index.php?option=com_docman&task=doc_download&gid=120

[378] https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

[379] Ratnayake WMN, L'Abbe MR, Mozaffarian D. Nationwide product reformulations to reduce trans fatty acids in Canada: when trans fat goes out, what goes in? Eur J Clin Nutr 2009; 63: 808-11 http://dx.doi.org/10.1038/ejcn.2008.39 pmid: 18594558

[380] Arcand, J., Scourboutakos, M. J., Au, J. T., & L'abbe, M. R. (2014). trans Fatty acids in the Canadian food supply: an updated analysis. *The American journal of clinical nutrition*, ajcn-088732.

	replaced high trans fat ingredients with those high in saturated fats as these were the only alternatives.

Competition, innovation and trade

Effect on competition in the domestic market	No information found.
Changes in trade of affected goods	The baking industry interviewee indicated that there is an opportunity for the Canadian industry to take trans fat-free products to the US market-place because they are ahead of the US in terms of reformulation. They said that if the EU were to move towards trans fat-free products then it could create a new market for Canada.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	No information found.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	The NCA interviewee mentioned that reformulation was a lot of work for companies, but that most of the costs were spent years ago as businesses have been aware for years that trans fats would need to be removed from food. Reformulation started even before the labelling legislation came into force. They said that most of the costs fell with the oil and fat suppliers as they were the start of the supply chain. When it came to regulation for labelling, the enforcement letters were usually sent to the oil and fat producers, and restaurants and food services relied on suppliers to provide updated products and labelling, rather than paying to monitor trans fat levels themselves.
Evidence of	**Voluntary reformulation measure:** The NCA interviewee was

authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	not sure of actual costs, but from their knowledge of the Trans Fat Monitoring Programme, they were able to confirm that the **administrative burden was high (i.e. in the millions of Canadian dollars)**, and much higher than for a regulatory approach. A lot of in-kind support was provided by the Canadian Heart and Stroke Foundation. It also funded three regional laboratories and employed several staff members for three years e.g. a research scientist, three chemists and a senior policy officer at Health Canada (the latter liaised with industry). Each employee had an average salary of C$100k a year plus benefits. Other costs include laboratory instruments and C$500k to buy market/sales data to support the analysis. **Labelling measure:** In comparison to the voluntary reformulation, the Canadian Food Inspection Agency did not spend that much money on monitoring nutrition labelling.

Environmental impacts

Evidence of any environmental costs or benefits	Most of the trans fat-free alternatives being used by the baking industry come from palm oil.
Evidence of increase in demand for palm oil / other ingredients	No information found.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

Additional references

Estimated trans fat intake as a percentage of energy

DRI age-sex group	Sample Size	*Trans* % of Energy	
		2004	2008
Children 1-3y	2117	2.07	1.55
Children 4-8y	3235	2.31	1.57
Boys 9-13y	2080	2.31	1.54
Boys 14-18y	2288	2.25	1.53
Girls 9-13y	1980	2.32	1.54
Girls 14-18y	2277	2.17	1.52
Males 19-30y	1804	2.01	1.40
Males 31-50y	2596	1.94	1.38
Males 51-70y	2550	1.89	1.36
Males 71+y	1520	1.92	1.44
Females 19-30y	2017	2.05	1.39
Females 31-50y	2755	1.94	1.39
Females 51-70y	3201	1.87	1.36
Females 71+y	2610	1.96	1.47
All Adults 19+y	19053	1.94	1.39
All Person 1+y	33030	2.01	1.42

Table 1. Estimated *trans* fat intakes as percent of energy in 2004 vs. 2008 in different age-sex groups in Canada [28]. The results contained in this table are based on the Canadian Community Health Survey – Cycle 2.2 on Nutrition, Statistics Canada, 2004.

Source:
https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

Usual distributions of estimated trans fat intakes as % of energy

Age-Sex	Sample Size	Year	Percentile						
			5th	10th	25th	50th	75th	90th	95th
Boys 9-18y	4368	2004	1.55	1.70	1.96	2.27	2.62	2.96	3.18
		2008	1.22	1.20	1.34	1.51	1.71	1.91	2.04
Girls 9-18y	4257	2004	1.58	1.71	1.94	2.22	2.53	2.82	3.00
		2008	1.06	1.15	1.30	1.49	1.73	1.96	2.12
Males 19-50y	4400	2004	1.16	1.31	1.58	1.92	2.29	2.67	2.91
		2008	0.90	0.99	1.15	1.36	1.59	1.81	1.96
Males 51+y	4070	2004	0.96	1.11	1.40	1.80	2.27	2.78	3.12
		2008	0.71	0.82	1.03	1.31	1.66	2.04	2.30
Females 19-50y	4772	2004	1.27	1.40	1.65	1.95	2.30	2.64	2.85
		2008	0.92	1.00	1.16	1.36	1.59	1.82	1.97
Females 51+y	5811	2004	1.10	1.24	4.50	1.84	2.23	2.63	2.89
		2008	0.79	0.89	1.08	1.33	1.64	1.96	2.18

Table 2. Usual distributions of estimated *trans* fat intakes as percent of energy in 2004 vs. 2008 in different age-sex groups in Canada [28]. The results contained in this table are based on the Canadian Community Health Survey – Cycle 2.2 on Nutrition, Statistics Canada, 2004.

Source:
https://docs.google.com/viewerng/viewer?url=https://cdn.intechopen.com/pdfs/42954.pdf&time=c3344365842b3bf1453a3bbb133492b0

Denmark

Policy status

	Existing	Proposed/ considered
Legislation	X	
Voluntary measures		
Labelling		
Consumer information		

Description of existing measure(s)

Type of measure	Legislation
Description of measure	ANNEX 1 ORDER ON THE CONTENT OF TRANS FATTY ACIDS 1. ------IND- **2002 0216 DK- EN-** ------ 20020619 --- --- PROJET Order No. 160 of 11 March 2003

Courtesy translation

Order on the content of *trans* fatty acids in oils and fats etc.

The following is laid down pursuant to Section 13, Section 55, subsection 2 and Section 78 subsection 3 of Act No 471 of 1 July 1998 on foodstuffs etc. (Foodstuffs Act):

Chapter 1

Scope

Section 1. This Order applies to oils and fats, including emulsions with fat as the continuous phase which, either alone or as part of processed foodstuffs, are intended, or are likely, to be consumed by humans.

Subsection 2. The Order does not apply to the naturally occurring content of trans fatty acids in animal fats or products governed under other legislation.

Subsection 3. The Order only applies to products sold to the final consumer.

Section 2. It is prohibited to sell the oils and fats covered by the Order to consumers if they contain a higher level of the trans fatty acids defined in the Annex than that stated in Section 3.

Section 3. As from 1 June 2003, the content of trans fatty acids in the oils and fats covered by this Order must not exceed 2 grams per 100 grams of oil or fat, cf. however subsection 2.

Subsection 2. From 1 June 2003 until 31 December 2003 the oils and fats covered by this Order and included in processed foodstuffs which also contain ingredients other than oils and fats and which are produced by the foodstuffs industry, in retail outlets, catering establishments, restaurants, institutions, bakeries etc. may, however, contain up to 5 grams of trans fatty acids per 100 grams of oil or fat.

Section 4. In products which are claimed to be "free from trans fatty acids", the content of trans fatty acids in the finished product shall be less than 1 gram per 100 grams of the individual oil or fat.

Chapter 2

Penalty provisions etc.

Section 5. A fine shall be imposed on anyone who contravenes Section 2 or Section 4 of Order.

Subsection 2. The penalty may increase to imprisonment for up to two years if the contra was committed wilfully or through gross negligence, and the contravention

1) caused damage to health or led to the risk thereof, or
2) resulted in, or was intended to result in, financial gain for the perpetrator themselves o others, including as a result of savings made.

Subsection 3. Criminal liability may be incurred by companies etc. (legal entities) in accor with the rules of Chapter 5 of the Penal Code.

Section 6. This Order shall enter into force on 31 March 2003.

Subsection 2. Products manufactured before this Order has entered into force, as well as manufactured within the periods stated in Section 3(2), may be sold until expiry of the best date.

Definition of trans fatty acids

For the purposes of this Order, trans fatty acids are defined as the sum of all fatty acid ison 14, 16, 18, 20 or 22 carbon atoms and one or more trans double bonds, i.e. C14:1, C16:1, C C18:2, C18:3, C20:1, C20:2, C22:1, C22:2 fatty acid trans isomers, but only polyunsaturat acids with methylene interrupted double bonds.

Source: Ministry of Food, Agriculture and Fisheries of Denmark and

	the National Food Institute (2014). Danish data on trans fatty acids in foods. Annex 1. An amendment to the Order 160 above (Order 1427/2015, see below) deletes section 4 to harmonise the Order with the EU regulation on nutrition and health claims made on foods (Order 1924/2006). Bekendtgørelse om indhold af transfedtsyrer i olier og fedtstoffer m.v. I medfør af § 7, § 40, stk 1, og § 60, stk. 3, i lov om fødevarer, jf. lovbekendtgørelse nr. 467 af 15. 2014, fastsættes efter bemyndigelse i henhold til § 7, nr. 3, i bekendtgørelse nr. 511 af 23. april 201 Fødevarestyrelsens opgaver og beføjelser: **§ 1.** Denne bekendtgørelse finder anvendelse på olier og fedtstoffer, herunder emulsioner med fedt fet som den gennemgående fase, der enten alene eller som del af forarbejdede fødevarer er besten eller må antages at skulle fortæres af mennesker. *Stk. 2.* Bekendtgørelsen omfatter ikke naturligt forekommende indhold af transfedtsyrer i anima fedtstoffer eller produkter, der er reguleret via anden lovgivning. *Stk. 3.* Bekendtgørelsen omfatter udelukkende salg til forbrugerne. *Stk. 4.* Transfedtsyrer defineres i denne bekendtgørelse som summen af alle isomere fedtsyrer mec 16, 18, 20 og 22 kulstofatomer og én eller flere transdobbeltbindinger, dvs. C14:1, C16:1, C18:1, C C18:3, C20:1, C20:2, C22:1, C22:2 transisomere fedtsyrer, dog kun flerumættede fedtsyrer med me len-afbrudte dobbeltbindinger. **§ 2.** Det er forbudt at sælge de af bekendtgørelsen omfattede olier og fedtstoffer, hvis de har et hø indhold af transfedtsyrer end angivet i § 3. **§ 3.** Indholdet af transfedtsyrer i de af bekendtgørelsen omfattede olier og fedtstoffer må ikke over 2 gram pr. 100 gram olie eller fedt. *Stk. 2.* Fødevarestyrelsen kan i særlige tilfælde, når forholdene taler herfor, meddele dispensatio stk. 1. **§ 4.** Med bøde straffes den, der overtræder § 2 i denne bekendtgørelse. *Stk. 2.* Straffen kan stige til fængsel i indtil 2 år, hvis den ved handlingen eller undladelsen skete o trædelse er begået med forsæt eller grov uagtsomhed, og der ved overtrædelsen er 1) forvoldt skade på sundheden eller fremkaldt fare herfor, eller 2) opnået eller tilsigtet opnået en økonomisk fordel for den pågældende selv eller andre, herunder besparelser. *Stk. 3.* Der kan pålægges selskaber m.v. (juridiske personer) strafansvar efter reglerne i straffelove kapitel. **§ 5.** Bekendtgørelsen træder i kraft den 15. december 2015. *Source: The Danish Veterinary and Food Administration*
Scope of measure	The scope of the legislation has been to reduce the amount of industrial trans fats in food to maximum 2 g per 100 g in eatable oils and fats.
FBOs covered	All
Derogations *(e.g. low fat products, local products)*	The legislation does not cover R-TFA.
Share of SMEs involved *(in case of voluntary*	N/A

measures)	
Length and characteristics of transition period	The legislation was passed in March 2003, and was fully implemented on 1 January 2004. For transition period, see Order 160 No. of 11 March 2003 Chapter 1, section 3, subsection 2: from 1 June 2003 to 1 January 2004, certain products were allowed to contain 5 g industrial trans fats per 100 g oil or fat. The Danish industry to a large extent complied with the regulation when this was implemented. The industry had been working towards a reduction of IP/TFA already from the 1990s.[381]
Arrangements for measure enforcement and compliance monitoring	The Danish Veterinary and Food Administration (*Fødevarestyrelsen*) and the National Food Institute at the Technical University of Denmark conducted surveys of the content of trans fats in selected foods in 2002-3, 2004-5, 2006-7, 2010 and 2012-13.
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	N/A
Tests used to assess trans fats content	The amount of industrial trans fats in foods that contain mixed fats, e.g. milk fat and partially hydrogenated soybean oil, can be estimated by: • Estimating the amount of milk fat present in the food based on its butyric acid content (C4:0), butyric acid occurs uniquely in milk fat; • Using this to estimate the amount of naturally occurring trans fats in the food based on an assumption about the fraction of milk fat that is TFA; • Subtracting the R-TFA figure form the total amount of trans fats to derive an estimate of the industrial trans fats content.[382]

[381] Interview with the Confederation of Danish Industry (13 July 2017)

[382] Danish food institute. 'Analysis of trans fatty acids in Denmark, industrially produced versus ruminant trans fatty acids.'

Steps taken to raise consumer awareness	Following a *Lancet* article in 1993 and scientific documentation on the effects of a high intake of TFA, there was a lot of media coverage in Denmark about the negative effects of TFA. This, for example, meant that the sale of margarine dropped already from 1993 onwards. When the industrial trans fats limit was introduced, the margarine producers largely already complied with the limit.[383] From a Danish perspective, it is considered more efficient that the industry limits limit the level of industrial trans fats from products in the market, instead of the costumers having to understand trans fats labels on products.[384] At the time around the introduction of the Order, there was a lot of debate about industrial trans fats. This means that the consumers also demanded healthier products.[385] A lot of attention is given to health issues in Denmark; including on the negative effects from e.g. TFA. This could raise the general consumer awareness around trans fats (personal view).
Guidance provided to affected businesses	There has been an ongoing dialogue between the industry, the Danish Veterinary and Food Administration (*Fødevarestyrelsen*) and the National Food Institute at the Technical University of Denmark to support the implementation of the Order. Before the implementation of the Order dialogue had been established to encourage a reduction of the industrial trans fats level in products on the Danish market. It was mainly just after the introduction of the Order that businesses received guidance and dispensations if they needed more time to adjust to the Order.[386] Denmark has a long term tradition of stakeholder dialogue, which could have had an impact on the process and dialogues around trans fats (personal view). Every third year risk-based controls are being conducted to analyse the level of industrial trans fats in products which are considered to be at risk of having too high a level of industrial trans fats. If the results of the analyses show that the limit of industrial trans fats has been exceeded, the business will receive further guidance to avoid sale/production of a product which transgresses the limit. Controls may also be conducted on the background of suspicions for specific products.[387] The branch federations in the Confederation of Danish Industry had already been in dialogue with the Industry before the implementation of the Order, so that the industry largely lived up to the Order when this was introduced.[388]

[383] Traill, Bech-Larsen, Gennaro, Koziol-Kozakowska, Kuhn, and Wills (2012). Reformulation for healthier food: a qualitative assessment of alternative approaches. P. 8. Link: https://www.researchgate.net/publication/254384473_Reformulation_for_healthier_food_a_qualitative_assessment_of_alternative_approaches

[384] Interview with The Danish Veterinary and Food Administration (5 July 2017)

[385] Interview with the Confederation of Danish Industry (13 July 2017)

[386] Interview with The Danish Veterinary and Food Administration (5 July 2017)

[387] Interview with The Danish Veterinary and Food Administration (5 July 2017)

[388] Interview with the Confederation of Danish Industry (13 July 2017)

	When working to reduce the industrial trans fats content, the businesses could enter into dialogue with the suppliers of oils to ensure import of oils with a lower industrial trans fats content. Prior to the introduction of the industrial trans fats limit, the Danish industry was concerned about the potential costs of this. However, retrospectively seen, the process of limiting the industrial trans fats has not been as difficult as expected.[389]
Effectiveness of the measure	The effect of the Danish regulation is clear from the results. Most of the products complied with the regulation already in 2004/5. In the following years (2006/7, 2010 and 2012/13) only occasional transgressions have been found. The surveys demonstrate a continual decrease in the number of products that do not comply with the Danish maximum limit for industrial trans fats.[390] The limitation of industrial trans fats in Denmark has taken place over a number of years, and began before the introduction of the Order 160. In this way the Order supported an ongoing process to limit intake of industrial trans fats. Today the health risks of industrial trans fats are no longer debated; the industry and authorities agree on and cooperate in the reduction of industrial trans fats from products on the Danish market.[391] The Order may have had only a limited effect as the industry was largely compliant with the Order when it was introduced. The Order may mainly have had an effect on imported products and businesses that were not organised via the Confederation of Danish Industry.[392] It is difficult to estimate the actual effectiveness of the measure, as the real process towards a reduction of industrial trans fats did not seem to develop in connection with the Order (which was introduced quite late in relation to the process of starting to reduce the trans fats content).
Describe (if any) other measures that are currently being considered	The Order has had the desired effects, and the process of introducing the Order has been considered easy and cost-efficient. Apart from ongoing monitoring of the level of industrial trans fats, no further measures are currently being considered.[393] Although the Order could be said to have had the desired effects, the actual direct impacts is difficult to estimate. It is more useful to look at the overall process, of which the Order was one component.

TFAs in foods and diets

TFAs content in	Test results of industrial trans fats content in selected foods:[394]

[389] Interview with a food procurement company (12 July 2017)
[390] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf
[391] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[392] Interview with the Confederation of Danish Industry (13 July 2017)
[393] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[394] The National Food Institute (2014). Transfedtsyrer i udvalgte fødevarer 2012. P. 6-8.

food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	Puff pastry: 2 tests of puff pastry. No content of IP_TFA of more than 2 g per 100 g fat was found. Confectionery and caramels: Tests of caramel, candy, chocolate-coated marshmallow, and filled chocolate. No content of industrial trans fats of more than 2 g per 100 g fat was found. Croutons: 2 tests of croutons. No content of industrial trans fats of more than 2 g per 100 g fat was found. Cakes: 16 tests of cakes. No content of industrial trans fats of more than 2 g per 100 g fat was found. Cookies: 25 tests of cookies. 2 tests transgressed the Danish limit of 2 % industrial trans fats. Both products were imported. Chips and frozen potatoes: 10 tests of chips and frozen potatoes. No content of industrial trans fats of more than 2 g per 100 g fat was found. 1 test was from a fast food restaurant. Biscuits: 16 tests of biscuits. 2 tests transgressed the Danish limit of 2 % industrial trans fats. Both products were imported. Crackers (*knækbrød*): 2 tests of crackers. No content of industrial trans fats of more than 2 g per 100 g fat was found. Fast food: Test of a fried fish filet and a marinated fried chicken for a burger. No content of industrial trans fats of more than 2 g per 100 g fat was found. Margarine: 7 tests of margarine. No content of industrial trans fats of more than 2 g per 100 g fat was found. Fat for microwave popcorn: 4 tests of fat from bags with popcorn for the microwave. No content of industrial trans fats of more than 2 g per 100 g fat was found. As the industrial trans fats limit was not transgressed, the popcorn have not been microwaved and tested again. Waffles: 5 tests of waffles. Tests transgressed the Danish limit 2 % industrial trans fats. Both products were of foreign origin.

