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Delegations will find attached document SWD(2015) 268 final.

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COMMISSION STAFF WORKING DOCUMENT

Results of the Commission's consultations on 'trans fatty acids in foodstuffs in Europe'

Accompanying the document

**Report from the Commission to the European Parliament and the Council
regarding trans fats in foods, in the overall diet and means for their reduction**

{COM(2015) 619 final}

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Abbreviations

BCCC	Biscuit Cake Chocolate & Confectionery Sector Group
BEUC	Bureau Européen des Unions de Consommateurs
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease(s)
E%	Percent of daily energy intake
EEA	European Economic Area
FBO	Food Business Operator(s)
FDF	Food and Drink Federation
FHVO	Fully Hydrogenated Vegetable Oil(s)
HVO	Hydrogenated Vegetable Oil(s)
iTFA	Industrial <i>Trans</i> Fatty Acid(s)
MS	Member State(s)
NCD	Non-Communicable Disease(s)
NFA	National Food Administration
NGO	Non-Governmental Organisation
PHVO	Partially Hydrogenated Vegetable Oil(s)
rTFA	Ruminant <i>Trans</i> Fatty Acid(s)
SD	Standard Deviation
SFA	Saturated Fatty Acid(s)
SME	Small and Medium-sized Enterprise(s)
TFA	<i>Trans</i> Fatty Acid(s)
WHO	World Health Organization

1. INTRODUCTION

Article 30(7) of Regulation (EU) No 1169/2011 foresees that *'by 13 December 2014, the Commission, taking into account scientific evidence and experience acquired in Member States, shall submit a report on the presence of trans fats in foods and in the overall diet of the Union population. The aim of the report shall be to assess the impact of appropriate means that could enable consumers to make healthier food and overall dietary choices or that could promote the provision of healthier food options to consumers, including, among others, the provision of information on trans fats to consumers or restrictions on their use. The Commission shall accompany this report with a legislative proposal, if appropriate'*.¹

This Staff Working Document accompanies the Commission report². It describes the following information:

1. the results of two surveys, one with the Working Group on Regulation (EU) No 1169/2011 on the provision of food information to consumers comprising Member States (MS) and Iceland and Norway and one with stakeholders, on the following four issues related to trans fatty acids (TFA) in Europe:
 - TFA in foodstuffs and diets in Europe
 - Consumer knowledge and understanding of TFA
 - Strategies to reduce population exposure to and consumption of TFA
 - Impact and effectiveness of such measures

The aim of these surveys was to gather "evidence-based actual input" on the four issues above to inform the Commission report.

2. the results of a second round of stakeholder consultation with the Advisory Group on the Food Chain and Animal and Plant Health³ (hereafter the "Advisory Group") that described possible future options for action in order to obtain further feedback from stakeholders. The following policy options were considered:
 - Option 1: The EU introduces mandatory TFA content declaration
 - Option 2: The EU introduces a legal limit on the TFA content of food
 - Option 3: Voluntary agreements towards reducing TFA in foods and diets are made at EU level
 - Option 4: No further action towards reducing TFA in foods and diets is taken at EU level

The first round of consultations took place over the period April-July 2014 using the online tool EUSurvey.⁴ The questionnaires used in the MS⁵ and stakeholder surveys can be found in

¹ Regulation (EU) No 1169/2011

² Report from the Commission to the European Parliament and the Council regarding the presence of and appropriate means for reducing trans fat in foods and in the overall diet of the Union population

³ http://ec.europa.eu/dgs/health_consumer/dgs_consultations/advisory_group_en.htm

⁴ <http://ec.europa.eu/eusurvey/>

ANNEX I and ANNEX II, respectively. The results are presented in chapters 2 and 3. ANNEX III and ANNEX IV contain lists of hyperlinks and references provided by the MS⁵ and stakeholder respondents, divided into the following three areas: (i) information on TFA intakes and the TFA composition of food products; (ii) information on consumers' understanding of TFA; and (iii) information on strategies to reduce population exposure to TFA and their impact and effectiveness.

The second round of consultation with the Advisory Group took place from 26 September 2014 till 10 November 2014. The responses are summarised in chapter 4.

All the information provided by the respondents was screened for relevant information to the extent possible. The content was adapted to fit the structure of this document as appropriate.