	Declarations: 56 of the tests have declared the content of fat and fatty acids. Test results have been compared to the declarations. In 11 tests the declarations do not match with the test results (corresponding to 20 % of the tests); incl. 2 declarations of fat, 4 declarations of saturated fat, and 5 declarations of both fat and saturated fat. These tests have been conducted between October 2012 and June 2013. The total number of tests was 95, and 47 tests were on imported products. 7 tests indicated a higher level of industrial trans fats than 2 g per 100 g fat (between 2.7 and 22.7 g industrial trans fats per 100 g fat). 4 of these 7 products had declared milk components. In one of the 4 products the trans fats could come solely from milk fat, but in the 3 remaining products there is a level of industrial trans fats which is higher than 2 g per 100 g fat. Hence, with the correction for the content of milk fat, the results found more than 2 g industrial trans fats per 100 g fat in 6 of the tests (i.e. 6 % of the tests). All these 6 tests are imported products consisting of cookies, biscuits or waffles.
Variation in TFAs content in food after implementation of measure	The test results above can be compared to test results from earlier years:[395] ▪ 2002-3: 25 % of the tests transgressed the Danish limit of 2 g industrial trans fats per 100 g fat. ▪ 2004-5: 11 % (17 products) of the tests transgressed the Danish limit of 2 g industrial trans fats per 100 g fat. 12 of the 17 tests which transgressed the trans fats limit were foreign products. ▪ 2006-7: 9 % (4 products) of the tests transgressed the Danish limit of 2 g industrial trans fats per 100 g fat. All 4 products were foreign. ▪ 2010: 7 % (7 products) of the tests transgressed the Danish limit of 2 g industrial trans fats per 100 g fat. 6 of the 7 products were foreign. In conclusion, the content of industrial trans fats in 2012-3 is the lowest since the first survey in 2002-3, as only 6 % of the products contain more than the industrial trans fats limit. All of the 6 products have been selected from ethnical shops, and the products are imported.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own*	The survey shows that the small businesses/importers might need extra guidance about the Order 160.[396]

[395] The National Food Institute (2014). Transfedtsyrer i udvalgte fødevarer 2012. P. 9.
[396] The National Food Institute (2014). Transfedtsyrer i udvalgte fødevarer 2012. P. 9.

products)	
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	Despite relative economic equality in Denmark, there is an enduring social inequality when it comes' to citizens' health; i.e. there is a correlation between people's social position in society and their health[397]. Research also suggests that the Danish limit of industrial trans fats has decreased the mortality caused by cardiovascular diseases by 14.2 deaths per 100,000 people annually;[398] meaning that the Danish limit on industrial trans fats saves around 700 people a year in Denmark.[399] It has also been suggested that the industrial trans fats limit has decreased the health inequality in Denmark with regard to coronary heart disease. Before the introduction of the limit – during the 1990s – health conscious people already largely avoided foods with industrial trans fats. By contrast, people who did not spend time on reading declarations on foods in general had a higher intake of industrial trans fats. The limit has presumably helped this latter group of people. As doctor and researcher Steen Stender has pointed out: '… it is the lowest social groups which have the highest rate of coronary heart diseases, so one of the advantages is that the ban protects those who need the protection the most.'[400]
Variation in TFAs intake after implementation of measure	See above
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	In general there is a lot of focus on health in the Danish media; including focus on industrial trans fats, and the fact that Denmark has a specific rule for this in comparison with other countries. In the national media, industrial trans fats has for example been called 'the world's most dangerous fat' (*verdens farligste fedtstof*)[401] and there is attention on imported products which contain too much industrial trans fats.[402]

[397] Koch, Davidsen og Juel (2012). *Social Ulighed i sundhed, sygelighed og trivsel 2010 og udvikligen siden 1987*. National Institute of Public Health, University of Southern Denmark.

[398] Restrepo and Rieger (2016). Denmark's Policy on Artificial Trans Fat and Cardiovascular Disease. In *American Journal of Preventive Medicine* 50 (1). Pp. 69–76; Martin-Saborido, Mouratidou, Livaniou, Caldeira, and Wollgast (2016). Public health economic evaluation of different European Union–level policy options aimed at reducing population dietary *trans* fat intake. In *The American Journal of Clinical Nutrition.* P. 1219.

[399] http://videnskab.dk/krop-sundhed/dansk-forbud-mod-transfedt-redder-liv-om-dagen

[400] http://videnskab.dk/krop-sundhed/dansk-forbud-mod-transfedt-redder-liv-om-dagen

[401] http://politiken.dk/mad/art5508833/Verdens-farligste-fedtstof-er-p%C3%A5-vej-ud

[402] http://politiken.dk/forbrugogliv/sundhedogmotion/art5508832/Varer-i-indvandrerbutikker-fyldt-med-transfedt

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	All businesses have to comply with the Order, and already before the introduction of the Order – from the 1990s onwards – the industry was working to reduce the level of industrial trans fats. Only few businesses received dispensation, in cases where they were not able to comply with the Order at the deadline. There is no known exact number of businesses that reformulated their products.[403]
Evidence of FBO sector facing specific challenges	The adjustments observed in Denmark after introduction of the Danish regulation were made relatively quickly for e.g. frying oils and ready-to-eat French fries from the big burger chains, whereas other French fries and frozen potato products as well as certain baking applications, especially cookies, sometimes needed more time to adjust. The demand for longer time to eliminate industrial trans fats from cookies was probably due to difficulties in finding alternative fats with usable properties as well as the existence of many small- and medium-sized baking companies in contrast to the big burger chains.[404] Chocolate producers may not have faced the same challenges as, for example, cookies producers.[405]
For which oils/fats was there a reduction in use and with what were they replaced?	Comparisons of the fatty acid profiles showed that in 68% of the products (e.g. sweets, cakes and cookies as well as fast food such as pie and tortilla), industrial trans fats were mainly substituted with saturated fatty acids (SFA). In some cases, the saturated fat source was coconut fat, whereas in other products, palm oil was added instead of partially hydrogenated oils. However, in important cases like frying fats, healthier fat substitutes with monounsaturated fatty acids were used. The surveys showed that the industrial trans fats content has been reduced or removed from most products with originally high industrial trans fats content, such as French fries, microwave oven popcorn and various bakery products. industrial trans fats levels are now insignificant for the intake of trans fats in Denmark.[406]
Costs of changes in products and	A recent report suggests that there was no increase in the price levels of the affected products. The product supply to the Danish market also appears not to have been affected. The Danish

[403] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[404] Bysted, Mikkelsen and Leth (2009). Substitution of trans fatty acids in foods on the Danish market. In *European Journal of Lipid Science and Technology* 111 (6), No. 6. Pp. 574-583.
[405] Interview with a food procurement company (12 July 2017)
[406] Bysted, Mikkelsen and Leth (2009). Substitution of trans fatty acids in foods on the Danish market. In *European Journal of Lipid Science and Technology* 111 (6), No. 6. Pp. 574-583.

processes *(if possible differentiate by type of cost and include figures)*	industry did not complain about financial losses following the industrial trans fats limit.[407] Margarine producers already complied with the legislation when this was introduced. At the beginning businesses had to import oils with limited industrial trans fats content. These oils could have been more expensive because they were not mainstream products. This may also have increased the prices of products initially – although these prices are thought to have decreased again.[408] Thirdly, the public health focus in Denmark may also support the development of a market in which many consumers demand health friendly products. Businesses might want to comply with this consumer demand. Fourth, it could also be taken into consideration that the Danish state may have a relatively strong societal legitimacy when it comes to regulating businesses' behaviour in society (in comparison to other countries). This could also play a role for businesses' acceptance of the Order, and the industry's willingness to create dialogue about changing their products (personal view).
Cost of understanding/ learning the measure for FBOs	The process of introducing the Order was cost and time efficient, and in some cases it was even easier than expected; for example, not all businesses had to use the entire transition period to achieve compliance.[409] Buying oils with a limited industrial trans fats was initially more expensive than ordering the conventional oils hitherto. Also, it took time to reformulate all the products – for example in chocolate production – and implement this reformulation in the entire production process.[410] The Confederation of the Danish Industry did not collect data on the costs, as the industry largely lived up to the Order when this was introduced. Also, how businesses were working to reduce the industrial trans fats content could have been commercially confidential.[411]

Consumer prices and choice

Evidence of changes in the price of reformulated products	The effect on product prices is thought to have been limited (see previous section). However, as in the case of chocolate, the import of oils with a limited industrial trans fats content for the chocolate production probably initially increased the prices of chocolate initially.[412]
Evidence of price differences	No evidence found. Mainly imported products seem to transgress the allowed Danish industrial trans fats level.

[407] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P.8
[408] Interview with a food procurement company (12 July 2017)
[409] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[410] Interview with a food procurement company (12 July 2017)
[411] Interview with the Confederation of Danish Industry (13 July 2017)
[412] Interview with a food procurement company (12 July 2017)

between products with iTFAs and alternatives	
Evidence of changes in the range, quality or taste of products available	No evidence found. The reduced level of industrial trans fats in products where crispiness is important seem to have led to an increase of saturated fat, although the overall fatty acids profile is important to take into consideration to estimate the actual health costs.
Evidence of changes in TFAs consumption	The decreased death rates in Denmark caused by coronary diseases are thought to reflect, at least in part, the effects of changed industrial trans fats consumption.
Effect on consumer information and awareness	The general focus on health in the Danish media and the debates about the harmful effects of industrial trans fats surrounding the legislation led to an increased awareness of industrial trans fats and the negative health consequences of eating too much industrial trans fats.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	Within the European Union, Denmark has the lowest rate of deaths caused by cardiovascular diseases (share of deaths attributed to cardiovascular diseases).[413] Research suggests that the mortality caused by cardiovascular diseases decreased by 14.2 deaths per 100,000 people annually.[414]
Evidence of change in saturated fats intake	As saturated fat is associated with an increased risk of coronary heart disease, the reduced level of industrial trans fats should not lead to an increase of saturated fat – although saturated fat has a similar functionality to industrial trans fats. If industrial trans fats is then replaced with saturated fat, the level of saturated fat 'should at least be the same or lower than the combined level of trans fats and saturated fat in the original product.'[415]

[413] See table 1: http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular_diseases_statistics

[414] Restrepo and Rieger (2016). Denmark's Policy on Artificial Trans Fat and Cardiovascular Disease. In *American Journal of Preventive Medicine* 50 (1). Pp. 69–76

[415] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 11.

	In margarine and shortening, the industrial trans fats level was in general reduced without increasing the level of saturated fat. Instead, the level of mono unsuaturated fats was increased.[416] In a majority of the products however, industrial trans fats was mainly replaced with saturated fat. These were products where the crispiness is very important, and the fat replacing the industrial trans fats must thus have similar functionality.[417] In other products, including chips and frozen potatoes, the level of mono unsuaturated fats was increased when reducing the level of industrial trans fats.[418] The adjustments for the trans fats level could be made fairly quickly in frying products. By contrast, the adjustments took longer with baking products given difficulties of finding replacements for TFA.[419]

Competition, innovation and trade

Effect on competition in the domestic market	The Danish industrial trans fats level initially led to criticism from the EU because it was said to cause a trade impediment on imported products, as imported products containing too much industrial trans fats cannot be sold in the Danish market.[420] In such cases, Danish products could have an advantage over imported products.
Changes in trade of affected goods	For imported products, see above. As the industry quickly complied with the Order, no changes in the trade of affected products have been identified.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	During recent years a number of alternatives have been developed to replace industrial trans fats.[421] Examples were provided of suppliers being keen to work with the producer to deliver the right oils, as the suppliers could see the emergence of a market for oils with a limited industrial trans fats content.[422]

[416] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 9.
[417] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 12.
[418] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 12.
[419] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 12.
[420] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[421] Ministry of Food, Agriculture and Fisheries of Denmark and the National Food Institute (2014). Danish data on *trans* fatty acids in foods. P. 12
[422] Interview with a food procurement company (12 July 2017)

Administrative burdens

Number of businesses required to provide information	Food business operators are not obliged to notify to the authorities of the marketing of products and/or provide information regarding content before marketing. The decision to regulate the industrial trans fats content in foods is considered to have eliminated the need to inform the consumer about trans fats on the label.[423]
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	No particular evidence identified. However, the research identified examples of the producers needing to buy specific fats that complied with the Order from suppliers. These fats were probably more expensive initially, as the requirement for less industrial trans fats was new. Also, the changing of product packaging led to extra costs. It also takes a few years to go through all the changes in the entire product chain.[424]
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	Continuous surveys have been carried out to monitor the development of the industrial trans fats level in foods on the Danish market.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	If there has been an increase in the use of palm oil, it is not certain whether this is due to the market prices more generally or an increased demand for palm oil as a replacement for hydrogenated oil/fats.[425]
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

[423] Interview with The Danish Veterinary and Food Administration (5 July 2017)
[424] Interview with a food procurement company (12 July 2017)
[425] Interview with The Danish Veterinary and Food Administration (5 July 2017)

Germany

Policy status

	Existing	Proposed/ considered
Legislation		
Voluntary measures	X	
Labelling		Proposed by industry
Consumer information		

Description of existing measure(s)

Type of measure	Voluntary measure
Description of measure *(if legislation paste exact text of legislation)*	Voluntary measure – self-regulation. In a joint initiative the Federal Ministry of Nutrition and Agriculture (BMEL) and the German food industry agreed a voluntary framework guideline for the minimisation of trans fats in foods that was issued June 2012. This framework guideline included product-specific guidelines for 1) baking, puff-pastry and cream margarines, 2) deep-frying oils and frying fats, 3) cooking oils and fats, 4) savoury snacks, 5) fine bakery wares, 6) processed potato products ,7) frozen pizzas.
Scope of measure	The food industry in Germany had already been working on reducing trans fats from partly hydrogenated fat substantially in many products over the last 20 years. According to data from the National Consumption Study II (NVS II) from 2005 to 2006 and the Food Monitoring Study (2008 to 2009) the average intake of trans fats was below the recommendations from the German Association for Nutrition (DGE). One third of men between 14 and 34 years consumed more trans fats than recommended, mainly due to consumption of non-ruminant industrial trans fats in certain product groups. Against this background the BMEL led a dialogue with economic associations of affected sectors which resulted in a joint initiative between the food industry and the Federal Ministry of Nutrition and Agriculture (BMEL). In close cooperation with a scientific adviser (the Max Rubner Institute (MRI)) the associations developed framework guidelines as well as seven specific guidelines for different product categories. The guidelines are intended to raise awareness among manufacturers and to assist in the transition to TFA-reduced products. Components of the measure include: • Joint Initiative Paper: two-page, short version of general

principles, published as a press release and signed by all stakeholders

- Framework Guideline / General Principles: detailed information on the initiative with backgrounds, aims and strategy
- Product Guidelines: detailed information and recommendations for the implementation in special product categories

The framework guideline describes the joint arrangements for the minimization of trans fats in foodstuffs and the initiative. The product guidelines describe in each case which products are involved and in which foodstuffs they are used. Subsequently, the special requirements of the respective product categories are discussed. The trans fats content is also described. Finally, recommendations are made on how trans fats can be reduced in the respective products, in which context challenges are also addressed. Attention is also drawn to specific areas where research is required.

The guidelines are aimed at food manufacturers and are used to inform them about the subject of TFA. This gives manufacturers the information they need to optimize their processes in order to further reduce TFA. The business associations involved use different channels (e.g. Internet, print media, newsletters, etc.) to inform their members. They provide information about the background and objectives of the initiative and provide links to further literature. The composition of the online offer is quite different depending on the association and the membership structure. This includes: pure specialist information on the topic in the members' areas, question-and-answer catalogs, and other different service offers, which can be used by the various interested parties at any time.

The participating associations are obligated to report regularly on minimization measures. Three reports from the German Federation for Food Law and Food Science (Bund für Lebensmittelrecht und Lebensmittelkunde (BLL)), which is coordinating the industry contributions under the scheme, are now available and are available on the BLL website.[426]

Institutions and associations participating in the agreement:

- Federation of Food Law and Food Science
- Federal Ministry of Food, Agriculture and Consumer Protection
- Federal Association of the German Sweets Industry
- Federal Association of Canteen Tenants

[426] https://www.bll.de/de/lebensmittel/ernaehrung/fett/tfa-trans-fettsaeuren

	• Federal Association of the Fruit, Vegetable and Potato Processing Industries. • Federal Association of System Gastronomy • Federal association of the German food trade • Federal association of German Market Selling Businesses • Federal Association of Fast Food and Snack-Service Companies • The German Association for Baking Ingredients • German Hotel and Catering Association • German Confectioner's Association • Deutscher Schaustellerbund e.V. • German Institute for Frozen Food • OVID Association of the Oilseed Processing Industry in Germany • Association of the German Margarine Industry • Association of Culinary Food Manufacturers • Association of German Bakeries • Central Association of the German Bakery Trade Since the introduction of the measures, relevant sectors have started to change their production conditions for the fats. Data from the state food monitoring show that, for example, the trans fats content of hydrogenated fats, fat-rich, sweet spreads and pastry products were significantly reduced.[427]
FBOs covered	This framework guideline includes product-specific guidelines for 1) baking, puff-pastry and cream margarines, 2) deep-frying oils and frying fats, 3) cooking oils and fats, 4) savoury snacks, 5) fine bakery wares, 6) processed potato products ,7) frozen pizzas.
Derogations *(e.g. low fat products, local products)*	N/A
Share of SMEs involved *(in case of voluntary measures)*	Associations representing SMEs were involved in all measures and research activities.

427 http://www.bmel.de/DE/Ernaehrung/SichereLebensmittel/RueckstaendeKontaminanten/_Texte/Transfettsaeuren.html

Length and characteristics of transition period	The measure has been in place since June 2012. No transition period was agreed with the participating organisations.
Arrangements for measure enforcement and compliance monitoring	The German Federation for Food Law and Food Science (Bund für Lebensmittelrecht und Lebensmittelkunde (BLL)) has issued yearly reports on the measures taken by industry from 2013 onwards and informs the Federal Ministry of Food and Agriculture (formerly the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV)) regularly about this. The signatory associations provide BLL with the necessary documentation.[428] In the beginning of 2017 the third report on measures on trans fats was published.[429]
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	The above listed business associations and their members are participating in the measure. Business has attempted to comply with the guidelines and the levels of trans fats were reduced after introduction of the measure. However, it has reported that the implementation of the specific product guidelines is a particular challenge for SMEs. Recipes partly need changing to maintain texture and taste despite substitution of, for example, baking fats.
Tests used to assess trans fats content	As an examination method for the determination of the composition of the fatty acids, the gas chromatographic analysis of the fatty acid methylester has been chosen. For the separation, the use of polar capillary columns with a stationary phase of cyanopropyl-polysiloxane having a length of at least 50 m, preferably 100 m has proven useful. A previous enrichment of the trans fats via a silver ion chromatography was considered as not required. For the purposes of the guidelines, only those TFAs with a chain length of 18 carbon atoms were considered. TFAs with different chain lengths usually make up a negligible proportion. The three main groups of TFAs are derived from oleic acid, linoleic acid and linolenic acid. TFAs elute on the polar capillary columns described above, respectively before the corresponding cis fatty acids, i.e. between stearic acid methyl ester and oleic acid methyl ester, and also before linoleic acid methyl ester and linolenic acid methyl ester. Fatty acids with conjugated double bonds as characteristic for milk fat, are not included in the assessment. Further information on trans fats content data used for the assessment can be found here: TFA-Gehaltsdaten: http://www.bfr.bund.de/cm/343/hoehe-der-derzeitigen-trans-fettsaeureaufnahme-in-deutschland-ist-gesundheitlich-

[428] http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Inhalt.pdf?__blob=publicationFile

[429] https://www.bll.de/de/lebensmittel/ernaehrung/fett/tfa-trans-fettsaeuren

	unbedenklich.pdf]
Steps taken to raise consumer awareness	For the participating associations, raising awareness within their respective member groups is central to implementing the guidelines. The type of dissemination activities (e.g. Internet, print media, newsletters, working groups, etc.) and content differs depending on the type of association and target industry. The central concern of all participating associations is to reach a broad membership and to elaborate on and enhance possibilities for minimizing non-ruminant TFA. Different media was used including: 1. Information on the homepage of the associations 2. Press releases 3. Circulation 4. (Committee) meetings / working groups / meetings 5. Newsletter 6. Annual reports 7. Specialist events and scientific congresses 8. Trade Journals The participating organisations are reporting on their initiatives in this field to the BLL as part of their yearly reporting obligation.
Guidance provided to affected businesses	• Framework Guideline / General Principles: detailed information on the initiative with backgrounds, aims and strategy • Product Guidelines: detailed information and recommendations for the implementation in special product categories
Effectiveness of the measure	Since signing the guidelines in June 2012, the participating associations have been working on implementation. An assessment of the trans fats intake in Germany undertaken one year after the introduction of the measure (2013) by the Federal Institute for Risk Assessment (BfR) confirmed the success of the minimization measures of the German food industry and showed that the current trans fats intake in Germany is under the defined limits and not a relevant risk factor for the development of cardiovascular diseases.[430] The German food industry has indicated its commitment to further reduce the content of non-ruminant trans fats in foodstuffs, provided this is technically feasible and reasonably achievable. However the BLL indicates that the legal framework for labeling continues to pose a challenge to the implementation of the guidelines, since, according to the provisions of the Food Information Regulation, the trans fats content must not be

[430] http://www.bfr.bund.de/cm/343/hoehe-der-derzeitigen-trans-fettsaeureaufnahme-in-deutschland-ist-gesundheitlich-unbedenklich.pdf

	voluntarily marked either on foodstuffs for the final consumer or on raw materials for industrial production.[431]
Describe (if any) other measures that are currently being considered	For the food industry, the clear recognition of low trans fats foodstuffs and raw materials through labelling is an important step for the further reduction of non-ruminant TFA. Current legislation does not require this. Against this backdrop, many of the participating associations argue for the possibility of voluntarily providing the non-ruminant trans fats content on their products.[432]

TFAs in foods and diets

TFAs content in food *(by product, if available please distinguish by trans fats source – industrial trans fats and ruminant trans fats, andpartly hydrogenated oil)*	In 2008 the following trans fats content was reported for a range of products:[433] • 0.4% to 2% in plant margarine, waffles, baking margarine, fat-rich sweet spreads • 2% to 5% in puff pastry, croissants, pastries, pigs' ears, cream tarts, Stollen • 5% to 10% in *Zieh* margarine, Crème margarine, Fine pastry made of light dough • 10% to 15% in fat pastry from yeast dough, donuts In *Zieh* margarine, Crème margarine, fine baked goods made from light-dough and pastries made from yeast dough, 57% to 65% of all samples had a total content of trans-fatty acids of more than 5 g / 100 g total fat. As part of the monitoring program, it has also been confirmed that industrial margarines contain significantly more trans-fatty acids than plant margarines for the household. Positive results were found for fat-rich sweet spreads (eg peanut cream, nut nougat cream, milk chocolate): the content of trans fatty acids was less than 2 g / 100 g of total fat in 83% to 100% of all samples in this category. In 2011 the following trans fats content was reported for ice cream, eggs, soup and sauces (includes rTFA and iTFA)[434]: Ice-cream = 0.03-2.9 g TFA/100 g fat (Mean/Median: 0.47

[431] https://www.bll.de/de/lebensmittel/ernaehrung/fett/tfa-trans-fettsaeuren (3rd Report issued by the BLL)

[432] 3. Bericht seit der Unterzeichnung der Initiative im Juni 2012 (https://www.bll.de/de/lebensmittel/ernaehrung/fett/tfa-trans-fettsaeuren)

[433] http://www.bvl.bund.de/SharedDocs/Downloads/01_Lebensmittel/02_BUEp_dokumente/buep_berichte_archiv/BUEp_Bericht_2008.pdf?__blob=publicationFile&v=6

[434] Bundesweiter Überwachungsplan 2011. Gemeinsamer Bericht des Bundes und der Länder. Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL) (2013)

	g/0.32 g TFA/100 g fat) Egg = 0.02-1.47 g TFA/100 g fat (Mean/Median: 0.65 g/0.50 TFA/100 g fat) Soup = 0.01-18.9 g TFA/100 g fat (Mean/Median: 0.86 g/ 0.40 g TFA/100 g fat) Sauces = 0.02-46.0 g TFA/100 g fat (Mean/Median: 1.63 g /0.51 gTFA/100 g fat) A study published in 2011 indicated the following trans fats product content in g per 100 g of total fat[435]: • Doughnuts: 7.3g • Butter: 3.1g • Puff pastries: 2.6g • Chocolate products: 2.1g • Instant products: 2.02g In this study, 96% of the deep-fried potato products, 90% of the confectioneries, 90% of the instant products and 82% of the semi-solid fats contained less than 2% trans fats of FAME. The study indicated that the trans fats proportion in foods on the German market is declining, especially within the former high risk food groups such as french fries, margarines and shortenings.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	No information found.
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and*	In 2012 (before the initiative was introduced) the average intake of trans fats was reported to be below recommendations from German Association for Nutrition (DGE). However, young people (between 14-34 years) were at the time heavy consumers with more than 1% trans fats of the daily amount of total energy consumption. This was mainly caused by consumption of non-ruminant industrial trans fats in some product groups.[436]

[435] Kuhnt, K., et al.: Trans fatty acid isomers and the trans-9/ trans-11 index in fat containing foods. Eur. J. Lipid Sci. Technol, 2011. 113: p. 1281-1292.Cited in http://publications.jrc.ec.europa.eu/repository/bitstream/JRC91353/lbna26795enn.pdf

[436] http://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/ev20120209_co07_en.pdf (2012)

socio-economic group, andpartly hydrogenated oil contribution)	The evaluation of the trans fats intake in Germany by BfR, which was published in 2013, one year after implementation of the joint initiative, shows that reductions were successfully achieved. The average intake (14-80 y) was estimated as 1.6 g/day or 0.66 E%. For most consumers (including the vast majority of young people between 14-34 years) trans fats intake was lower than 1% of their dietary energy intake. It concludes that the current level of trans fats intake in Germany does no longer represent a relevant risk factor for the development of cardiovascular disease.
Variation in TFAs intake after implementation of measure	See above.
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	No information found.

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	No information found.
Evidence of FBO sector facing specific challenges	No information found.
For which oils/fats was there a reduction in use and with what were they replaced?	For each product guideline the alternative oils/fats were identified: For example, for frying oil, new TFA-low oil and fat mixtures were identified that are technologically-feasible and already available on the market. For example, high-oleic acid (HO rapeseed or HO sunflower) oils were recommended. The advantages of these

	modern TFA-low frying oils are in their nutritionally- and physiologically-favorable composition, with heat and oxidation stability comparable to conventional oils, good sensory results (taste and odor) and markedly reduced trans fats contents in the final product (pastry/dumplings). The product guidelines also identify TFA-low margarines as well as the possible exchange of partially hardened vegetable fats and oils (high-TFA content) through non-hardened vegetable fats and oils as technologically feasible for the production of cookies, potato crisps etc. The product guidelines indicate that the transition to TFA-low oils and fats has been practiced in many of the product groups for several years and has shown good results.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	Research conducted between 2013 and 2015 showed that low-TFA frying fats are less expensive as compared to partially hydrogenated peanut fats.[437]
Cost of understanding/ learning the measure for FBOs	No information found.
Consumer prices and choice	
Evidence of changes in the price of reformulated products	No information found.
Evidence of price differences between products with iTFAs and alternatives	No information found.
Evidence of changes in the range, quality or taste of	No information found.

[437] http://www.fei-bonn.de/gefoerderte-projekte/projektdatenbank/aif-17875-n.projekt

products available	
Evidence of changes in TFAs consumption	No information found.
Effect on consumer information and awareness	No information found.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	No information found.
Evidence of change in saturated fats intake	No information found.

Competition, innovation and trade

Effect on competition in the domestic market	No information found.
Changes in trade of affected goods	No information found.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	No information found.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	Implementation of the specific product guidelines is a particular challenge for SMEs. Recipes partly need changing to maintain texture and taste with the substitution of, for example, baking fats.
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	No information found.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	No information found.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

Additional references

https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

Hungary

Policy status

	Existing	Proposed/ considered
Legislation	X	
Voluntary measures		
Labelling		
Consumer information	X	

Description of existing measure(s)

Type of measure	Legislation
Description of measure *(if legislation paste exact text of legislation)*	Decree 71/2013 of the Ministry of Human Resources[438] 'It is forbidden to place on the market food products in which the amount of trans fats exceeds 2 g for every 100 g of the total fat content of food products provided or sold to end consumers. This does not include the storage of said products in their finished state in order to place them on the market outside Hungary.' 'For processed food products consisting of multiple ingredients, the above paragraph shall not apply if (a) the total fat content of the food product is lower than 20%; in this case, the amount of trans fats may not exceed 4 g for every 100 g of the total fat content of said food product; (b) the total fat content of the food product is lower than 3%; in this case, the amount of trans fats may not exceed 10 g for every 100 g of the total fat content of said food product.'
Scope of measure	National
FBOs covered	All FBOs involved in food production for the Hungarian market
Derogations *(e.g. low fat products, local products)*	TFAs of animal origin

[438] https://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=a1300071.emm

Share of SMEs involved *(in case of voluntary measures)*	Not applicable, legislation.
Length and characteristics of transition period	The decree came into effect on 18/02/2014, 90 days after its official publication. Nevertheless, foodstuff being at the market on the date of publication of the decree, could still be marketed until their expiration date with a maximum of up to 12 months after the entry into force of the decree.
Arrangements for measure enforcement and compliance monitoring	Quarterly report is being prepared by the territorial government offices which results are sent to the National Food Chain Safety Agency (Nébih). This institution summarises the results received and forwards the report to the National Institute of Pharmacy and Nutrition (OGYÉI).[439]
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	Not applicable, legislation.
Tests used to assess trans fats content	Regular laboratory test carried out by the OGYÉI. It examines the amount of TFAs isomers with 14, 16, 18, 20 or 22 carbon atoms in food products. iTFA content of foods marketed in Hungary monitored annually since 2009. Publication on the latest test results from 05/2017 showing the TFA% per type of foodstuff.[440]
Steps taken to raise consumer awareness	As part of a 6 week-long health promotion programme organised in 10 towns around lake Balaton in Hungary in 2013, 1,643 participants (66% males) were asked about TFA. 65% of respondents gave a correct answer regarding the origin of iTFA whereas 18% were knowledgeable of the foods considered to contain iTFA. The number of correct answers showed a positive correlation with education level, and a correlation with the place of residence (city, town, and village) was observed. Targeted information and educational campaigns by the Ministry of Human Resources taking place in hospitals and sanitary institutions, social media, TV spots, web.[441]

[439] http://portal.nebih.gov.hu/elelmiszer-es-takarmanybiztonsagi-igazgatosag
[440] http://www.ogyei.gov.hu/dynamic/tfa_2017-Ine.xlsx
[441] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

Guidance provided to affected businesses	Industry representatives claim that no sufficient guidance was provided by the government in relation to the legislation. They found the transition period short and insufficient. As a recommendation, they would like to have more timely, open and useful communication next time when a measure of such importance gets implemented.[442]
Effectiveness of the measure	National legislation, covering all food products being produced and sold in Hungary. 18 February 2014:The announcement of the Decree 18 February 2015 Sell off period of food products that are already on the market when the regulation entered into force
Describe (if any) other measures that are currently being considered	Measure already in place: **37/2014 decree of Ministry of Human Resources on reforming the public canteens**. The decree aimed to foster healthy, balanced nutrition in all public canteens (i.e. schools) by defining the binding daily intakes per different nutrition groups.[443]

TFAs in foods and diets

TFAs content in food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	A nationwide quarterly monitoring of the trans fats content in alimentary products in Hungary. Food samples from different groups are checked with regard to the trans fats content. The results are publicly available, nevertheless the products are selected randomly which makes comparison rather complicated. The table below offers an overview (extracted from the dataset) of the trans fats g/100g total fat on different food groups based on the monitoring between 1st quarter 2014 – 1st quarter 2017[444]: According to the data available, the vast majority of products comply with the regulation with only few exceptions.

	2014	2015	2016	2017
Margarines/oils	Min: 0.08 Max: 2.27 Av: 0.68	Min: 0.05 Max: 1.93 Av: 0.59	Min: 0.05 Max: 1.31 Av: 0.73	Only 1 product examined: 0.88
Bakery products, pasta	Min: 0.23 Max: 6.08 Av: 0.90	Min: 0.16 Max: 1.31 Av: 0.66	Min: 0.2 Max: 3.86 Av: 0.86	No product examined
Sweet biscuits,	Min:0.05	Min:0.09	Min:0.14	Min: 0.2

[442] https://eu-brusszel.mfa.gov.hu/assets/41/85/91/b3477161e14b1ae5d25a7f3d6f2a9d93b7833546.pdf
[443] https://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=a1400037.emm
[444] http://www.ogyei.gov.hu/dynamic/tfa_2017-Ine.xlsx

tea biscuits	Max:7.53 Av:0.86	Max:22.15 Av:1.23	Max:13.00 Av:1.26	Max: 0.48 Av: 0.34

Variation in TFAs content in food after implementation of measure	All FBOs needed to reformulate their products in order to comply with the national legislation. The table above gives a good indication of the impact of the Decree.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	Since the Decree is legally binding, all FBOs must comply with it.
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	The estimated iTFA intake of the Hungarian population is 6.8g/day, taking into account the average consumption data based on the three day dietary questionnaire and the highest iTFA values of the food category. According to the result of a National Nutritional Survey in Kindergartens (OTEF 2009), in 10% of nurseries the daily menu contained more than 2 % TFA.[445]
Variation in TFAs intake after implementation of measure	According to the National Institute of Pharmacy and Nutrition, the daily trans fats intake decreased from 6.8 g to less than 1 g two years after the entry into force of the legislation.[446]
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	No research on this topic have been carried out, thus no information can be provided here. It can, however, be said that in parallel with the entry into force of the legislation, the vast majority of the Hungarian media (printed, online, TV, radio) raised awareness of the topic, providing consumers with information not only about the Decree but the health risks of high daily trans fats intake.

Measure impacts

[445] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf
[446] http://alimento.blog.hu/2013/11/24/transz-zsirsavak_kulonvelemeny

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	The number of SMEs in the affected sectors is particularly high. For them, the obligation to reformulate their products might be particularly demanding (as they often struggle from lack of specialist knowledge, information, financial flexibility and means). Industrial fats with less than 2% trans fats content are 13-50% more expensive, what means that there is a close relationship between the price of the industrial fat used and the price of the actual product.[447]
Evidence of FBO sector facing specific challenges	The transition set a number of challenges as follows:[448] - New types of fats to be used - Changing long term contracts of FBOs with subcontractors - Discontinue certain products in order to save on new machinery - New machinery/equipment to be purchased - Carry out laboratory tests on the trans fats content of products - Change of wrapping and packaging material
For which oils/fats was there a reduction in use and with what were they replaced?	Only anecdotal evidence was found that claims that the previously used fats have been increasingly replaced by palm.[449]
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	The Federation of Hungarian Food Industries stated that "industrial fats of a trans fats content below 2% are by 13-30% more expensive, a fact which means a substantial increase in ingredients' price." When asked about any FBO sector (e.g. SMEs, producers of specific foods) that faced particular challenges, 8 out of 18 confirmed to have corresponding information. According to one SME (referenced in this document), the total cost of transition in the case of a 10 billion HUF (35 Mio EUR) turnover company was approximately 100 mio HUF (300.000 EUR). This source suggests the new types of fats used cost on average 58% more compared to previous one.[450]
Cost of understanding/ learning the measure for FBOs	See above.

[447] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf
[448] https://eu-brusszel.mfa.gov.hu/assets/41/85/91/b3477161e14b1ae5d25a7f3d6f2a9d93b7833546.pdf
[449] http://alimento.blog.hu/2013/11/24/transz-zsirsavak_kulonvelemeny

[450] https://eu-brusszel.mfa.gov.hu/assets/41/85/91/b3477161e14b1ae5d25a7f3d6f2a9d93b7833546.pdf

Consumer prices and choice

Evidence of changes in the price of reformulated products	No data available on this, however the Hungarian Statistical Office have been publishing consumer price index every year since 1985. The factors for the increase/decrease of prices are not identified here. The table below shows an extract of the food price index, indicating the increase/decrease of prices compared to the year before.

2013	2014	2015	2016
102,8	99,6	100,9	100,7

Evidence of price differences between products with iTFAs and alternatives	Not identified.
Evidence of changes in the range, quality or taste of products available	Not identified.
Evidence of changes in TFAs consumption	The daily intake of trans fats decreased from 6.8 g per person/day to less than 1 g per person/day two years after the entry into force of the legislation.
Effect on consumer information and awareness	In parallel with the entry into force of the legislation, the vast majority of the Hungarian media (printed, online, TV, radio) raised awareness of the topic, providing consumers with information not only about the Decree but the health risks of high daily trans fats intake. Despite not being measured, it can be concluded that the awareness of Hungarian consumers has significantly increased.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	As researches show, a daily intake of trans fats of 5 g per person/day increases the risk of cardiovascular diseases by 23%.

Evidence of change in saturated fats intake	No evidence of changes over time

Competition, innovation and trade

Effect on competition in the domestic market	Anecdotal evidence that SMEs were more seriously affected by the legislation, given their more vulnerable financial situation. Production of certain products was discontinued in the absence of financial resources to reconstruct recipes, test the new products and start production. In the meantime, bigger FBOs complied relatively easily with the legislation.
Changes in trade of affected goods	Over the recent years, margarines became synonymous with TFAs and there is expected to have been a decrease in consumption, but no hard data are available on this.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	Suppliers did reformulate their products. A broader impact on innovation at the company level was not identified.

Administrative burdens

Number of businesses required to provide information	According to the national legislation, businesses are not required to provide information.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	According to one SME, the total cost of transition in the case of a 10 billion HUF (35 Mio EUR) turnover company was approximately 100 million HUF (300.000 EUR). This source suggested that the new types of fats used cost on average 58% more compared to previous ones.[451] This single report cannot be taken as representative of the typical impact.
Evidence of	A nationwide quarterly monitoring of the trans fats content in

[451] https://eu-brusszel.mfa.gov.hu/assets/41/85/91/b3477161e14b1ae5d25a7f3d6f2a9d93b7833546.pdf

authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	alimentary products in Hungary is being conducted by the territorial government offices. Results are sent to the National Food Chain Safety Agency (Nébih).

Environmental impacts

Evidence of any environmental costs or benefits	Not identified
Evidence of increase in demand for palm oil / other ingredients	Only anecdotal evidence, mentioning the increased use of palm oil and its negative environmental effects, mostly deforestation. No statistics are available for Hungary on palm oil import/demand.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	As above.

Latvia

Policy status

	Existing	Proposed/ considered
Legislation	X	
Voluntary measures Labelling		
Consumer information		

Description of existing measure(s)

Type of measure	Legislation
Description of measure *(if legislation paste exact text of legislation)*	Cabinet of Ministers Regulation No. 301 on maximally allowed trans fatty acids quantities in food products, adopted on 17 May 2016, in force as of 20 May 2016. The regulation outlines maximally allowed trans fatty acids quantities in food products produced in Latvia, including public catering companies, imported from other European Union member states and countries of European Economic area or third countries, intended for distribution in Latvia. The regulatory requirements apply to food products including trans fatty acids that have been created in the following technological processes of food production: 2.1. by hydrogenating oil; 2.2. by pressing oil at high temperature; 2.3. by frying and heating food products in oil; 2.4. by baking and frying fat-containing food products. 3. The regulatory requirements shall not apply to animal fat and products containing trans fatty acids resulting from natural processes, not being added in the food production process. 4. The maximum amount of trans fat acids in food products shall not exceed 2 g per 100 g of total fat, with the exception of food products mentioned in Articles 5 and 6 of these regulations. 5. The maximum amount of trans fat acids in food products where the total fat content is less than 3%, shall not exceed 10 g per 100 g of total fat content. 6. The maximum amount of trans fat acids in food products where the total fat content is between 3% and 20%, must

	not exceed 4 g per 100 g of total fat content. 7. Food products that exceed the maximum quantities of trans fat acids laid down in Articles 4, 5 or 6 of these regulations, can be distributed in Latvia until 1 June 2018. Informative Reference to European Union directive. These regulations contain legal norms arising from the **Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services.**
Scope of measure	Food products produced in Latvia, including by public catering companies, and food products imported from other European Union member states and countries of European Economic area or third countries, intended for distribution in Latvia. The regulatory requirements apply to food products including trans fatty acids that have been created in the following technological processes of food production: by hydrogenating oil; by pressing oil at high temperature; by frying and heating food products in oil; by baking and frying fat-containing food products. The regulatory requirements shall not apply to animal fat and products containing trans fatty acids resulting from natural processes, not being added in the food production process.
FBOs covered	It was estimated that the Regulation would affect 7800 food companies, including 6536 public catering companies. At the same time the Ministry of Agriculture did not have precise information on companies that use trans fatty acids in their products.
Derogations *(e.g. low fat products, local products)*	1. The maximum amount of trans fatty acids in food products where the total fat content is less than 3%, shall not exceed 10 g per 100 g of total fat content. 2. The maximum amount of trans fat acids in food products where the total fat content is between 3% and 20%, must not exceed 4 g per 100 g of total fat content.
Share of SMEs involved *(in case of voluntary measures)*	Not applicable.
Length and characteristics of transition period	Transition period until 1 June 2018 for the distribution of products exceeding the maximally allowed quantities of trans fat acids as set out in this regulation. The two year transition period was introduced to limit the negative financial impact of the regulation on food production companies, giving producers enough time to use the existing product packaging

	and sell the products already produced, as well as change product recipes and production technologies, and create new product packaging to align with the new regulation.
Arrangements for measure enforcement and compliance monitoring	The Food and Veterinary Service (Pārtikas un Veterinārais dienests) is tasked with conducting 1000 additional food controls and 100 laboratory tests of food samples annually, starting from 1 June 2018, when the transition period of the regulation will end. If violations of this regulation are found, the service can issue a written warning, as well as halt or limit the operations of the food production company (including the operations of specific units or plants).
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	Not applicable.
Tests used to assess trans fats content	TFA content is analysed using the gas chromatography method in the Institute of Food Safety, Animal Health and Environment (BIOR). The cost of analysing one product is 52.25 EUR (excluding VAT). According to the estimates of the Ministry of Health, each of the 6536 public catering companies will have to test approximately 5 products annually as a self-controlling measure, resulting in the overall financial burden of 1.7 million EUR. In addition, if it is assumed that each of the 1264 food production companies purchase fats with unidentified amount of trans fats content, these companies will also have to send these ingredients for tests at BIOR. According to the estimates of the Ministry of Health, the costs of these tests could amount to 198,000 EUR, assuming that each company orders three tests.
Steps taken to raise consumer awareness	Awareness raising was conducted as part of broader educational campaigns, cooperating with municipalities and schools. 'Heart Health' 2014-2015 campaign run by the Ministry of Health included several health promotion activities and public health campaigns to draw attention to the main cardiovascular disease risk factors including TFA. Dietary guidelines developed by the Ministry of Health include recommendations to not use food products which contain partially hydrogenated vegetable oils. Such guidelines have been published for different age groups – children from the age of 2 to 18, adults, as well as people over the age of 60. The Ministry of Health has also published on its website a 1-page fact sheet on TFAs. In 2016 the Centre for Disease Prevention and Control published an infographic on fats in nutrition, including information on TFAs and products that most frequently contain TFAs. [452]

[452] Links to publicity campaigns online:
http://www.vm.gov.lv/images/userfiles/phoebe/aktualitates_aktualitates_augsas_virsdala_ba89d22083b17edac22575a6002bb060/trans_tauki.pdf
http://www.vm.gov.lv/lv/tava_veseliba/veseligs_uzturs/
https://www.spkc.gov.lv/upload/Infografikas/Informativi%20materiali/infografika_tauki.pdf

Guidance provided to affected businesses	Representatives of food production businesses, including the Latvian Federation of Food Companies, were involved in the legislative process drafting the adopted legislation. In 2014 the Centre for Disease Prevention and Control, in cooperation with the World Health Organisation's representation in Latvia, organized a 2-day seminar on how to decrease salt and trans fats content in food, including best practices from Latvia and other European countries on technologies used. The seminar was also attended by representatives of food production and public catering businesses.[453]
Effectiveness of the measure	Effectiveness of the measure cannot be assessed prior to the end of the transition period (1 June 2018).
Describe (if any) other measures that are currently being considered	Since June 2012 the Cabinet of Ministers Regulation No 172, regarding Nutritional Norms for Students of Educational Institutions, Clients of Social Care and Social Rehabilitation Institutions and Patients of Medical Treatment Institutions, prohibits the use of products containing partially hydrogenated vegetable fats (like sugar confectionery, pastries and margarine) in these institutions. The purpose of this Regulation is to ensure the use of healthy and balanced nutrition in pre-schools, general and VET schools, as well as in long-term social care and social rehabilitation institutions, and health care institutions. The main motivation for excluding confectionery containing partially hydrogenated vegetable fats from the meals provided in these institutions was to limit the consumption of foods that are not necessary for the daily consumption requirements of children, patients and social care institution clients (for example food products that contain TFA).