2. RESULTS OF THE MEMBER STATE CONSULTATION⁵ ON TFA IN FOODSTUFFS IN EUROPE

The MS survey was answered by 25 countries (83% response rate), namely 23 MS⁶ of the EU28, Iceland and Norway. Unless indicated otherwise, percentages reported in this chapter are relative to this total number of respondents.

2.1 TFA in foods and diets

Domain 1 of the questionnaire addressed the availability of data on TFA in foods and dietary intakes. Seventy-two percent of the countries that responded had data on the TFA composition of food products. Table 1 summarises the information provided.

A wide variety of products were reported to contain TFA. Often food samples were pre-selected for their likelihood to contain TFA, be it industrial (iTFA) or naturally occurring ruminant TFA (rTFA). While the majority of sampled products contained no or little TFA, several relevant sources of TFA remain *e.g.* frying fat in Belgium and Finland, bakery products and confectionery in Hungary, or butter and lard in Latvia or the Netherlands. The data presented also indicate that the levels of TFA in foods have been decreasing over time in countries where such analysis was done (*e.g.* Denmark or Iceland).

As for TFA intake, 46% of the responding countries provided data on the TFA intake of their population, mostly stratified by population groups (*e.g.* gender, age, socio-economic status). Seven (out of 12) countries reported to have separate intake data on iTFA and rTFA. Table 2 summarises the data provided in this section. Population intake levels were reported most frequently in grams/person/day. It is difficult to conclude generically on the relative contributions of iTFA and rTFA to the overall TFA intake of the EU population. The main TFA contributors in the diets of the populations examined included milk, meat, dairy

⁵ Consultation with the Working Group on Regulation (EU) No 1169/2011 on the provision of food information to consumers comprising Member States and Iceland and Norway

⁶ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

products, convenience food, bakery products, deep-fried products, cakes and biscuits. Most MS⁵ have reported an average intake in their population below 2 g/d or less than 1 E% intake although there are instances where individuals or population subgroups may have considerably higher intakes.

Table 1 - Summary of responses reporting on TFA content of food and foodstuff.

Country	Agency/Author (A), year of product sampling (Y) and unit of measure (U):	Foods analysed	TFA content of foods	Comments
Austria	A - Austrian Agency for Health and Food Safety Y - Prior to 2009 (exact date not specified) U - g TFA/100g		<ul style="list-style-type: none"> - Before the TFA-Regulation contribution of different kinds of food groups was as follows: - 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 <p>42% of the samples showed a TFA content over 2%, more than 10% were even higher than 10% of total energy.</p>	<ul style="list-style-type: none"> - Adapted from free text answer - Information provided did not specify whether g TFA/100 g refers to g total fat or g product
Belgium	A - Data collected by Nubel ⁷ Y - 2009-2014 U - g TFA/100 g-ml	<ul style="list-style-type: none"> - 1326 food products including meat and fish products, drinks, vegetarian foods, snacks etc. 	<ul style="list-style-type: none"> Of the 1326 products: - 6 products ≥ 2 g TFA/100 g (butter, cheese, chocolate puffed rice, frying fat, cookies) - 38 products = > 1 g TFA/100g - 94 products = 0.6-1 g TFA/100g - 262 products = 0.1-0.5 g TFA/100g - 599 products = 0 g TFA/100g - Maximum of 3.7 g TFA/100g; frying fat 	<ul style="list-style-type: none"> - Adapted from provided document(s) - Information provided did not specify whether g TFA/100 g refers to g total fat or g product
	U - %TFA in total fat	<ul style="list-style-type: none"> - 100 food products including margarines, chocolate, biscuits etc. 	<ul style="list-style-type: none"> Of the 100 products: - 87 products = < 0.30-1% - 9 products = 1.24-2.47% - 2 margarines* = 1.22 and 2.62%TFA in total fat - 2 margarines* = 0.41 and 0.4%TFA in total fat - Maximum* = 2.62%TFA in total fat (margarine) 	<ul style="list-style-type: none"> - Adapted from free text answer - With the exception of the four products marked with (*) the information provided did not specify whether g TFA/100 g refers to g total fat or g of product