TFAs in foods and diets

TFAs content in food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	A study conducted in 2013 by the Institute of Food Safety, Animal Health and Environment (BIOR) on 102 food products from seven food product groups found that the content of trans fats was not detected in 37% of analysed food products (the content of trans fats was < 0.1%). At the same time in 22 out of 102 products the content of trans fats exceeded 2%. Butter and sour cream products were characterised by the highest risk for trans fats content – average trans fats content was 6.3% (from 0.2% to 12.3% in sour cream products, and from 3.3% to 9.1% for butter products). Three cheese and cottage cheese/curd products also included considerable trans fats content – 5.6%, 6.2% and 6.4% respectively. At the same time almost two-thirds of samples of this product group had a trans fats content of 0.7-1%, with the average indicator for the product group at 1.8%. Seven ice cream samples included trans fats content from 0.1 to 2%. Out of the 19 tested white bread samples only three contained trans fats in the amount of 0.6%, 1.3% and 1.7% of fat content. Out of the 29 tested pastry products (biscuits,

[453] http://www.vm.gov.lv/lv/ministrija/seminars_par_sals_un_transtaukskabju_daudzuma_samazinasana_p/

	waffles), 13 products contained trans fats in the amount of less than 0.1% of fat content. The average amount of trans fats content for this product group was 0.6%, while 3 products contained 2.4%, 2.7% and 2.9% TFA. 14 pastry products (pastries, cakes) on average included 1% TFA, while the highest values among the samples were 2.2%, 2.9% and 3.3%. trans fats concentration was very low in foreign-origin margarine sold in Latvian market (< 0.1%, 0.2% and 0.4%).[454]
Variation in TFAs content in food after implementation of measure	Effects of the adopted legislation are likely to be visible after 1 June 2018 when the transition period ends.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	Food production companies paid special attention to trans fats content in products in 2011, when test results published by Danish professor, Steen Stender (Department of Clinical Biochemistry, Copenhagen County Hospital in Gentofte, University of Copenhagen) revealed high amount of trans fats content in some confectionary products (waffles) made by *Laima* and *Staburadze* owned by NP Foods. Following a public uproar, the two food production companies replaced ingredients of these products with vegetable fats, claiming that their products from thereon (September 2011) would have 0% of trans fats content. No other major FBOs have made pledges to reduce trans fats content in the future beyond what legislation requires.[455]
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	No specific data are available on TFAs intake. The only data available are on the consumption of different food products among adults and pupils, including those which may contain TFAs like pastry products, sweets and potato chips. According to a 2014 study on the habits affecting health of adults (aged 15-74), pastry products (pastries, biscuits/ cookies, cakes) were frequently consumed (3 and more days per week) by 24.7% men and 24.9% women.[456] The data for 2016 show a slight decrease – 22.5% of men and 22.3% of women consumed pastries, cookies or cakes 3 and more days per week.[457] According to a 2007 study, almost 40% of pupils in the age of 11, 13 and 15 ate sweets at least once a day. Girls

[454] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf https://www.zm.gov.lv/public/ck/files/ZM/TP%20petijumi/Transtauksk%C4%81bes_p%C4%93t%C4%ABjums.pdf

[455] http://www.db.lv/razosana/partika/laima-sak-razot-vafeles-bez-transtaukskabem-danu-profesors-atklaj-jaunus-produktus-grekazus-24406

[456] https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/FINBALT/finbalt_2014_labotais.pdf

[457] https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/FINBALT/finbalt_2016_2.pdf

	consumed sweets more frequently than boys (on average by 11% more frequently). The highest proportion of pupils consuming sweets were in the age of 13. Potato chips were consumed at least once a week by 59% of surveyed pupils, while 7.7% ate potato chips every day at least once a day.[458] According to a 2014 study, almost every third pupil consumed sweets every day (22% boys and 33% girls), with the highest proportion of pupils consuming sweets in the age of 15 (24% of boys and 36% of girls).[459]
Variation in TFAs intake after implementation of measure	Effects of the adopted legislation will be visible after 1 June 2018 when the transition period ends.
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	There are no studies available on this issue, according to the Ministry of Health.

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	The Ministry of Agriculture does not have a precise figure on the number of companies that will need to reformulate their products, as data on companies making products exceeding the TFAs content limited in the regulation are not available. The number of businesses likely to be affected (7800 food companies, including 6536 public catering companies) include all companies, disregarding whether they make products containing TFAs exceeding the limits set in the regulation, or not.
Evidence of FBO sector facing specific challenges	The study on TFAs content reveals that food companies producing butter and sour cream products as well as cheese and cottage cheese/curd products could face most significant challenges, as the study showed that these product groups contained highest TFAs content (specific products with 5.6% - 12.3% trans fats content in fat content).
For which oils/fats was there a reduction in use and with what were they replaced?	It is predicted that hydrogenated vegetable oils will be replaced by vegetable oils and butter. For example, the dairy producer *Rīgas Piensaimnieks* will reformulate 4 out of 150 products to align with the requirements of the Regulation. In all of these products hydrogenated vegetable oils are replaced with butter (one reformulated product has been in

458 https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/HBSC/uztura_paradumi_kermena_masa_berniem_lv_2007.pdf

459 https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/HBSC/hbsc_2013_2014_aptaujas_rez.pdf

	the market since May 2017, the other will enter the market in August 2017, while the last 2 reformulated products will be produced as of December 2017).
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	This information cannot be obtained until the end of the transition period (1 June 2018), when businesses will have had time to adjust their production processes.
Cost of understanding/learning the measure for FBOs	This information cannot be obtained until the end of the transition period (1 June 2018), when businesses will have had time to adjust their production processes.

Consumer prices and choice

Evidence of changes in the price of reformulated products	Prior to introducing the Regulation the responsible ministries – Ministry of Health and Ministry of Agriculture – did not expect substantial changes in product prices as a result of having to replace TFAs with alternatives such as vegetable oils. However, if the trans fats is replaced with butter, the price of the product may increase. Specific data will not be available until the end of transition period (1 June 2018), when businesses have time to reformulate their products.
Evidence of price differences between products with iTFAs and alternatives	No information found.
Evidence of changes in the range, quality or taste of products available	No information found.
Evidence of changes in TFAs consumption	As the transition period of the adopted legislation will only end on 1 June 2018, it is impossible to assess the effect of this measure with regard to changes in TFAs consumption.
Effect on consumer information and awareness	As the transition period of the adopted legislation will only end on 1 June 2018, it is impossible to assess the effect of this measure on consumer information and awareness.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	According to Eurostat, 16,372 deaths were caused by diseases of the circulatory system, equivalent to 57% of all deaths in Latvia in 2013, which is considerably higher than the EU-28 average of 37.5% for the same year. The effect of the adopted legislation on this indicator can be assessed after the end of the transition period (1 June 2018).

Evidence of change in saturated fats intake	No specific data are available on saturated fats intake.

Competition, innovation and trade

Effect on competition in the domestic market	No information found.
Changes in trade of affected goods	No information found.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	The chosen measure does not include a requirement for businesses to provide information unless the responsible institution (Food and Veterinary Service) requests this information in the framework of an inspection on site. In this case the company is required to provide information on the specification and the recipe of the product.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	TFA content is analysed by using gas chromatography method in the Institute of Food Safety, Animal Health and Environment (BIOR). The cost of analysing one product is 52.25 EUR (excluding VAT). According to the estimates of the Ministry of Health, each of the 6,536 public catering companies will have to test approximately 5 products annually as a self-controlling measure, resulting in a financial burden of 1.7 million EUR. In addition, if one assumes that each of the 1,264 food production companies purchase fats with unidentified amount of trans fats content, these companies will also have to send these ingredients for tests at "BIOR". According to the estimates of the Ministry of Health, the costs of these tests could amount to 198,000 EUR (assuming that each of the companies makes 3 tests). The Ministry of Health also estimated that the cost of reformulation of products could be 60,000 EUR (assuming that each of the 1264 food production companies has to reformulate 3 products spending 8 hours on each product).
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	Food and Veterinary Service (Pārtikas un Veterinārais dienests) will need 86,000 EUR to conduct additional controls and order needed laboratory tests in 2018. As of 2019 the cost of this function is estimated at 63,000 EUR annually.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	No information found.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

Additional references

https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-report_en.pdf
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Annotation to the Cabinet of Ministers Regulation No.301
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http://www.vm.gov.lv/lv/tava_veseliba/veseligs_uzturs/
http://www.vm.gov.lv/lv/tava_veseliba/veseligs_uzturs/
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https://www.spkc.gov.lv/upload/Infografikas/Informativi%20materiali/infografika_tauki.pdf

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http://www.vm.gov.lv/lv/ministrija/seminars_par_sals_un_transtaukskabju_daudzuma_samazinasana_p/
https://www.spkc.gov.lv/upload/Petijumi un zinojumi/FINBALT/finbalt_2014_labotais.pdf
https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/FINBALT/finbalt_2014_labotais.pdf
https://www.spkc.gov.lv/upload/Petijumi un zinojumi/FINBALT/finbalt_2016_2.pdf
https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/FINBALT/finbalt_2016_2.pdf
https://www.spkc.gov.lv/upload/Petijumi un zinojumi/HBSC/uztura_paradumi_kermena_masa_berniem_lv_2007.pdf
https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/HBSC/uztura_paradumi_kermena_masa_berniem_lv_2007.pdf
https://www.spkc.gov.lv/upload/Petijumi un zinojumi/HBSC/hbsc_2013_2014_aptaujas_rez.pdf
https://www.spkc.gov.lv/upload/Petijumi%20un%20zinojumi/HBSC/hbsc_2013_2014_aptaujas_rez.pdf
http://www.db.lv/razosana/partika/laima-sak-razot-vafeles-bez-transtaukskabem-danu-profesors-atklaj-jaunus-produktus-grekazus-244067

http://www.db.lv/razosana/partika/laima-sak-razot-vafeles-bez-transtaukskabem-danu-profesors-atklaj-jaunus-produktus-grekazus-24406

Netherlands

Policy status

	Existing	Proposed/ considered
Legislation		
Voluntary measures	X (completed/ended)	
Labelling		
Consumer information	X	

Description of existing measure(s)

Type of measure	Voluntary measure
Description of measure *(if legislation paste exact text of legislation)*	**Task Force Verantwoorde Vetzuursamenstelling (Task Force for** **the Improvement of the Fatty Acid Composition).** Members of this voluntary initative include representative organisations of various relevant industries, and the Dutch Ministry for Public Health, Wellbeing and Sport (Volksgezondheid, Welzijn en Sport) as observer. As members, these industries have committed themselves to a continued improvement of the fatty acid composition of the diet. For public health reasons it is desirable that saturated fatty acids and trans fatty acids in the diet are replaced with (cis) unsaturated fatty acids. All affected sectors have committed themselves to a manifesto, which was offered to the Minister of VWS in 2005.[460]
Scope of measure	The measure applied across the various relevant industries (for a specific list, see 'FBOs covered'), which together represent 80% of the food industry that uses oils and fats. The goals of the measure were as follows: • The reduction of the amount of trans fatty acids in food so that, in accordance with the guidelines from the Dutch Health Council, a maximum of 1 percent of energy intake originating from trans fatty acids can be achieved; • The reduction of the amount of saturated fat in food in order to make an important contribution to meeting the Dutch Health Council guideline of a maximum of 10 percent of energy intake originating from saturated fat. Over the years (from 2003 to 2010) these were to be achieved through the following activities:

[460] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

	• Stimulating innovations. • Supplying information to the professional user. • Supplying information to the consumer. • Monitoring the branches involved in the Task Force.[461]
FBOs covered	**Algemene Kokswaren en Snackproducenten Vereniging (AKSV**: **Association of Producers of Cooked product and Meat Snacks**): The AKSV is the branch organization of Dutch industrial companies that produce convenience foods (snacks, cool meals, salads, soups, sandwiches and sandwiches, etc.). Through mailings, members and committee meetings and annual monitoring, companies are encouraged to reduce trans fatty acids and saturated fatty acids in their products. AKSV has been involved and active since the start of the Task Force (2003). **Koninklijk Horeca Nederland (KHN: Royal Hospitality Netherlands**): KHN is the branch organization for the catering industry in the Netherlands, with around 20,500 companies being affiliated. KHN has been involved since the start of the Task Force (2003). Together with the Information Office on Margarine, Vetten en Oliën (MVO: Margarine, Fats and Oils), it is running the Responsible Frying campaign, with the aim of stimulating the use of liquid frying fat in the catering industry (2004). **Nederlandse Brood- en Banketbakkers Ondernemers Vereniging (NBOV: Dutch Association for the Craft Bakery Industry**): The NBOV represents 1400 artisan bakeries (bread and confectionery). In January 2008, the NBOV officially joined the Task Force, and in the first year it focused on communicating fats towards its members and performing a baseline measurement. **Productschap Margarine Vetten en Oliën (MVO: Margerine, Fats and Oil Industry Association)**: MVO represents the entire chain of vegetable oils and fats, including the producers of consumer margarines, frying fats, bakery margarines and fats and oils for use in foodstuffs. It is the initiator of the Task Force and carries out the secretariat. In addition, MVO together with KHN, promotes the Responsible Frying campaign to stimulate the use of liquid frying fat in the catering industry, and provides information on fat ("Vette Feiten": "Fat Facts") aimed at the food industry (www.vettefeiten.nl). Information about fats towards consumers is carried out by the MVO and funded by MVO and BNMF.

[461] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

	Bond van Nederlandse Margarine Fabrikanten (BNMF: Dutch Margarine Producers Association): BNMF represents the manufacturers of margarine, halvarine and baking products. Information about fats towards consumers is carried out by the MVO and funded by MVO and BNMF. **Vereniging voor de Aardappelverwerkende Industrie (VAVI: Dutch Association for the Potato Processing Industry**): VAVI is the branch organization for Dutch companies of pre-baked, chilled and deep-frozen potato products. The VAVI has been a member of the Task Force since 2003. In addition to activities such as conducting research and communicating recommendations for using better frying fats or less fat for home preparation, among other things, the VAVI has sponsored the Responsible Frying campaign for years. In 2004, 85% of all pre-baked, chilled and deep-frozen potato products came from VAVI companies. **Vereniging voor de Bakkerij- en Zoetwarenindustrie (VBZ: Dutch Association for the Bakery and Sweets Industry) / Nederlandse Vereniging voor de Bakkerij (NVBL Dutch Association for the Bakery Industry):** These two associations together represent the industrial bakery sector. Bakery and confectionery products include all the products belonging to the banquet / biscuit, chocolate, sugar and related products, such as savoury dry snacks, chips, peanuts and nuts, etc. The NVB represents the Dutch medium and large bakery companies. VBZ and NVB have been involved and active since the start of the Task Force (2003). The main activities of VBZ / NVB have been to encourage its members to improve fatty acid composition. They actively communicate with their members and provide practical tools such as the "Healthy Fats in the Bakery" technology research. [462]
Derogations *(e.g. low fat products, local products)*	The self-regulation does not apply to ruminant trans fat. [463]
Share of SMEs involved *(in case of voluntary measures)*	Exact share is not available, however the NBOV, which specifically provides representation for SMEs, has around 1400 members. [464]
Length and characteristics of transition	The task force ran from 2003 to 2010. [465]

[462] http://www.vetzuursamenstelling.nl/Partijen/index.html
[463] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf
[464] http://www.vetzuursamenstelling.nl/Partijen/index.html
[465] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

period	
Arrangements for measure enforcement and compliance monitoring	The branches involved in the Task Force reported annually on the achieved results. [466]
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	All partners provided information on results. [467] For trans fats the goal was to reduce the amount of trans fatty acids in food so that in accordance with the guidelines from the Dutch Health Council, a maximum of 1 percent of energy intake originating from trans fatty acids can be achieved. Each partner also had their own goals; AKSV: AKSV aimed for a transfatty acid proportion of less than 2% in 2010. IN 2009 the amount of transfat acids as a proportion of total fat used (i.e. not the proportion of fat in the end product but rather the fat used in the process) was 0.7% opposed to 9.7% in 2002: a reduction of 92.8%. KHN: KHN aimed for an increase in the use of liquid frying fat from the baseline of 30% in 2005 to 75% in 2010 in the hospitality sector. It provided measurements for 2009, in which the proportion was 78%. NBOV: NBOV aim was to limit the amount of trans fat to up to 2% of the total fat content. In addition the reduction in trans fat should not increase the sum of saturated fat and trans fat. The measurement of this included a very small sample of max 10 bakeries. The results were subsequently inconclusive and not representative, but did show a wide variety across different products and bakeries. NEBAFA: NEBAFA set a similar aim: to limit the amount of trans fat to up to 2% of the total fat content. In addition the reduction in trans fat should not increase the sum of saturated fat and trans fat. The proportion of trans fat as a share of all fat was 2.8% in 2003 and dropped to 1.7% in 2009. MVO and BNMF: MVO and BNMF set less specific goals regarding trans fat (i.e. to reduce the amount of trans fat), and focused more specifically at reducing the use of solid frying fats. It found from measurements that the amount of trans fat as a proportion of all fat was reduced from 3.4% in 2003, to 1.0% in 2008 in bakery margarines. Trans fat for industrial use and for use on bread was already below 1% and

[466] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf
[467] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

	has not been measured. Trans fat for baking products was already below 1% and was measured again in 2009 which showed this was still the case. Measurements also showed a reduction in the use of solid frying fats in favour of liquid frying fats, and a reduction of the proportion of trans fats in solid frying fat from 10% in 2003 to 2% in 2009. VAVI: VAVI's goal was to further reduce the amount of trans fat at product level. This dropped from 1.5% in 2003 to 0.8% in 2009. As a lot of the fat content comes from the consumers' choice of frying fat. An estimate of this has also been added and shows a reduction from 6.4% in 2003 to 1.6% in 2009. VBZ and NVB: No explicit goal, but members were monitored on a yearly basis. It shows a reduction of the amount of trans fat as a proportion of the total fat from 20.1% in 2003 to 1% in 2009. There are concerns about the response rate.
Tests used to assess trans fats content	Each partner was responsible for measuring its own progress.[468] AKSV: Sent out a survey to its members and achieved a response rate of 88.9%. Full methodology was not available but respondents were asked (amongst others?) what type of fat they used and in what volume for either frying (e.g. soy oil; liquid frying oil; lard; palm oil; rapeseed oil; sunflower oil) or as ingredient (e.g. rapeseed oil; palm oil; soy oil; margarine; sunflower oil; ruminant fats; baker's fat; olive oil; others). KHN: N/A (TFA content not available) NBOV: Cast studies/site visits were undertaken to collect data on the use of transfat in 6 particular products but the sample of this was too small to be able to make conclusions. NEBAFA: TFA content provided, but there is no information on how test was conducted. MVO and BNMF: Wageningen University did the testing for the MVO, based on a

[468] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

sample of 14 margarines from craft bakeries. The report (in Dutch), which includes methods, can be found here: http://edepot.wur.nl/161230 It refers to methods used in previous research available here: http://edepot.wur.nl/45471 Of particular interest is Annex 2 ('Bijlage 2') on page 52 (in English).[469] It sets out the methodology used. Abstract is as follows:

Trans fatty acids in foods are usually analysed by gas-liquid chromatography (GLC) of fatty acid methyl esters (FAME). However, this method may produce erroneously low values because of insufficient separation between cis and trans isomers. Separation can be optimized by preceding silver-ion thin-layer chromatography (Ag-TLC), but this is laborious. We have developed an efficient method for the separation of 18-carbon trans fatty acid isomers by combining GLC of FAME with GLC of fatty acid 4,4-dimethyloxazoline (DMOX) derivatives. We validated this method against conventional GLC of FAME, with and without preceding Ag-TLC. Fatty acid isomers were identified by comparison with standards, based on retention times and mass spectrometry. Analysis of DMOX derivatives allowed the 13t, 14t, and 15t isomers to be separated from the cis isomers. The combination of the GLC analyses of FAME and DMOX derivatives gave results comparable with those obtained by GLC of FAME after preceding Ag-TLC, while saving about 100 h of manpower per 25 samples. It allowed the identification and quantitation of 11 trans and 8 cis isomers and resulted in 25% higher values for total C18:1trans, compared with the analysis of FAME alone. The combination of DMOX and FAME analyses, as applied to the analysis of 14 foods that contained ruminant fat and partially hydrogenated vegetable and fish oils, indicated that the most common isomers were 11t in ruminant fats, 9t in partially hydrogenated fish fats, and either 9t or 10t in partially hydrogenated vegetable fats. The combination of GLC analyses of FAME and DMOX derivatives of fatty acids improves the quantitation of 18-carbon fatty acid isomers and may replace the laborious and time-consuming Ag-TLC.

Analysis of C18:1 cis and trans fatty acid isomers by the combination of gas-liquid chromatography of 4,4-dimethyloxazoline derivatives and methyl esters (PDF Download Available). Available from: https://www.researchgate.net/publication/257730530_Analysis_of_C181_cis_and_trans_fatty_acid_isomers_by_the_combination_of_gas-liquid_chromatography_of_44-dimethyloxazoline_derivatives_and_methyl_esters [accessed Jun 16, 2017].

VAVI:

No information is available on methods of VAVI's measurement of trans fat in its member's end products. The estimated additional trans fat consumed as a result of the consumers' choice of frying fats was based on data from the MWO.

[469] Or download here: https://www.researchgate.net/publication/257730530_Analysis_of_C181_cis_and_trans_fatty_acid_isomers_by_the_combination_of_gas-liquid_chromatography_of_44-dimethyloxazoline_derivatives_and_methyl_esters

	VBZ and NVB: Annual survey of members (no further information). Concerns about low response rate.
Steps taken to raise consumer awareness	AKSV: None KHN: In cooperation with the Centre for Nutrition the KHN launches the Snackposter, which enables consumers to make informed choices about their food. The poster shows nutritional values of snacks and the number of minutes of cycling required to burn calories NBOV: None NEBAFA: None MVO and BNMF: In addition to product information on products of margarine manufacturers, the MVO Information Centre provides information on how margarine, halvarine and baking products fit in healthy, contemporary and tasty food. Through campaigns, the Information Office provides information on fats and health and about products with a favourable fatty acid composition. There are various specific examples of campaigns available, focusing on the use of margarine as healthier alternative and the knowledge platform 'Fat Facts' ('Vette Feiten'). [470] [471] VAVI: Various: information on packaging e.g. type of frying oil to use; support of the Responsible Frying campaign. VBZ and NVB: None
Guidance provided to affected businesses	AKSV: Shared information from the Task Force with its members and also fed back the monitoring results. In its internal policies it has also encouraged its members to use fats with lower trans fat proportions. KHN: KHN has supported businesses in hospitality through making available various information and support on the use of healthy product. The most important one with regards to trans fats is the 'Responsible Frying' campaign during with the KHN and MVO actively engaged with hospitality to promote the use of liquid over solid frying fat. NBOV:

[470] http://mvo.nl/vettefeiten
[471] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

	Dedicated articles in members' magazine. NEBAFA: Communication in professional magazine about trans fat, NEBAFA has also had direct influence on product development at the business level (not clear how). MVO and BNMF: The campaign Responsible Frying and a Code of Practice for frying fats in the hospitality sector focused on the reduction of use of solid fats (higher in trans fats) and increase in liquid fats (lower in trans fats). VAVI: Coordination of change in use of used ingredients and development of new products. VBZ and NVB: VBZ and NVB engaged TNO (Knowledge and Innovation organisation) to run the research project 'Healthy fats in the bakery', aimed at supporting members with reducing the proportion of saturated fats. In addition this topic was often discussed at meetings, newsletters, website, etc. Members were also encouraged to participate in a range of other initiatives aimed at promoting healthy food.[472]
Effectiveness of the measure	Across almost all partners the measures taken were effective against their targets (for concrete numbers refer back to compliance in which details are provided for pre and post project measurements).[473]
Describe (if any) other measures that are currently being considered	The Task Force has officially come to an end. The initiator, MVO, together with BNMF (now IMACE-NL?) are currently looking at how they can further reduce the use of trans fat in a work programme ending in 2020 called 'Herformulering productsamenstelling' (Reformulating product composition). The goal for this project is that as a minimum the average proportion of transfat would stay the same. To achieve this, the action plan for this project focuses on monitoring levels in the sector and working together with other players to gather this information; a continuation of the campaign 'Responsible Frying'; provide information to consumers, intermediaries and businesses and; work together with health professionals.[474]

TFAs in foods and diets

TFAs content in	See below. This has been extracted from NEVO, an online database,

[472] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf
[473] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf
[474] http://www.mvo.nl/media/gezondheid/20141020_actieplan_mvo_imace_nl___wijzigingen_werkgroep.pdf

food

(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)

and contains information on trans fat content in many products. The amount of trans fat is presented as a % of all fat in the product and is available broken down by their lipid number: [475]

Voedingsstof	**EuroFIR component code**	**Code NEVO voedingsstof**
Transvetzuren total	**FATRN**	**3136**
C10:1 trans totaal	F10:1TRS	3027
C12:1 trans totaal	F12:1TRS	3055
C14:1 trans totaal	F14:1TRS	3022
C16:1 trans totaal	F16:1TRS	3026
C18:1 trans totaal	F18:1TRS	3031
C18:2 n-6 trans	F18:2TTN6	3065
C18:3 n-3 trans	F18:3TTTN3	3131
C20:1 trans totaal	F20:1TRS	3058
C20:2 n-6 trans	F20:2TT	3133
C22:1 trans totaal	F22:1TRS	3059
C24:1 trans totaal	F24:1TRS	3060
Enkelvoudig onverzadigde vetzuren trans rest	FAMSTXR	3116

More recent data are available from NEVO. [476]

[475] http://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Tabellen_grafieken/Leefstijl_Voeding/NEVO/Samenstelling_vetzuurclusters_NEVO_online_2016/Download/Samenstelling_vetzuurclusters_NEVO_online_2016.org

[476] http://nevo-online.rivm.nl/Default.aspx

Variation in TFAs content in food after implementation of measure[477]		**Reference (2001)**		**Most recent (2010)**		**Difference**	
		Avg g /100g	SD	Avg g /100g	SD	g/100g	SD
	Mashed potatoes	0.0	0.0	0.0	0.0	-0.0	0.0
	Potato products for frying	0.4	0.2	0.1	0.1	-0.3	0.2**
	Bread, all types	0.1	0.1	0.0	0.1	-0.0	0.1***
	Crackers	0.3	0.3	0.3	0.5	-0.1	0.3
	Cake and baked goods	0.7	0.9	0.6	0.8	-0.2	0.5**
	Cookies and biscuits	1.4	1.4	0.6	1.0	-0.8	1.1***
	(Meat) snacks and salads	1.5	1.4	0.9	1.4	-0.6	0.8**
	Fats and margarines	1.1	0.8	0.9	0.5	-0.1	0.4
	From: Impact of fatty acid food reformulations on intake of Dutch young adults. Elisabeth H.M. TEMME, PhD; Inger L. MILLENAAR, MSc; Gerda VAN DONKERSGOED, MSc; Susanne WESTENBRINK, MSc ; National Institute for Public Health and the Environment (RIVM), the Netherlands						
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	No information found						
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly*	See below Intake by socio-economic group is not available in this research, but demographic information is collected and published in the National Food Consumption Survey. For example (from 2003):[478]						

477 https://www.researchgate.net/profile/Elisabeth_Temme/publication/221800312_Impact_of_fatty_acid_food_reformulations_on_intake_of_Dutch_young_adults/links/0fcfd50ea945d2a3ce000000.pdf

478 http://www.rivm.nl/dsresource?objectid=f5a9b5c7-a14a-44e1-839b-87cebd52695c&type=org&disposition=inline

hydrogenated oil contribution)

	Men		Women	
	Avg	**S.E.**	**Avg**	**S.E.**
Age	**P=0.22**		**P=0.002**	
19-24	1.0	0.0	1.0	0.0
25-30	1.0	0.0	1.2	0.0
Family status	**P=0.35**		**P=0.006**	
Alone	0.9	0.1	1.1	0.1
With partner	1.0	0.0	1.1	0.1
Family with children	1.1	0.1	1.2	0.0
Living with parent(s)	1.0	0.0	1.0	0.0
Education	**P=0.66**		**P=0.99**	
Low	1.0	0.1	1.1	0.0
Middle	1.0	0.0	1.1	0.0
High	1.0	0.0	1.1	0.0
Alcohol use	**P=0.04**		**P=0.16**	
No	1.2	0.1	1.2	0.1
Yes, less than 1 glass p/w	1.1	0.1	1.1	0.0
Yes, 1 glass p/w or more	1.0	0.0	1.0	0.0
Smokes	**P=0.09**		**P=0.51**	
Yes	0.9	0.0	1.1	0.0
No, used to	0.9	0.1	1.0	0.1
No, never	1.1	0.0	1.1	0.0
Activity score	**P=0.28**		**P=0.87**	
Low	1.0	0.0	1.1	0.0
Middle	1.0	0.0	1.1	0.0
High	0.9	0.0	1.1	0.0
Supplement use	**P=0.19**		**P=0.54**	
No	1.0	0.0	1.1	0.0
Yes	0.9	0.1	1.1	0.0

Variation in TFAs intake after implementation

From: Impact of fatty acid food reformulations on intake of Dutch young adults

of measure	Elisabeth H.M. TEMME, PhD; Inger L. MILLENAAR, MSc; Gerda VAN DONKERSGOED, MSc; Susanne WESTENBRINK, MSc National Institute for Public Health and the Environment (RIVM), the Netherlands

	Reference scenario			Reformulation scenario		
	P50 g/day	95% CI g/day	E% P50	P50 g/day	95% CI g/day	E% P50
Total fat	85	(82.8-87.2)	34.8	84.5	(81.5-87.0)	34.6
SFA	31.4	(30.6-32.6)	12.9	31.3	(30.4-32.1)	12.8
TFA	2.3	(2.2-2.5)	1	1.9	(1.8-2.0)	0.8
MUFA	27.5	(26.6-28.2)	11.3	28.3	(27.5-29.4)	11.6
PUFA	17.2	(16.5-18.0)	7.1	16.1	(15.5-16.7)	6.6

SFA: saturated fatty acids,

TFA: trans fatty acids,

MUFA: monounsaturated fatty acids,

PUFA: polyunsaturated fatty acids.

Newer data are available. Data above are based on the RIVM (Rijksinstituut voor Volksgezondheid en Milieu: State Institute for Public Health and Environment) National Food Consumption Survey 2003. The latest available version is for 2012-2016, although more detailed publications based on this data are not yet available.

Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	There is data on consumers' knowledge and perceived healthfulness of PHVO and FHVO but it is limited to a single population group (women aged 25-65 y, responsible for household shopping). The results showed that consumers have low awareness of FHVO and found them less appealing and far less required in margarine than vegetable oils and fats. In 2003 a study by the National Nutrition Centre (n=500) revealed that 93% had never heard of TFA. Could not find a source on this other than the EC consultation.[479]

Measure impacts

Business responses and costs

Number of business that	No information found

[479] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

reformulated their products *(if possible differentiate by large and small companies)*	
Evidence of FBO sector facing specific challenges	• Foods serving food based on ruminant meat (out of scope?) • Many artisan bakeries fail to use healthier alternatives to dairy butter which has high contents of naturally occurring trans fat (out of scope?) • For bread and cakes etc producers reformulation of products in practice has proven to be difficult because the consumer has a certain expectation of the product. Many banquet and cake products are traditional products. In practice it turns out that a change in fatty acid composition has consequences for the sensory properties of the product which go against the expectation of the consumer. • Bread, cake etc producers worries about not being able to convey the improvement of lower amounts of trans fats on product labelling (as determined by EC/1924/2006), and therefore being unable to make a return on the investment. [480] From the bakery industry, a combination of regulation pressure (notably the early adoption of the Danish legislation on trans-fatty acids implemented since January 2004) and demands from large customers (supermarkets and producers of bakery products within the Netherlands and in EU) urged a switch in the food industry from partially hydrogenated oil with high levels of iTFA to fully hydrogenated oil with a iTFA content below 2 per cent. Fully hydrogenated oil, although having a iTFA content of less than / equal to 1 percent, remains solid at room temperature, a characteristic which is undesirable in the bakery industry where a soft texture at room temperature is a prerequisite for processing. This meant that bakery suppliers needed to come up with a solution and began to adjust their products so that they would keep their soft texture while containing fully hydrogenated oil. In the Netherlands, this is generally palm oil and is mainly supplied by ADM and Cargill. According to an interview with one bakery supplier, they began this process in 2003 and ended in 2007. This ran parallel to similar projects executed by other large bakery ingredient producers. Although the research results were not exchanged amongst these parties, overall progress was reported to the Dutch Association of Manufacturers of Bakery Ingredients (NEBAFA, De Vereniging van Nederlandse Fabrikanten van Bakkerijgrondstoffen).
For which oils/fats was there a reduction in use	Solid frying fat replaced with liquid frying fat For the bakery sector, there was a switch to fully hydrogenised oil,

[480] http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

and with what were they replaced?	and research was devoted to securing the correct consistency of products at room temperature. For this purpose, two strategies were applied: (a) Reformulation of the product recipes containing fully hydrogenized oil, notably by adding and altering emulsifiers (Monoglycerides; and Calcium Stearoyl Lactylates, CSL); (b) Adjusting the processing of the products (bread improvers, bread and pastry mixes) by heating them to 80 – 90 degrees Celsius and then applying a rapid cooling process (minus 20 degrees Celsius) back to room temperature. This process forces the molecules to form a weaker crystal structure so that the product cannot regain its previous solid texture.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	Evidence from bakery supplier indicated about 2 to 3 percent price increase of bread improvers, bread and pastry mixes. About 1 to 1.5 man-years (Academic or Higher Vocational Education level), costing rou 120-150k Euros.
Cost of understanding/learning the measure for FBOs	No information found

Consumer prices and choice

Evidence of changes in the price of reformulated products	According to a bakery supplier, the impact for the baked goods sector was negligible, as bread improvers, bread and pastry mixes represent 2 to 3 percent of the value of the end product (e.g. a bread).
Evidence of price differences between products with iTFAs and alternatives[481]	Research from the Vrije Universiteit Amsterdam found a significant negative relationship between the cost of food and its energy density/ saturated fat/ trans fat/ total fat/ carbohydrates. In addition, there was a significant positive relationship between the costs and the percentage of beneficial products in the diet.
Evidence of changes in the range, quality	Not located, but the goal of the Task Force was to lower trans and saturated fats without changing the quality of the product.

[481] https://research.vu.nl/ws/portalfiles/portal/24510456

or taste of products available	
Evidence of changes in TFAs consumption	As previously mentioned: From: Impact of fatty acid food reformulations on intake of Dutch young adults Elisabeth H.M. TEMME, PhD; Inger L. MILLENAAR, MSc; Gerda VAN DONKERSGOED, MSc; Susanne WESTENBRINK, MSc National Institute for Public Health and the Environment (RIVM), the Netherlands

	Reference scenario			Reformulation scenario		
	P50 g/day	95% CI g/day	E% P50	P50 g/day	95% CI g/day	E% P50
Total fat	85	(82.8-87.2)	34.8	84.5	(81.5-87.0)	34.6
SFA	31.4	(30.6-32.6)	12.9	31.3	(30.4-32.1)	12.8
TFA	2.3	(2.2-2.5)	1	1.9	(1.8-2.0)	0.8
MUFA	27.5	(26.6-28.2)	11.3	28.3	(27.5-29.4)	11.6
PUFA	17.2	(16.5-18.0)	7.1	16.1	(15.5-16.7)	6.6

SFA: saturated fatty acids,

TFA: trans fatty acids,

MUFA: monounsaturated fatty acids,

PUFA: polyunsaturated fatty acids.

Data above is based on the RIVM (Rijksinstituut voor Volksgezondheid en Milieu: State Institute for Public Health and Environment) National Food Consumption Survey 2003. The latest available version is for 2012-2016 though more detailed publications based on this data is not yet available.[482]

Effect on consumer information and awareness[483]	The MVO found that a combination of investment of the industry and consumer awareness had led to an increase in the proportion of liquid margarine and baking and bread products (lower % of trans fat) relative to the fixed variants (higher % of trans fat). The share of liquid margarine and baking and baking products on the Dutch market doubled between 2003 and 2009 from 22% to 44%.

482 https://www.researchgate.net/profile/Elisabeth_Temme/publication/221800312_Impact_of_fatty_acid_food_reformulations_on_intake_of_Dutch_young_adults/links/0fcfd50ea945d2a3ce000000.pdf

483483 http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	The below table details death rates by cardiovascular disease.[484]

	2011	2012	2013	2014
M Total	**18,115**	**18,211**	**18,231**	**17,830**
M Younger than 25	42	32	22	25
M 25-49	648	566	502	477
M 50-64	2,362	2,293	2,202	2,026
M 65 and older	15,057	15,313	15,501	15,299
F Total	**20,335**	**20,412**	**20,531**	**20,257**
F Younger than 25	16	18	20	21
F 25-49	313	291	257	238
F 50-64	1,013	1,040	904	903
F 65 and older	18,989	19,060	19,348	19,094
Total	**38,460**	**38,628**	**38,767**	**38,092**

See also Microsoft Excel Worksheet

Evidence of change in saturated fats intake	Please see above in the table on 'Evidence of changes in TFAs consumption' the amount of saturated fat (Saturated fatty acids). It has been an explicit goal of the Task Force to not decrease the % of trans fat at the cost of an increase in saturated fats.

Competition, innovation and trade

Effect on competition in the domestic market	No information found
Changes in trade of affected goods	No information found
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	Part of the mandate of the task force was to examine the reformulation of products. The end report of the task force mentions an increase in healthier liquid frying alternatives as opposed to solid frying fats. Innovation was found to be particularly difficult in bakeries producing sweets (cakes, cookies). The end report specifically mentions a project with Innovation and knowledge company 'TNO' on 'Gezonde vetzuren in de bakkerij' (Healthy fatty acids in the bakery) but a report is not available.

484 http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular_diseases_statistics

	The evidence provided of change in trans fats amount in food also points to changes in production processes (but no information on the cost of this).

Administrative burdens

Number of businesses required to provide information	No information found
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	No information found
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	No enforcement (voluntary), but the RIVM produces and keeps up to date a database with information nutritional values (including TFAs) called NEVO.[485] However, NEVO depends on other parties to supply information. NEVO does set certain criteria for information to be included.[486]

Environmental impacts

Evidence of any environmental costs or benefits	No information found
Evidence of increase in demand for palm oil / other ingredients	The Netherlands is the largest importer of palm oil in the EU.[487] After a small increase from 2011 to 2012, there has been a slow but steady decline in the total use of palm oil in the 'food' and 'feed' industry from 385.000 kg in 2011 to 279.804 in 2015, and a much larger increase in use of sustainable palm oil as a proportion of the total amount of palm oil.[488]
Effects on	No information found

485 http://nevo-online.rivm.nl/Default.aspx

486 http://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Tabellen_grafieken/Leefstijl_Voeding/NEVO/NEVO_online_2016_achtergrondinformatie/Download/NEVO_online_2016_achtergrondinformatie.org

487 https://www.cbs.nl/nl-nl/achtergrond/2014/33/achtergrondinformatie-en-handelsstromen--palmolie--

488 http://www.taskforceduurzamepalmolie.nl./uploads/media/TaskForceDuurzamePalmolie-FinalReport_2015.pdf

deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	

Poland

Policy status

	Existing	Proposed/ considered
Legislation		
Voluntary measures	X	
Labelling		
Consumer information	X	

Description of existing measure(s)

Type of measure	Voluntary measure
Description of measure *(if legislation paste exact text of legislation)*	Self-regulation It is motivated by knowledge of the adverse impact of trans fats on human health; prevalence of trans fats in different types of Polish foods (according to results from monitoring of trans fats levels in foodstuffs); producer awareness of TFA; it is about an encouragement to reduce or eliminate the trans fats content in food products.[489] There are no legal obligations for producers in Poland – only an industry initiative to reduce levels.[490] The Ministry Of Health Ordinance from 19/06/2012 sets the Food and Nutrition Institute as a reference laboratory for Poland.[491] The National Health Programme introduced in 2017 assigns the Food and Nutrition Institute with the task of monitoring the trans fats content in selected products and to create and maintain a database of trans fats levels in food products for the years 2017 - 2020.[492]
Scope of measure	All products potentially containing TFA.