⁷ www.internubel.be

Denmark	A - The Danish Veterinary and Food Administration in collaboration with the National Food Institute, Technical University of Denmark Y - 2002/3, 2004/5, 2006/7, 2010 and 2012/13 U - g iTFA/100 g fat	- Products were selectively collected on the basis of existing knowledge about, which food categories would typically contain iTFA.	<ul style="list-style-type: none"> - Most of the products complied with the regulation already in 2004-5 (148 food products) - In following years (2006/7 (45 food products), 2010 (96 food products) and 2012/13 (95 food products)) only occasional transgressions have been found. More specifically: <ul style="list-style-type: none"> - The percentage of analysed products containing >2 g iTFA/100 g fat, declined from 26% (2002, prior to the Danish ban) to 6% in 2013 - iTFA in products, which did not comply with the Danish TFA Order, varied from 3 g to 54 g iTFA/100 g of fat - Exceeding levels of iTFA were found in: cakes, biscuits, cookies, waffles, microwave popcorn, French fries and deep fried potatoes, some types of candy, in particular caramel. 	- Adapted from free text answer
Finland	A - National Institute for Health and Welfare, Nutrition Unit Y - Values are based on the Fineli Food Composition Database ⁸ Release 16 (9 December 2013) U - g TFA/100 g portion		<ul style="list-style-type: none"> - Fats for industrial frying: 16.1 g/100 g - Catering margarine pastry 80% fat: 6.7 g/100 g - Fat in butter dough: 4.9 g/100 g - Cheese snacks: 4.6 g/100 g - Vanilla crème: 3.5 g/100 g - Mince meat patty deep fried with soy: 2.8 g/100 g - Ice cream pin, vegetable fat, chocolate coated: 2.7 g/100 g - Chocolate with puffed rice: 2.6 g/100 g - Wafer biscuit: 2.6 g/100 g - Butter, unsalted: 2.5 g/100 g - Beef lard: 2.3 g/100 g - Ice cream cornet vegetable fat: 2.3 g/100 g - Dough: 2.2 g/100 g - Chocolate chip cookies: 2.1 g/100 g - Catering fat for deep frying 100%: 2.0 g/100 g - Butter dough: 2.0 g/100 g - Butter: 2.0 g/100 g 	- Extracted from reference ⁸

⁸ <http://www.fineli.fi/topfoods.php?compid=2158&fuclass=all&specdiet=none&items=20&from=top&portion=100g&lang=en>

	A - Ritvanen <i>et al.</i> ⁹ Y - 2012 U - % of total and individual TFA per total fat	- 63 products sampled included light spreads, fat spread/margarine, shortenings, vegetable fat dairy products, margarines/spreads, shortenings/cooking fats, cheeses, puff pastries, doughnuts, chocolate products, biscuits, butters etc.	- The proportion of total TFA in individual cheeses varied from 2.09% to 3.37%. - Only one spread contained more than 1% TFA - None of the shortenings had TFA in detectable amounts. - All vegetable fat dairy products, vegetable fat half creams and vegetable fat ice creams had negligible amounts of TFA.	- Extracted from reference ⁹
Hungary	A - National Food and Nutrition Institute of Hungary ¹⁰ Y - 2013 U - g TFA/100 g fat	- Approximately 800 products sampled. These included fast foods and convenience products, margarines, bakery products, sweet biscuits/wafers/muffins, chocolates, pastries/cakes, savoury biscuits/crackers/chips, dairy products, ice creams etc.	- 1/4 of the products sampled has 0 g TFA/100 g of fat - The rest ranged from 0.1 to 37.3 g TFA/100 g of total fat - High values found (example of the 5 highest): 4 confectionary samples ranging from 30.2 to 37.3 g TFA/100 g of total fat 1 bakery product: 29.8 g TFA/100 g of total fat	- Extracted from reference ¹⁰
Germany	A - Bundesamt für Verbraucherschutz und Lebensmittelsicherheit ¹¹ Y - 2011 U - g TFA/100 g fat	- Over 100 samples of each of the four different products analysed (ice-cream, eggs, soups, sauces).	TFA content: - Ice-cream = 0.03-2.9 g TFA/100 g fat Average: 0.47 g TFA/100 g fat - Egg = 0.02-1.47 g TFA/100 g fat Average: 0.65 g TFA/100 g fat - Soup = 0.01-18.9 g TFA/100 g fat Average: 0.86 g TFA/100 g fat - Sauces = 0.02-46.0 g TFA/100 g fat Average: 1.63 g TFA/100 g fat	- Extracted from reference ¹¹
Iceland	Y - 2008/9 U - % of total fatty acid content	- Margarine, spreading fats, bakery products, deep fried foods, ice	- In June 2008 and 2009 the fatty acid composition of various domestic and imported food products was analysed in Iceland. Test results in June 2008 proved	- Adapted from free text answer