[489] COMMISSION STAFF WORKING DOCUMENT, Results of the Commission's consultations on 'trans fatty acids in foodstuffs in Europe. European Commission 2015 https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf; p. 31

[490] Bruce W. et al (2012) Reformulation for healthier food: a qualitative assessment of alternative approaches, https://www.researchgate.net/publication/254384473_Reformulation_for_healthier_food_a_qualitative_assessment_of_alternative_approaches

[491] Dziennik Ustaw 28/06/2012 http://isap.sejm.gov.pl/DetailsServlet?id=WDU20120000728

[492] Rozporządzenie Rady Ministrów 4/08/2016 w sprawie Narodowego Programu Zdrowia na lata 2016–2020. http://dziennikustaw.gov.pl/DU/2016/1492/1 p. 13. Interview with representative of the National Food and Nutrition Institute on 29/06/2017

FBOs covered	All FBOs
Derogations *(e.g. low fat products, local products)*	N/A
Share of SMEs involved *(in case of voluntary measures)*	100% potentially covered; industry representatives claim that most companies are aware of issues related to trans fats and take action;[493] no hard data is available to verify de facto participation.
Length and characteristics of transition period	N/A
Arrangements for measure enforcement and compliance monitoring	Enforcement not applicable as no legal measures are in place. No information was located on existence of any compliance monitoring – it appears that no such system exists at the level of the whole food sector. However, company-specific measures are in place (e.g. Unilever, Nestle, Sante).
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	Industry representatives claim that most companies are aware of issues related to trans fats and take action;[494] no hard data is available to verify de facto participation.
Tests used to assess trans fats content	Rancimat test [495] Fatty acids converted into FAMEs their methyl esters according to ISO standard method [ISO 5509:2000a]. Gas chromatography of the FAMEs was performed according to ISO standard [ISO 5508:2000b].[496]
Steps taken to raise consumer awareness	There are several initiatives aiming to raise consumer awareness. Producers campaigns: The Polish Federation of Food Industry (PFPZ) runs a campaign Good fats, (PL: Dobre tłuszcze, http://dobretluszcze.pl/) with a special subsection of the campaign website focusing on TFA:

[493] Interview with the Polish Federation of Food Industry (PFPZ)
[494] Interview with the Polish Federation of Food Industry (PFPZ)
[495] Żbikowska, Anna et al (2006), Quality of Shortenings Available on the Home Market, Rocz Panstw Zakl Hig 57 (2), pp. 133-142.
[496] Żbikowska, Anna and Krzysztof Krygier (2011), Changes in the Fatty Acids Composition, Especially Trans Isomers, and Heat Stability of Selected Frying Fats Available on the Polish Market in the Years 1997 and 2008, Pol. J. Food Nutr. Sci., Vol. 61, No. 1, pp. 45-49 http://journal.pan.olsztyn.pl/?p=rec&s_rok=2011&s_numer=1

	http://dobretluszcze.pl/unikaj-tluszczow-trans In late 2015, ZT Kruszwica (the largest PL producers of vegetable fats) in partnership with the National Food and Nutrition Institute initiated a campaign *Get to know fats* (PL: *Poznaj sie na tłuszczach*) https://poznajsienatluszczach.pl/.. In 2017, this campaign received a golden award in Power of Content Marketing Awards – Szpalty Roku 2017 in the category „Content Marketing – FMCG". Other similar initiatives initiated by individual producers or groups of food producers include the campaigns on margarines,[497] rapeseed oil,[498] and an initiative created together with The Chief Sanitary Inspectorate.[499] Some producers take part in the international program *Choices* introduced by Unilever. The *Choices* Programme in Poland started in 2008 under the name *I know what I choose*. The *Choices* logo can be placed on foods and drinks indicating that the products meet qualifying criteria with respect to trans fatty acids, saturated fat, salt and sugar content.[500] More than 100 products received the Choices mark in Poland by 2011.[501] In the same year it run an outdoor marketing campaign to promote the programme, participating firms and products. The programme does not appear to be active at present.
Guidance provided to affected businesses	Sector or product-specific guidance only, e.g. by the European Margarine Association (IMACE).
Effectiveness of the measure	Falling average trans fats content in some products and intake and increasing number of firms undertaking measures and/or launching campaigns promoting their products as heathy suggests that the measure is to some extent effective. Similarly, information campaigns may have some impact on rising consumer awareness but no comparable data was identified. Anecdotal evidence, such as the opinion of Beata Michalik (director at Z.T. Bielmar, large producer of vegetable fats) in an interview with food industry portal portalspozywczy.pl suggests that consumers are increasingly able to make a distinction between various fats and their health benefits and

[497] http://www.margaryna.com
[498] http://www.pokochajolejrzepakowy.eu
[499] https://www.jemdrugiesniadanie.pl/
[500] Choices International Foundation (2013), Product Criteria for Poland Ver. 2.5, https://www.choicesprogramme.org/public/criteria/choices_product_criteria_v2-5_poland_130201.pdf
[501] Bruce W. et al (2012) Reformulation for healthier food: a qualitative assessment of alternative approaches, https://www.researchgate.net/publication/254384473_Reformulation_for_healthier_food_a_qualitative_assessment_of_alternative_approaches, p. 14

	risks.[502]
Describe (if any) other measures that are currently being considered	Not identified

TFAs in foods and diets

TFAs content in food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	A Nationwide Monitoring of the trans fats content in alimentary products in Poland has been in place since 2004. Every year food samples from different groups are checked with regard to the trans fats content. The results from the monitoring are not publicly available and it is not clear what data have been collected so far. The data have not been shared in response to ICF's request related to this project. Publicly available data comes from different studies covering different sets of products and not necessarily applying the same methodology. The identified results are as follows (organised by the year of a study): 2016: (TFA per total weight of product) • Butter: 1.98-3.01% • Mixed spreads (butter and vegetable oils): 0.17-9.32% • Margarines (hard): 0.33-22.15% • Margarines (soft): 0.13-1.11%[503] 2013: • TFA levels of infant and follow up formula: 0.16%wt/wt (Note: it is unclear from the source whether %wt/wt refers to %TFA per total fat or per total weight of product) • Follow-up formulas (for children): 0.15%wt/wt • Gluten-free food products (31): 2.34%wt/wt

[502] Portalspozywczy.pl (2017), Bielmar: Polacy coraz częściej przekonują się o walorach tłuszczów roślinnych, http://www.portalspozywczy.pl/zboza/wiadomosci/bielmar-polacy-coraz-czesciej-przekonuja-sie-o-walorach-tluszczow-roslinnych,142324.html

[503] Okręglicka, K, H Mojska, A. Jarosz, M. Jarosz (2017). Fatty acid composition including trans isoforms in selected food fats available on Polish market. Żyw. Człow. Metab. 44 (1), 10-13.

2012:

- Chocolate confectionary (31): 2.13%wt/wt
- Another 2012 study focused on margarines found that the content of trans fats was in the range 0-7.9% for tub and 0-10.9% for stick products. 58% of tub margarines contained below 0.7% TFA.[504] (Note: unclear whether g TFA/100 g refers to g total fat or g product)

2010:

- Packed cakes sold as ready to eat (32): 1.19%wt/wt
- Among a varied group of products (mostly sweets) analysed in 2009/2010: High heterogeneity of trans fats content was found in fat extracted from the products (in short-crust biscuits it ranged from 0.3 to 24.8 g TFA/100 g fat) The highest mean content of trans fats where found in wafers (1.94 g TFA/100 g of the product).[505]

2008:

Frying fats (64): 1.1%wt/wt

Including:

- Frying fats from fast food restaurants (32): 1.56%wt/wt
- Frying fats from other restaurants and outlets (32): 0.59%wt/wt
- Liquid frying fats (35): 0.39%wt/wt
- Hard frying fats (29): 1.97%wt/wt

2006:

- Kebab (13): 0.55%wt/wt
- French fries (17): 11.31%wt/wt
- Pizza (13): 1.42%wt/wt
- Hamburgers (15): 0.55%wt/wt

Year unknown:

In potato chips manufactured in Poland, the analysis showed low levels – usually below 0.1 g/100 g fried base or final product, max 0.2 g/100 g of the final product.[506]

[504] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p 12
[505] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p 12
[506] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p. 36

Variation in TFAs content in food after implementation of measure	A reduction of trans fats content of the frying fats was noted from 1997 to 2008. It was found that an average trans fats content in frying fats sold in Poland in 1997 was 21.4% (ranging from 0.4 to 57.6%), while in 2008 it was significantly lower and reached 12.2% (ranging from 0 to 54%).[507] The sum of trans fats and saturated fat also declined significantly: from 61.1% in 1997 to and 50.4% in 2008. About 33% of fats analysed in 1997 and about 46% in 2008 were characterised by very small trans fats contents (below 1%). trans fats levels of infant and follow up formula remained broadly stable during 2006-2013.[508] Some company specific information is available: PHVO have been replaced in breakfast cereals and in all products based on breakfast cereals (cereal bars) produced by Toruń Pacific Sp. z o.o. The company uses non-hydrogenated vegetable oils. The monitoring results show that trans fats content is low (below 0.2%). By 2013 all Nestlé products in Poland have been reformulated according to the Company Policy (CO) on trans fats levels (e.g. bars, ice-cream, culinary products, wafers). Non-hydrogenated fats and partly hydrogenated fats have been used which had specific fatty acid profile with trans fats levels in line with the CO requirements.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	No information found.
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	In 2009/2010 relatively low level of average intake of trans fats in Poland was reported (approximately 1 E%).[509] Main sources of trans fats (rTFA/iTFA): • butter consumption, which contributed 0.359g rTFA/person/day. • products of animal origin (rTFA) were estimated to provide 0.496 g TFA/person/day. Significantly higher consumption of trans fats was found in the case of: • Products containing fats of industrial origin: 1.5 g

[507] Żbikowska, Anna and Krzysztof Krygier (2011), Changes in the Fatty Acids Composition, Especially Trans Isomers, and Heat Stability of Selected Frying Fats Available on the Polish Market in the Years 1997 and 2008, Pol. J. Food Nutr. Sci., Vol. 61, No. 1, pp. 45-49 http://journal.pan.olsztyn.pl/?p=rec&s_rok=2011&s_numer=1

[508] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p. 11

[509] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, p. 19-20

	iTFA/person/day) • Margarines and other vegetable fats: 0.988 g iTFA/person/day • Potato products (N/A) An estimate concerning 2010: trans fats consumption (E%) males ≤ 20 years old 1.2 (1.0-1.3) and females 1.2 (1.0-1.4).[510] For the purpose of the model constructed in Martin-Saborido et al. 2016 study it was estimated that the products of natural origin (rTFA) provided 0.496 g/person of trans fats per day, and those of industrial origin about 1.5 g (iTFA).[511]
Variation in TFAs intake after implementation of measure	The daily intake of trans fats decreased from about 14g per person/day in 1995 to about 2 g per person/day in 2010. Most of the reduction occurred between 1995 and 1999.[512]
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	Of 600 Polish people (>18 y) interviewed as part of a five country survey in 2005, 65% did not know what trans fats were and below 50% mentioned that food labelling should include information on trans fats (survey conducted on behalf of the European Consumer Organisation – BEUC). From a multi-country student survey carried out in 2012, "most of the students had heard the term 'trans fats' before and were aware of their negative influence on human health. Some of the students could not indicate all of the products constituting a potential source of trans fats (around 30%). Polish students were not aware of natural sources of trans fats (less than 10%). Polish students from studies not related to food and nutrition sciences had less knowledge in the topic of trans fats than respondents in the USA and Canada." At the Warsaw University of Life Sciences (SGGW) more than two thirds of the students answered that TFAs have an adverse effect on human health. Most of the Polish students correctly indicated

[510] Micha R., Khatibzadeh S., Shi P., Fahimi S., et al., Global, regional, and national consumption levels of dietary fats and oils in 1990 and 2010: A systematic analysis including 266 country-specific nutrition surveys. BMJ 2014, 348, g2272. [PubMed]

[511] Martin-Saborido et al (2016),Public health economic evaluation of different European Union–level policy options aimed at reducing population dietary trans fat intake, American Journal of Clinical Nutrition, p. 1218-1226 no. 5 vol. 104 and Online Supplemental Material.

[512] https://www.palmoilandfood.eu/sites/default/files/Anna %C5%BBbikowska - TFA in Europe and Poland in particular.pdf
citing http://dx.doi.org/10.1080/07315724.2014.942472

	as the main source of TFAs 3 groups of products: shortening, hard margarines and pastry products. The other correct answers related to natural sources of trans fatty acids (milk fat and dairy products) were selected much more often (30% more) by the students from Wageningen University than from SGGW.[513] Information campaigns may have some impact on rising consumer awareness but no comparable data was identified. Anecdotal evidence, such as the opinion of Beata Michalik (director at Z.T. Bielmar, large producer of vegetable fats) in an interview with food industry portal portalspozywczy.pl suggests that consumers are increasingly able to make a distinction between various fats and their health benefits and risks.[514] The Polish Federation of Food Industry (PFPZ) indicates that rules stemming from the Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers are not conducive to helping consumer make informed decisions on trans fats content in food, This is because the labelling rules can be confusing and consumers do not understand the difference between partially and fully hydrogenated oils.[515] The Food and Nutrition Institute sets the "Nutrition standards for Polish Population" where it is expressed that the trans fats intake should be as low as possible.[516] The Food and Nutrition Institute plans to update the nutrition standards in 2017. The Food and Nutrition Institute intensify its education activities mainly through the newly (beginning of 2017) established National Centre for Nutrition Education that is to organise conferences targeted to FBOs.

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small*	Unknown; information available on some large producers (especially multinational companies that changed their company policies)

513 https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf, pp. 24-25

514 Portalspozywczy.pl (2017), Bielmar: Polacy coraz częściej przekonują się o walorach tłuszczów roślinnych, http://www.portalspozywczy.pl/zboza/wiadomosci/bielmar-polacy-coraz-czesciej-przekonuja-sie-o-walorach-tluszczow-roslinnych,142324.html

515 Interview with the Polish Federation of Food Industry (PFPZ)

516 M. Jarosz, Normy żywienia dla populacji polskiej – nowelizacja. IZŻ 2012, http://www.izz.waw.pl/attachments/article/33/NormyZywieniaNowelizacjaIZZ2012.pdf

companies)	
Evidence of FBO sector facing specific challenges	No evidence of specific sectors facing challenges
For which oils/fats was there a reduction in use and with what were they replaced?	Only anecdotal evidence available from specific companies, e.g. Toruń Pacific Sp. z o.o replaced PHVO in breakfast cereals and in all products based on breakfast cereals (cereal bars) with non-hydrogenated vegetable oils. Nestlé Poland reformulated its products switching to non-hydrogenated fats and partly hydrogenated fats have been used which had specific fatty acid profile with trans fats levels in line with the Company Policy requirements.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	No summary data identified. Prices of margarine (CP01152) that are provided by Eurostat for the last 3 years show strong stability, in contrast to butter prices (CP01151) which were very volatile. While the short period of data availability does not allow for drawing any conclusions on the possible impact of actions limiting the trans-fat content, the overall stability of margarine prices relative to the prices of butter suggest that if there is any cost impact of changes in the margarine formulae it is unlikely to be important in cost competition for consumer preferences. The Polish Federation of Food Industry (PFPZ) was not able to provide specific estimates. The situation likely differs between producers depending on the product characteristics, used machinery, etc. For some SMEs costs can be a barrier. The risks of acceptance of modified products by consumers was also highlighted (e.g. due to different taste).[517]
Cost of understanding/learning the measure for FBOs	See above

Consumer prices and choice

Evidence of changes in the price of reformulated products	No firm-level data were identified to assess the impact of product changes on costs. Between 2004 and 2017 (the maximum period of Eurostat data availability) the consumer prices of a broad category "oils and fats" (CP01115 in the COICOP mnemonics of Eurostat) in Poland increased slower than in the EU28, whereas for the total of "food" (CP011) prices inflation in Poland was higher than in the EU. Also in the case of the category "Sugar, jam, honey, chocolate and confectionery" (CP0118) inflation in Poland was slower than in the EU28. This may partly reflect the fact that improvements in product

[517] Interview with the Polish Federation of Food Industry (PFPZ)

	formulae were not associated with any significant increases of consumer prices, but it is very difficult to draw any strong conclusions given multitude of factors affecting prices. Prices of margarine (CP01152) are only available for the last 3 years and the show strong stability, in contrast to butter prices (CP01151) which were very volatile. While the short period of data availability does not allow for drawing any conclusions on the possible impact of actions limiting the trans-fat content, the overall stability of margarine prices relative to the prices of butter suggest that if there is any cost impact of changes in the margarine formulae it is unlikely to be important in cost competition for consumer preferences.
Evidence of price differences between products with iTFAs and alternatives	Not identified
Evidence of changes in the range, quality or taste of products available	Only firm-specific information available
Evidence of changes in TFAs consumption	The daily intake of trans fats decreased from about 14g per person/day in 1995 to about 2 g per person/day in 2010.[518]
Effect on consumer information and awareness	Information campaigns (see above for examples) may have some impact on rising consumer awareness but no comparable data was identified. Anecdotal evidence, such as the opinion of Beata Michalik (director at Z.T. Bielmar, large producer of vegetable fats) in an interview with food industry portal portalspozywczy.pl suggests that consumers are increasingly able to make a distinction between various fats and their health benefits and risks.[519]

Health effects

Evidence of benefits on consumer health *(if possible*	No direct estimate identified. Indirectly it can be to some extent approximated by the evolution of the share of deaths due to Ischaemic heart diseases in total deaths (Eurostat data – series [hlth_cd_aro). Between 2011 and 2014 the share of such deaths in PL decreased from 12% to 10%. This is a slightly faster decrease (and from a lower level) than in the EU28 (from 14% to 13%).

[518] https://www.palmoilandfood.eu/sites/default/files/Anna %C5%BBbikowska - TFA in Europe and Poland in particular.pdf

[519] Portalspozywczy.pl (2017), Bielmar: Polacy coraz częściej przekonują się o walorach tłuszczów roślinnych, http://www.portalspozywczy.pl/zboza/wiadomosci/bielmar-polacy-coraz-czesciej-przekonuja-sie-o-walorach-tluszczow-roslinnych,142324.html

differentiate by age and socio-economic group)	However, the observed changes likely result from a multitude of factors, and the direct implications of possible changes in trans fats intake cannot be separated. In general the consumption of fats rose in Poland from 23.6 kg per capita in 1995 to 33.5 kg per capita in 2015 but the share of animal fats consumption decreased from 16 kg in 1995 to 10 kg in 2015 whereas the consumption of vegetable fats rose from 7.5 to 23.4 kg in 2015.[520]
Evidence of change in saturated fats intake	No evidence of changes over time. The daily intake of saturated fat per person in 2015 was about 52.2 g.[521] saturated fat contributes to about 11.6 %E.[522] No comparison with past data was available.

Competition, innovation and trade

Effect on competition in the domestic market	Not identified – anecdotal evidence suggests no major impact; promoting healthy aspects of foods is a common strategy in the highly competitive food market in Poland. The overall stability of margarine prices relative to the prices of butter suggests that if there is any cost impact of changes in the margarine formulae it is unlikely to be important in cost competition for consumer preferences.
Changes in trade of affected goods	According to the Central Statistical Office data domestic market supply of margarine fluctuated over the years but remained broadly stable over the last decade (change from 329 thousand tonnes in 2005 to 315 thousand tonnes in 2010 and 320 thousand tonnes in 2015).[523]
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	Suppliers did take decisions to reformulate products. Broader impact on innovation at the company level was not identified.

Administrative burdens

Number of	Not applicable;

[520] Rosiak E. (2015), The Consumption of Fats in Poland and the European Union, Scientific Journal Warsaw University of Life Sciences, SGGW, http://www.wne.sggw.pl/czasopisma/pdf/PRS_2016_T16(31)_z2.pdf p. 283

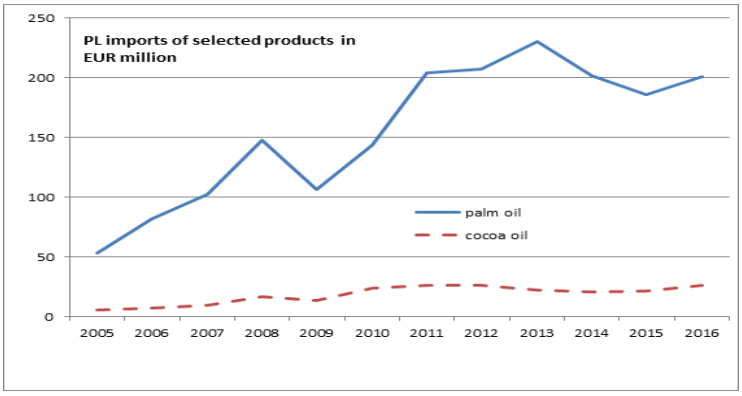
[521] Calculations carried and provided by the Independent Unit of Economics of Food and Nutrition, The National Food and Nutrition Institute based on Central Statistical Office data on consumption patterns and food content data from Kunachowicz H., Nadolna I., Przygoda B., Iwanow K.: Tabele składu i wartości odżywczej żywności. Wydawnictwo Lekarskie PZWL, Warszawa, 2005.

[522] Eliander et al (2015), Intake and sources of dietary fatty acids in Europe: Are current population intakes of fats aligned with dietary recommendations?, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4736684/

[523] GUS, Rynek Wewnętrzny (various annual editions), http://stat.gov.pl/obszary-tematyczne/ceny-handel/handel/rynek-wewnetrzny-w-2015-r-,7,21.html

businesses required to provide information	Individual companies may impose requirements on their suppliers – data not available
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	Not identified. Likely negligible given the character of the measures.
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	N/A

Environmental impacts

Evidence of any environmental costs or benefits	N/A
Evidence of increase in demand for palm oil / other ingredients	Palm oil imports to Poland were on the increasing trend until 2011 and since then appear to have stabilised. Cocoa oil imports to Poland were increasing until around 2010 and have stabilised since then.[524] 
Effects on deforestation resulting from variation in demand of	Not identified at the country level – expected to be negligible.

[524] Eurostat

ingredients *(e.g. palm oil, soy)*	

Additional references

Other sources:

Jasińska-Melon E., Mojska H.: Zawartość izomerów trans kwasów tłuszczowych w ciastach gotowych do spożycia dostępnych w Polsce. Żyw. Człow. Metab. 2015, 42 (3), 143-155

Mojska H., Gielecińska I., Balas J., Pawlicka M., Szponar L.: Trans fatty acids in foods in Poland: monitoring study. Żyw. Człow. Metab., 2006, 33 (2); 107-122

Mojska H., Jasińska E., Żukowska K.: Zawartość izomerów trans kwasów tłuszczowych w tłuszczach smażalniczych w Polsce. Żyw. Człow. Metab. 2011, 38 (4); 245-255

National Health Programme, Ministry of Health, 2017 http://www.mz.gov.pl/en/health-and-prevention/national-health-programme/

K. Okręglicka, H Mojska, A. Jarosz, M. Jarosz. Fatty acid composition including trans isoforms in selected food fats available on Polish market. Żyw. Człow. Metab. 2017, 44 (1), 10-13.

Onacik-Gür S et all, Sources of trans fatty acids on the Polish market. Probl Hig Epidemiol 2014, 95(1): p. 120-124 https://www.researchgate.net/publication/283087677_Zrodla_izomerow_trans_kwasow_tluszczowych_na_polskim_rynku

Product Criteria for Poland, Choices International Foundation, 2013, Ver. 2.5 https://www.choicesprogramme.org/public/criteria/choices_product_criteria_v2-5_poland_130201.pdf

Report from Workshop on 'Trans Fats' held at the European Parliament in Brussels on 5 Nov. 2013 http://www.europarl.europa.eu/RegData/etudes/workshop/join/2014/518744/IPOL-ENVI_AT(2014)518744_EN.pdf

Rosiak, 2016, The Consumption of Fats in Poland and the European Union in The Problems of World Agriculture. http://www.wne.sggw.pl/czasopisma/pdf/PRS_2016_T16(31)_z2.pdf p. 279

Spożycie tłuszczów na świecie – przegląd badań z 40 krajów, 2014 http://www.pokochajolejrzepakowy.eu/spozycie-tluszczow-na-swiecie-przeglad-badan-z-40-krajow/

Switzerland

Policy status

	Existing	Proposed/ considered
Legislation	X	
Voluntary measures		
Labelling		
Consumer information		

Description of existing measure(s)

Type of measure	Legislation
Description of measure *(if legislation paste exact text of legislation)*	[817.022.105] "**Decree of the Federal Home Office (*Verordnung des EDI ueber Speiseoel, Speisefett und daraus hergestellte Erzeugnisse*) concerning edible oils and fats and all products contained therein"[525]** setting the limit on trans fats in oils and fats at 2%. The above decree was abrogated in May 2017, however relevant elements were incorporated into "[817.022.108] "**Decree of the Federal Home Office on foodstuffs of vegetable origin, mushrooms and edible salt (ODOV)"[526]**, including that the sum of trans fats (cooking oil and cooking fat) has to be limited to 2 grams per 100 grams.
Scope of measure	(Legislative):Federal (national level) Applies only to vegetable oils and fats derived from seeds, spores or fruits: • Vegetable oils are defined as cold pressed, cold washed, virgin, extra-virgin, natural or non-refined; • Olive oils and olive pomace oils are defined as extra virgin olive oil, refined olive oil, olive oil containing refined olive oil and extra virgin olive oil, crude olive pomace oil, refined olive pomace oil, and olive pomace oil; and • Spreadable fats

[525] https://www.admin.ch/opc/de/classified-compilation/20050165/201401010000/817.022.105.pdf
[526] https://www.admin.ch/opc/de/classified-compilation/20143412/201705010000/817.022.17.pdf

	An amendment to the previous (2005) law seemed to set the limit at 1% for certain oils and fats (i.e. those extracted from krill, the microalga "Schizochytrium" and those with high levels of eicosapentaenoic acid).[527] The provisions concerning the regulation on novel oils contained in the Decree concerning edible oils and fats and all products contained therein were introduced into the novel food regulation (Article 6 (1) (a) and Annex 1). The oils which were placed on the market in accordance with Regulations (EU) No 258/97 and (EU) No 2015/2283 are also commercially viable in Switzerland (with the exception of genetically modified food). The maximum level of 1% for trans fats in certain fats and oils therefore continues to apply.
FBOs covered	Food regulations concerns production, treatment, storage, transport and placing of food on the market (Article 2 of the Federal Law on Food and Consumer Goods (LMG, SR 817.0)). The regulation therefore applies in principle to all foodstuffs which are placed on the market.
Derogations *(e.g. low fat products, local products)*	The Decree on foodstuffs of vegetable origin, mushrooms and edible salt applies to vegetable cooking oils and cooking fats as well as to mixtures of vegetable oils and animal fats, but not for animal fats. The latter are regulated in the regulation on foodstuffs of animal origin (VLtH, SR 817.022.108).
Share of SMEs involved *(in case of voluntary measures)*	No data available
Length and characteristics of transition period	There was a transition period under the original law from 2005 whereby the foodstuffs to which the decree applied could be imported, produced and characterised according to the previous legislation up to 31 December 2007. They could be sold until stocks were exhausted.
Arrangements for measure enforcement and compliance monitoring	Any person who manufactures, handles, stores, transports, sells, imports or exports food is obliged to implement a self-control system in accordance with Article 26 of the LMG and must ensure that the legal requirements are complied with. The enforcement authorities monitor the compliance with the provisions on foodstuffs and the implementation of a self-control system (Art. 30 LMG). The regulation on the enforcement of food legislation (LMVV, SR 817.042) regulates the official control of foodstuffs

[527] https://www.admin.ch/opc/it/official-compilation/2015/3403.pdf

Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	Before entry into force of the legislation, Migros and COOP imposed a 2% limit on their products.
Tests used to assess trans fats content	Not specified in legislation
Steps taken to raise consumer awareness	The new Swiss Nutrition policy does not mention trans fats, because the limits on trans fats are regulated. Nevertheless, reformulation and innovation of products (less sugar, less salt and better fat quality) are one of the priorities in Swiss nutrition policy.
Guidance provided to affected businesses	No guidance provided
Effectiveness of the measure	No information found.
Describe (if any) other measures that are currently being considered	No information found.

TFAs in foods and diets

TFAs content in food *(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)*	Pre law (2009): A study found that trans fats levels were higher than 2%.[528]

[528] Scheeder & Colombani (2009). Trans fatty Acid content of Selected Swiss Products: the TransSwissPilot Study in the Journal of Food Composition and Analysis.

Variation in TFAs content in food after implementation of measure	According to a nutritional bulletin by the Federal Office for Food Safety, thanks to the regulation limiting transfats to 2%, there are considerably lower amounts in food in Switzerland.
Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*	Required by law to be capped at 2% - no reforms foreseen.
TFAs intake *(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)*	No specific information on trans fats intake, just on diet more generally (so how much fruit/veg are consumed, etc.)
Variation in TFAs intake after implementation of measure	As above.
Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	Interviews undertaken in 2011 by LINK on behalf of COOP (based on a sample of 506 people) demonstrated low knowledge of transfats as well as little preoccupation therewith.[529] Transfats bore very little impact on the interviewees' purchasing choices.

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by*	No information found.

[529] http://www.coop.ch/pb/site/common2/get/documents/coop_main/elements/Gesund%20geniessen_2013/_pdf/Studienberichte/Studienbericht_VI_it.pdf

large and small companies)	
Evidence of FBO sector facing specific challenges	No information found.
For which oils/fats was there a reduction in use and with what were they replaced?	According to a newspaper article, McDonald's now uses rapeseed oil in order to remain within the 2% boundary.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	No information found.
Cost of understanding/learning the measure for FBOs	No information found.

Consumer prices and choice

Evidence of changes in the price of reformulated products	A price increase was not observed. However, no evidence-based studies have been carried out.
Evidence of price differences between products with iTFAs and alternatives	No information found.
Evidence of changes in the range, quality or taste of products available	No information found.
Evidence of	No information found.

changes in TFAs consumption	
Effect on consumer information and awareness	No information found.

Health effects

Evidence of benefits on consumer health *(if possible differentiate by age and socio-economic group)*	No information found.
Evidence of change in saturated fats intake	No information found.

Competition, innovation and trade

Effect on competition in the domestic market	No information found.
Changes in trade of affected goods	No information found.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	Does not apply. Decree applies to all.
Evidence of	No information found.

economic burden associated with compliance for FBOs *(obtain cost data if possible)*	
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	Controls are carried out by relevant authorities based on risk assessments.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	No information found.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.

United Kingdom

Policy status

	Existing	Proposed/ considered
Legislation		
Voluntary measures	X	
Labelling		
Consumer information		

Description of existing measure(s)

Type of measure	Voluntary measure
Description of measure *(if legislation paste exact text of legislation)*	Voluntary measure – self-regulation and dietary recommendation 1. "Update on trans fats and health – Position statement by the Scientific Advisory Committee on Nutrition"[530] 2. England: Public Health Responsibility Deal Food Network: Pledges F3(a) on not using ingredients that contain TFAs and F3(b) on removing artificial trans fats from products within 12 months, as well as guidance for small businesses.[531] 3. "Revised Dietary Goals for Scotland" include a goal for the average intake of trans fats to remain below 1 E%.[532] [533]
Scope of measure	1. In its report on the "Nutritional Aspects of Cardiovascular Disease (1994)", the Committee on the Medical Aspects for Cardiovascular Disease (COMA) concluded that there was sufficient evidence for an association between trans fats intakes and CHD, and for adverse effects on circulating lipoprotein concentrations, to recommend that the average population intake of trans fats should not exceed 2% food energy. This recommendation was endorsed by the Scientific Advisory Committee on Nutrition in 2007. 2. While population average intakes (0.5 E% from trans fats in 2010/12) are well within public health recommendations, the possibility that artificial trans fats from foods containing PHVO might be consumed at high levels by some vulnerable groups of the population continued to be a concern for some consumers and health groups. For this reason, two voluntary Public Health Responsibility Deal pledges were introduced in England to provide reassurance to consumers and to ensure that intakes of artificial

530 https://www.gov.uk/government/publications/sacn-update-on-trans-fatty-acids-2007
531 https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/01/Artificial-trans-fats-advice-Final.pdf
532 http://www.gov.scot/Resource/0042/00421385.pdf
533 http://www.gov.scot/Resource/0049/00497558.pdf

	trans fats are reduced to a minimum. The first pledge acknowledged the fact that some organisations had already removed trans fats from their products. The second committed companies to remove artificial trans fats from their products within the next 12 months. 3. The "Revised Dietary Goals for Scotland" describe, in nutritional terms, the diet that will improve and support the health of the Scottish population. They indicate the direction of travel, and assist policy development to reduce the burden of obesity and diet-related disease in Scotland. They will continue to underpin diet and health policy in Scotland and will be used for scientific monitoring purposes.
FBOs covered	1. UK wide recommendation 2. "All our major supermarkets have committed to removing artificial trans fats from our foods. In total almost 100 companies have signed up to this pledge to date, which includes around 69 per cent of the retail /manufacturing market – Kraft Foods, Heinz, Nestle, Weetabix, Warburtons, Kelloggs and Premier Foods to name but a few – as well as 58 per cent of the major high street and contract catering sector."[534] 3. Scotland wide recommendation
Derogations *(e.g. low fat products, local products)*	Does not apply
Share of SMEs involved *(in case of voluntary measures)*	1. and 3.: Does not apply (UK/Scotland wide) 2. No info
Length and characteristics of transition period	1 and 3: Does not apply (recommendation) 2: Those signed up to F3(a) already have removed trans fat from their offer. Those who signed up to F3(b). Artificial Trans Fat Removal have said they are "(b). We are working to remove artificial trans fats from our products within the next 12 months."
Arrangements for measure enforcement and compliance monitoring	1 and 3: Does not apply (recommendation) 2: Confirmation of pledge delivery for F3(a) Shortly after signing up to F3(a), partners will be asked to provide a delivery plan in which they must confirm when they met this pledge. All delivery plans will be published on this website. There will be no further reporting for these partners once they have confirmed that they have completed this pledge. Partners signing up to F3(b) will participate in the Responsibility Deal's reporting arrangements set out below, until they have completed this work and can transfer to F3(a). Shortly after signing up, partners will be asked to provide pledge delivery plans, laying out how they intend to meet each of the pledges they have signed up to. They will have up to 2,000 characters to describe their plans

[534] https://responsibilitydeal.dh.gov.uk/progress-to-date/

	for each pledge they are signed up to. All delivery plans will be published on this website. Partners will be asked to report on their progress by the end of April each year. For some pledges, partners will be asked to report using pre-defined quantitative measures, while for others they will be asked for a narrative update. Further information on the reporting arrangements for each food pledge for the reporting period 2014/2015 is available.[535] All annual updates will be published on this website.[536]
Rate of compliance/ participation and favouring conditions *(in case of voluntary measures)*	1 and 3: Does not apply (recommendation) 2. No info, though the 11 currently signed for F3(b) signed up more than 12 months ago which could imply they were non-compliant and could not move to F3(a). If this is the case, this means 11 out of a total of 101 who signed up to either a or b were non-compliant.
Tests used to assess trans fats content	No specific tests for monitoring any of the above voluntary measures. However, the Department of Health undertakes a rolling programme of nutrient analysis surveys to ensure that reliable, up-to-date information on the nutritional value of foods is available for use in conjunction with food consumption data collected in dietary surveys to monitor the nutritional content of the nation's diet. The following tests have been used for different iterations of this monitoring: I. Department of Health (applies only to England) Nutrient Analysis of Fish and Fish Products (March 2011) and; Department of Health (applies only to England); Nutrient Analysis of Eggs (November 2010 and February 2011)[537] Method: The lipid fractions of the sample are solvent extracted. The isolated fat is transesterified with methanolic sodium methoxide to form fatty acid methyl esters (FAMES). The FAME profile is determined using capillary gas chromatography (GC). Quantification and identification of individual FAMEs in the test material is achieved with reference to calibration standards. Accredited to BS/EN ISO/IEC 17025:2005. UKAS 0680 LOQ 0.01 mg/100g Results: Presented as g TFA/100 g of food II. Department of Health: Analysis of trans and saturated fatty acids (SFA)

[535] https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2015/02/Food-pledges-annual-update-questions-2014-2015-FINAL.pdf

[536] https://responsibilitydeal.dh.gov.uk/

[537] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167972/Nutrient_analysis_of_eggs_Summary_Report.pdf

	in fats/oils and takeaway products from areas of deprivation in Scotland (2012)[538] Method: Unknown, performed by the Glasgow Public Analyst Laboratory, which is UKAS accredited for fatty acid analysis, including TFA. Results: Presented as g TFA/100 g of food
Steps taken to raise consumer awareness	No evidence online on campaigns other than from EC report,[539] which lists: • Dissemination through talks in communities and through the use of local media • Skills development programmes and programmes available for lower socio-economic status groups The following organisations have consumer-aimed pages on trans fats (not exhaustive): NHS (National Health Service): http://www.nhs.uk/Livewell/Goodfood/Pages/Fat.aspx#transfats The Association of UK Dietitians: https://www.bda.uk.com/foodfacts/FatFacts.pdf
Guidance provided to affected businesses	The Responsibility Deal gives some basic guidance on how to deliver the pledge.[540] Additionally, the Department of Health has developed guidance to support smaller businesses to deliver the pledge.[541]
Effectiveness of the measure	A study notes that for trans fat even earlier voluntary action by industry (before 2003) had been effective and efficient at reducing intakes to an acceptable level.[542]
Describe (if any) other measures that are currently being considered	No information found.

TFAs in foods and diets

538 http://www.foodstandards.gov.scot/sites/default/files/854-1-1588_Report_of_Analysis_of_Trans_fatty_acids_in_fats_FINAL.pdf
539 https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf
540 https://responsibilitydeal.dh.gov.uk/pledges/pledge/?pl=10#_ftn1
541 https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/01/Artificial-trans-fats-advice-Final.pdf
542 https://www.researchgate.net/publication/254384473_Reformulation_for_healthier_food_a_qualitative_assessment_of_alternative_approaches

TFAs content in food

(by product, if available please distinguish by trans fats source – iTFA and rTFA, andpartly hydrogenated oil)

From the most comprehensive study (others look at only one or a group of food items (e.g. fish and fish products):

1. Department of 'Health Nutrient analysis of a range of processed foods with particular reference to trans fatty acids', 2013[543] NB: detailed FAMES results available via link[544]

Product	Trans fats (g/100g)
Cheese and tomato pizza, retail, all bases, not stuffed crust	0.11
Garlic and herb baguette, baked	0.31
Crunchy clusters type breakfast cereal without nuts	0.01
Crunchy/crispy muesli type cereal with nuts	0.01
Quiche Lorraine with shortcrust pastry, retail	0.18
Low fat spread (26-39%), not polyunsaturated (including dairy type)	0.12
Low fat spread (26-39%), not polyunsaturated, with olive oil	0.14
Low fat spread (26-39%), polyunsaturated	0.05
Hard block margarine	0.07
Compound cooking fat, not polyunsaturated	0.06
Ghee made from vegetable oil	0.08
Reduced fat spread (41-62%), polyunsaturated	0.13
Reduced fat spread (41-62%), not polyunsaturated	0.15
Reduced fat spread (41-62%), not polyunsaturated, with olive oil	0.11
Reduced fat spread (62-75%), not polyunsaturated	0.14
Takeaway chicken pieces, coated, deep fried	0.11
Coated chicken pieces, takeaway	0.02
Chicken/turkey burger, coated, baked	0.03
Breaded/battered chicken/turkey pieces, cooked	0.02
Chicken breast/steak, coated, baked	0.02
Beef pie, purchased, puff or shortcrust pastry, family size	0.06
Beef pie, purchased, individual, puff or shortcrust pastry	0.13
Cornish pasty, purchased	0.14
Pork pie, individual	0.06
Sausage roll, purchased, ready to eat, flaky pastry	0.03
Chicken/turkey pasties/slices, puff pastry	0.05
Cod in batter, fried in commercial oil, from takeaway fish and chip shops	0.34
Cod in batter, frozen/chilled, baked	0.02
Cod in breadcrumbs, oven baked	0.01
Fish fingers, pollock, grilled	0.01
Coleslaw, purchased, not low calorie	0.02
Chips, fried in commercial oil, from takeaway fish and chip shops	0.16
Chips, fine cut, from fast food outlets	0.02
Potato chips, oven ready, baked	0.00

[543] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167938/Summary_Report.pdf

[544] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167941/spreadsheet_of_fatty_acid_data.XLS

Potato chips, oven ready, with batter, baked	0.01
Potato crisps, fried in vegetable oil, not Walkers, not premium crisps, not fried in sunflower oil	0.06
Potato crisps, fried in sunflower oil, including premium, not Walkers1	0.03
Potato crisps, fried in high oleic sunflower oil	0.03
Potato rings (e.g. Hula Hoops)	0.02
Withdrawn	N/A
Tortilla chips in Sunseed or high oleic sunflower oil (e.g. Doritos)	0.08
Corn snacks (e.g. Monster Munch, Wotsits)	0.04
Mixed toffees (including liquorice toffees), not premium	0.07
Chew sweets (e.g. Starburst, Chewits, Blackjacks)	0.01
Milk chocolate bar	0.16
Chocolate covered caramels (e.g. Cadburys caramel)	0.10
Dark chocolate with crème or mint fondant centres	0.01
Mars Bars (and own brand equivalents)	0.05
Maltesers (and similar products)	0.07
Milk chocolate covered caramel and biscuit fingers	0.05
Chocolate covered bar with caramel and cereal	0.09
Milky Way bars (and own brand equivalents)	0.06
Snickers bars (and own brand equivalents)	0.03
Chocolate spread	0.03
Cream of tomato soup, canned	0.01
Instant soup, as purchased	0.01
Mayonnaise, retail, standard	0.04
Baby rusks	0.01
Ice cream, non dairy, vanilla, soft scoop	0.04
Ice cream, dairy, vanilla, soft scoop	0.18
Chocolate/choc mint and nut cone (e.g. Cornetto)	0.03
Ice Cream, luxury, dairy, with chocolate/caramel	0.23
Luxury choc ices (e.g. Walls Dream, Bounty, Magnum)	0.11
Butter, spreadable (75-80% fat)	1.38
Butter, spreadable, light (60% fat)	1.01
Coleslaw, purchased, economy products only	0.01

More specific studies:

2. Department of Health Nutrient Analysis of Fish and Fish Products (March 2011)[545]

Product	Trans fats (g/100g)
Cod, chilled/frozen, raw, flesh only	0.00
Cod, chilled/frozen, baked, flesh only	0.00
Cod, chilled/frozen, microwaved, flesh only	0.00
Haddock, chilled/frozen, raw, flesh only	0.00
Haddock, chilled/frozen, grilled, flesh only	0.00
Haddock, chilled/frozen, steamed, flesh only	0.00

[545] https://www.gov.uk/government/publications/nutrient-analysis-of-fish

Alaskan pollock, chilled/frozen, raw, flesh only	0.01
Sole, chilled/frozen, raw, flesh only	0.00
Sole, chilled/frozen, grilled, flesh only	0.00
Plaice, chilled/frozen, raw, flesh only	0.01
Pangasius, chilled/frozen, raw, flesh only	0.00
Coley, chilled/frozen, raw, flesh only	0.00
Sea bass, chilled/frozen, raw, flesh only	0.02
Sea bass, chilled/frozen, baked, flesh only	0.01
Prawns, cold-water, purchased cooked	0.00
Prawns, king, warm-water, raw	0.00
Prawns, king, warm-water, grilled from raw	0.00
Prawns, king, warm-water, purchased cooked	0.00
Mussels, purchased cooked	0.00
Crab, brown meat	0.04
Crab, white meat	0.00
Mackerel, chilled/frozen, raw, flesh only	0.02
Mackerel, chilled/frozen, grilled, flesh only	0.02
Trout, rainbow, chilled/frozen, raw	0.01
Trout, rainbow, chilled/frozen, baked	0.01
Kippers (analysed without butter), grilled	0.01
Kippers, boil in the bag, with butter, cooked	0.02
Tuna, chilled/frozen, raw	0.00
Tuna, chilled/frozen, baked	0.00
Sardines, chilled/frozen, raw	0.01
Haddock, smoked, chilled/frozen, poached	0.00
Plaice, coated in breadcrumbs, baked	0.02
Calamari, coated in batter, baked	0.02
Fish fingers, cod, grilled/baked	0.02
Fish fingers, cod, fried	N/A
Fish fingers, salmon, grilled/baked	0.02
Cod, coated in batter, fried	N/A
Fishcakes, white fish, coated in breadcrumbs, baked	0.02
Fishcakes, salmon, coated in breadcrumbs, baked	0.04
Scampi, coated in breadcrumbs, baked	0.01
Scampi coated in breadcrumbs, fried	N/A
Fish pie, white fish, retail, baked	0.12
Mussels in white wine sauce, cooked	0.04
Salmon, smoked (cold-smoked)	0.01
Salmon, smoked (hot-smoked)	0.01
Mackerel, smoked	0.02
Seafood sticks	0.00
Tuna, canned in brine	0.00
Tuna, canned in sunflower oil	0.00
Salmon, red, canned	0.01
Salmon, red, canned, skinless and boneless	0.01
Salmon, pink, canned	0.01
Mackerel, canned in brine	0.01
Sardines, canned in tomato sauce	0.01
Sardines, canned in brine	0.01
Langoustine, boiled	0.00

3. Department of Health Nutrient Analysis of Eggs (November 2010 – February 2011)[546]

Product	Trans fats (g/100g)
Whole egg, raw	0.00
Eggs, chicken, white, raw	N/A
Egg yolk, raw	0.00
Whole egg, boiled	0.00
Eggs, chicken, white, boiled	N/A
Egg yolk, boiled	0.00
Whole egg, poached	0.00
Whole egg, fried	0.00

Product (oils)	Trans fats (g/100g oil)
Beef dripping (new)	4.8 ± 0.3
Animal origin oil (used)	4.6 ± 0.3
Vegetable oil blended (new)	1.4 ± 0.1
Vegetable oil (used)	1.8 ± 0.2

Product (takeaway meals)	Trans fats (g/100g)
Spring rolls	0.14
Chicken pakora	0.18
Vegetable pakora	0.28
Sausage	0.33
Chips	0.35
Fritters	0.73
Fish	0.63

3. A more recent and wider scope study on takeaways than the study above on which more data is available is 'Saturated and trans-fatty acids in UK takeaway food'[547]

Meal type	TFA (g/100 g): median
Chinese (all meals)	**0.03**
Sweet and Sour Chicken with boiled rice	0.02
Chicken Chow Mein	0.10
Char Sin Chow Mein	0.02
Chicken Satay with fried rice	0.01
Kung Po King Prawns with boiled rice	0.04

546 https://www.gov.uk/government/publications/nutrient-analysis-of-eggs

547 https://www.researchgate.net/publication/295864106_Saturated_and_trans-fatty_acids_in_UK_takeaway_food

Special Fried Rice	0.1
Indian (all meals)	**0.09**
Chicken Korma with pilau rice	0.09
Lam Rogan Josh with pilau rice	0.10
Vegetable Biryani	0.10
English (all meals)	**0.07**
Chicken and chips	0.1
Fish and chips	0.03
Chips and curry sauce	0.1
Pizzas (all meals)	**0.18**
Ham and Pineapple pizza	0.18
Meat pizza	0.18
Kebabs (all meals)	**0.53**
Donner kebab with chips	0.84
Donner kebab	0.43

Variation in TFAs content in food after implementation of measure

N/A (no 'post' measurement as such and measure is ongoing)

Future projections of TFAs content in food *(e.g. a major FBO pledged to reduce trans fats content in own products)*

"All our major supermarkets have committed to removing artificial trans fats from our foods. In total almost 100 companies have signed up to this pledge to date, which includes around 69 per cent of the retail /manufacturing market – Kraft Foods, Heinz, Nestle, Weetabix, Warburtons, Kelloggs and Premier Foods to name but a few – as well as 58 per cent of the major high street and contract catering sector."[548]

TFAs intake

(if available please report data by trans fats source – iTFA and rTFA, age and socio-economic group, andpartly hydrogenated oil contribution)

1. The Diet and nutrition survey of infants and young children, 2011 shows the following results:[549]

Energy, macronutrients	**Age group (months)**			
	4-6	7-9	10-11	12-18
Trans fatty acids g Mean (=median)	0.1	0.2	0.3	0.6
% total energy Mean (=median)	0.1	0.2	0.3	0.5

2. Derived from: National Diet and Nutrition Survey Results from

[548] https://responsibilitydeal.dh.gov.uk/progress-to-date/

[549] https://www.gov.uk/government/publications/diet-and-nutrition-survey-of-infants-and-young-children-2011

Years 1, 2, 3 and 4 (combined) of the Rolling Programme (2008/2009 – 2011/2012):[550]

		Average daily trans fatty acid intake g
Boys	4-10	1.1
	11-18	1.4
Total	boys	1.2
Men	19-64	1.5
	65+	1.5
Girls	4-10	1.1
	11-18	1.1
Total	girls	1.1
Women	19-64	1.1
	65+	1.2
Total	1.5-3	0.8
	4-10	1.1
	11-18	1.2
	19-64	1.3
	65+	1.3

*Also available by income group*age group* sex:*

*NB: * p<0.05 and ** p<0.01 denotes a statistical difference between an individual quintile and the highest quintile (reference quintile) of equivalent age group;*

No statistical analysis has been carried out on 65+ due to the cell size of quintile 5 being below 50.

		Trans fat g		Trans fat % food energy	
		Mean	Median	Mean	Median
Boys 4-10 years	Quintile 1	1.1	1.0	0.6	0.6
	Quintile 2	1.1	1.0	0.6	0.6
	Quintile 3	0.9**	0.8	0.5*	0.5
	Quintile 4	1.2	1.1	0.6	0.6
	Quintile 5	1.1	1.1	0.6	0.6
Boys 11-18 years	Quintile 1	1.5	1.4	0.7	0.6
	Quintile 2	1.2**	1.1	0.6**	0.6
	Quintile 3	1.4	1.2	0.6	0.6
	Quintile 4	1.4	1.3	0.6	0.6
	Quintile	1.5	1.4	0.6	0.6

[550] https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012

	5				
Total boys	Quintile 1	1.3	1.2	0.6	0.6
	Quintile 2	1.1	1.1	0.6*	0.6
	Quintile 3	1.2	1.0	0.6	0.6
	Quintile 4	1.3	1.2	0.6	0.6
	Quintile 5	1.3	1.2	0.6	0.6
Men 19-64 years	Quintile 1	1.2*	1.1	0.6*	0.5
	Quintile 2	1.4	1.2	0.6	0.6
	Quintile 3	1.4	1.3	0.6	0.6
	Quintile 4	1.5	1.5	0.7	0.6
	Quintile 5	1.5	1.4	0.7	0.6
Men 65+	Quintile 1	[1.5]	[1.3]	[0.7]	[0.7]
	Quintile 2	1.5	1.3	0.7	0.6
	Quintile 3	[1.4]	[1.4]	[0.7]	[0.7]
	Quintile 4	1.6	1.5	0.8	0.7
	Quintile 5				
Girls 4-10 years	Quintile 1	1.0	0.9	0.6	0.6
	Quintile 2	1.1	1.1	0.7	0.6
	Quintile 3	1.0	0.9	0.6	0.6
	Quintile 4	1.2*	1.1	0.7	0.7
	Quintile 5	1.0	1.0	0.6	0.6
Girls 11-18 years	Quintile 1	1.1	0.9	0.6	0.6
	Quintile 2	1.1	1.0	0.6	0.6
	Quintile 3	1.0	1.0	0.6	0.5
	Quintile 4	1.1	1.0	0.6	0.6
	Quintile 5	1.0	0.9	0.6	0.6
Total girls	Quintile 1	1.0	0.9	0.6	0.6
	Quintile 2	1.1	1.0	0.6	0.6

	Quintile 3	1.0	1.0	0.6	0.6
	Quintile 4	1.1	1.1	0.7	0.6
	Quintile 5	1.0	0.9	0.6	0.6
Women 19-64 years	Quintile 1	1.1	1.1	0.6	0.6
	Quintile 2	1.1	1.0	0.7	0.6
	Quintile 3	1.0**	1.0	0.6	0.6
	Quintile 4	1.2	1.1	0.7	0.7
	Quintile 5	1.2	1.1	0.7	0.7
Women 65+	Quintile 1	1.3	1.2	0.8	0.8
	Quintile 2	1.2	1.0	0.7	0.6
	Quintile 3	1.1	0.9	0.7	0.7
	Quintile 4	1.4	1.3	0.8	0.8
	Quintile 5	[1.2]	[1.0]	[0.7]	[0.7]

(also available without the breakdown by sex)

3. The Food Standards Agency Low income diet and nutrition survey Volume 2 Food consumption Nutrient intake found that: 'Mean intakes expressed as a percentage of food energy were 1.3% in men and women and 1.2% in boys and girls. They did not differ significantly between the sexes in any age group, or between adults and children, but were marginally higher in women aged 65 and over (1.4%) compared with other age groups (1.2%).The COMA recommendation2 is that the population average contribution of trans fatty acids to energy should not exceed 2% and average intakes were below this figure. Over the 24 hour (24h) recall days, intakes by consumers in the upper 2.5 percentile were over double the recommended maximum.'[551] Further data is available breaking results down by age groups (2-10; 11-18; 19-34; 35-49; 50-64; 65+) and sex.

Variation in TFAs intake after implementation of measure

There is no 'post' measurement as such and measure is ongoing but the National Diet and Nutrition Survey Results can be used to look at variation over time:[552]

			Trans fat g		Trans fat % food energy	
			Mean	Median	Mean	Median
Year	Boys	4-10	1.3	1.3	0.8	0.7

[551] http://tna.europarchive.org/20110116113217/http://www.food.gov.uk/multimedia/pdfs/lidnsvol02

[552] https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012

1 + 2		11-18	1.6	1.5	0.7	0.7
	Total	boys	1.5	1.4	0.7	0.7
	Men	19-64	1.8	1.7	0.8	0.8
		65+	1.8	1.6	0.9	0.8
Year	Boys	4-10	0.8**	0.8	0.5**	0.5
3 + 4		11-18	1.1**	1.0	0.5**	0.5
	Total	boys	1.0**	0.9	0.5**	0.5
	Men	19-64	1.2**	1.1	0.5**	0.5
		65+	1.2**	1.0	0.6**	0.5
Year	Girls	4-10	1.3	1.2	0.8	0.7
1 + 2		11-18	1.3	1.2	0.7	0.7
	Total	girls	1.3	1.2	0.8	0.7
	Women	19-64	1.3	1.2	0.8	0.7
		65+	1.5	1.4	0.9	0.8
Year	Girls	4-10	0.8**	0.8	0.5**	0.5
3 + 4		11-18	0.8**	0.8	0.5**	0.5
	Total	girls	0.8**	0.8	0.5**	0.5
	Women	19-64	0.9**	0.8	0.6**	0.5
		65+	1.0**	0.9	0.6**	0.6

(also available without the breakdown by sex)

Information on national consumer awareness of TFAs issues *(e.g. terminology, impact of food choice)*	Food Standard Agency surveys and research from 2007 showed that consumer concerns remained relatively low in comparison to those about other nutrients and food safety issues.[553] When asked to choose from a list what types of fats it was most important for them to cut down on, just 15% of respondents selected trans fats and hydrogenated vegetable oils. In contrast 45% named saturated fats as the key fat of concern.[554]

Measure impacts

Business responses and costs

Number of business that reformulated their products *(if possible differentiate by large and small companies)*	N/A (but as noted above: "All our major supermarkets have committed to removing artificial trans fats from our foods. In total almost 100 companies have signed up to this pledge to date, which includes around 69 per cent of the retail /manufacturing market – Kraft Foods, Heinz, Nestle, Weetabix, Warburtons, Kelloggs and Premier Foods to name but a few – as well as 58 per cent of the major high street and contract catering sector.")
Evidence of FBO	No information found.

[553] https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

[554] http://tna.europarchive.org/20120419000433/http://www.food.gov.uk/multimedia/pdfs/board/fsa071207.pdf

sector facing specific challenges	
For which oils/fats was there a reduction in use and with what were they replaced?	No information found.
Costs of changes in products and processes *(if possible differentiate by type of cost and include figures)*	No information found.
Cost of understanding/learning the measure for FBOs	No information found.

Consumer prices and choice

Evidence of changes in the price of reformulated products	No information found.
Evidence of price differences between products with iTFAs and alternatives	No information found.
Evidence of changes in the range, quality or taste of products available	No information found.
Evidence of	No information found other than information on intake as described

changes in TFAs consumption	above, i.e.: National Diet and Nutrition Survey Results can be used to look at variation over time:[555]

			Trans fat g		Trans fat % food energy	
			Mean	Median	Mean	Median
Year 1 + 2	Boys	4-10	1.3	1.3	0.8	0.7
		11-18	1.6	1.5	0.7	0.7
	Total	boys	1.5	1.4	0.7	0.7
	Men	19-64	1.8	1.7	0.8	0.8
		65+	1.8	1.6	0.9	0.8
Year 3 + 4	Boys	4-10	0.8**	0.8	0.5**	0.5
		11-18	1.1**	1.0	0.5**	0.5
	Total	boys	1.0**	0.9	0.5**	0.5
	Men	19-64	1.2**	1.1	0.5**	0.5
		65+	1.2**	1.0	0.6**	0.5
Year 1 + 2	Girls	4-10	1.3	1.2	0.8	0.7
		11-18	1.3	1.2	0.7	0.7
	Total	girls	1.3	1.2	0.8	0.7
	Women	19-64	1.3	1.2	0.8	0.7
		65+	1.5	1.4	0.9	0.8
Year 3 + 4	Girls	4-10	0.8**	0.8	0.5**	0.5
		11-18	0.8**	0.8	0.5**	0.5
	Total	girls	0.8**	0.8	0.5**	0.5
	Women	19-64	0.9**	0.8	0.6**	0.5
		65+	1.0**	0.9	0.6**	0.6

(also available without the breakdown by sex)

Effect on consumer information and awareness	Food Standard Agency surveys and research from 2007 showed that consumer concerns remained relatively low in comparison to those about other nutrients and food safety issues.[556] When asked to choose from a list what types of fats it was most important for them to cut down on, just 15% of respondents selected trans fats and hydrogenated vegetable oils. In contrast 45% named saturated fats as the key fat of concern.[557]

Health effects

Evidence of	From Eurostat[558]

555 https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012

556 https://ec.europa.eu/food/sites/food/files/safety/docs/fs_labelling-nutrition_trans-fats-oswp_en.pdf

557 http://tna.europarchive.org/20120419000433/http://www.food.gov.uk/multimedia/pdfs/board/fsa071207.pdf

558 http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular_diseases_statistics

benefits on consumer health

(if possible differentiate by age and socio-economic group)

	2011	2012	2013	2014
M Total	**79,085**	**79,334**	**79,722**	**78,222**
M Younger than 25	175	164	143	127
M 25-49	2,975	2,906	2,872	2,860
M 50-64	10,506	9,775	10,056	9,859
M 65 and older	65,429	66,489	66,651	65,376
F Total	**80,171**	**82,637**	**79,514**	**76,689**
F Younger than 25	104	115	111	84
F 25-49	1,192	1,191	1,214	1,208
F 50-64	3,885	3,983	3,930	3,909
F 65 and older	74,990	77,348	74,259	71,488
Total	**159,256**	**161,971**	**159,236**	**154,911**

Evidence of change in saturated fats intake

Mean daily saturated fat intakes for all age/sex groups, in line with total fat intakes, also tended to be lower in Y3&4 compared with those in Y1&2, with significant differences observed in boys aged 4 to 10 years (22.1g versus 24.0g), men aged 19 to 64 years (27.4g versus 29.4g), girls aged 11 to 18 years (20.9g versus 22.5g) and women 65 years and over (21.4g versus 24.3g), In line with total fat, mean saturated fat intakes as a percentage of food energy tended to be slightly lower in Y3&4 compared with Y1&2 and were significantly lower in boys aged 4 to 10 years (12.7% versus 13.4%) and women aged 65 years and over (13.2% versus 14.3%).[559]

			Saturated fat g		Saturated fat % food energy	
			Mean	Median	Mean	Median
Year	Boys	4-10	24.0	23.5	13.44	13.11
1 + 2		11-18	28.2	26.8	12.72	12.56
	Total	boys	26.4	25.4	13.02	12.84
	Men	19-64	29.4	27.6	12.89	12.84
		65+	29.5	28.4	14.38	14.35
Year	Boys	4-10	22.1*	21.6	12.74	12.56
3 + 4		11-18	27.4	25.8	12.59	12.5
	Total	boys	24.9	23.9	12.66	12.54
	Men	19-64	27.4*	26.7	12.4	12.37
		65+	27.8	24.3	13.28	13.14
Year	Girls	4-10	22.7	22.2	13.4	13.5
1 + 2		11-18	22.5	21.5	12.5	12.5
	Total	girls	22.6	21.9	12.9	12.9
	Women	19-64	22.6	21.6	12.7	12.5
		65+	24.3	23.4	14.3	14.6
Year	Girls	4-10	21.8	20.7	13.2	13.2
3 +		11-18	20.9*	20.5	12.3	12.1

559 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/594361/NDNS_Y1_to_4_UK_report_full_text_revised_February_2017.pdf

4						
	Total	girls	21.3	20.7	12.6	12.5
	Women	19-64	21.6	20.4	12.6	12.5
		65+	21.4*	21.6	13.2*	13.2

Competition, innovation and trade

Effect on competition in the domestic market	No information found.
Changes in trade of affected goods	No information found.
Effect on innovation among suppliers *(i.e. reformulation and/or changes in production processes)*	No information found.

Administrative burdens

Number of businesses required to provide information	No information found.
Evidence of economic burden associated with compliance for FBOs *(obtain cost data if possible)*	No information found.
Evidence of authorities' effort to enforce/monitor measure *(obtain cost data if possible)*	No information found.

Environmental impacts

Evidence of any environmental costs or benefits	No information found.
Evidence of increase in demand for palm oil / other ingredients	No information found.
Effects on deforestation resulting from variation in demand of ingredients *(e.g. palm oil, soy)*	No information found.