⁹ Food and Nutrition Sciences, 2012.3:1189-96

¹⁰ <http://www.oeti.hu/download/tfacso.pdf>

¹¹ http://www.bvl.bund.de/SharedDocs/Downloads/01_Lebensmittel/02_BUEp_dokumente/buep_berichte_archiv/BUep_Bericht_2011.pdf?__blob=publicationFile&v=4

			cream substitutes, biscuits, snack, sweets	several products had high content of TFA, over 20% of total fatty acid content. All companies were then contacted in April 2009 and questioned on their use of TFA. Samples taken in August 2009 showed improvement and 66% of samples taken showed TFA content below 2% of total fatty acid. The concern now is imported products mostly from USA, especially microwave popcorn and some domestic products like bakery products, spread fats and ice cream.		- Due to language barriers the information provided ¹² could not be extracted. - Adapted from free text answer and provided document(s)
Latvia	A - Matis - Icelandic Food and Biotech R&D ¹² Y - 2008/9 Y - 2013		- In the study content of TFA of 7 food product groups was determined by analysis of 102 food products manufactured in a variety of Latvian enterprises. - Products included: margarine, wheat bread, ice cream, pastry products (biscuits and waffles, buns, cakes), cheese products, butter and sour cream products	- The content of TFA was not detected (< 0.1%) in 37% of analysed food products. - Butter and sour cream products are characterised by the highest risk for TFA content – average TFA content is 6.3%. In foreign origin margarine, existing in Latvian market, TFA concentration is very low. - Taking into account results of studies, several Latvian manufacturers have to make series of actions by changing raw materials used for food product production.		
Netherlands	A - The Dutch Food Composition Database ¹³ (NEVO) Y - 2013 U - g TFA/100 g edible food A - Temme <i>et al</i> ¹⁴ Y - 2001 and 2010 (NEVO 2001-before vs NEVO 2010-		- 924 food products including meat, yogurt, bread, oils, spread, sauces etc. 896 of which tested positive for TFA - Mean TFA composition of potato products, bread, pastry,	- 7 out of the 896 had TFA = 2-3.50 g TFA/100 g portion - Maximum (lard) = 3.50 g TFA/100 g portion		- Adapted from provided document(s) - Extracted from reference ¹⁴ - Information provided did not

¹² http://www.matis.is/media/raedslu/ISGEM_Fitusyrur_2008.pdf

¹³ <http://www.rivm.nl/nevo>

¹⁴ Acta Cardiol. 2011;66(6):721-8

	after) U - g TFA/100 g	cakes and biscuits, (meat) snacks and salads and fats and margarines	significant decrease in the TFA content. - Mean difference (g/100g) before and after the reformulation - Potato products for frying: -0.1 g TFA/100 g - Cake and baked goods: -0.2 g TFA/100 g - Cookies and biscuits: -0.8 g TFA/100 g - (Meat) snack and salads: -0.6 g TFA/100 g - Fats and margarines: -0.1 g TFA/100 g - The average content of TFA in the industrial bakery products dropped in the period 2003 – 2009 from 10 g/100 g to 1 g/100 g	specify whether g TFA/100g refers to g total fat or g product
Norway	A - Hulshof & Kosmeyer, Wageningen University ¹⁵ Y - 2008 U - g TFA/100 g	- Bakery margarines	- Adapted from free text answer - Information provided did not specify whether g TFA/100 g refers to g total fat or g product	
	A - Norwegian Food Composition Table ¹⁶ Y - 2014 U - g TFA/100 g of an edible portion	- 1469 different food items	- Maximum 2.5 g/100 g (lamb, trimmed fat, raw) - 4 products = >2 g/100 g (3 butter products, 1 meat product) - 378 products = 0.1-2.5 g/100 g	- Extracted from reference ¹⁶
Poland	Y - 2005 – 2013 U - Average TFA levels expressed as mean ± SD [% weight/weight (wt/wt)]	- 674 food products (sum across the sampling years) including infant and follow-up formulae, fast food products, frying fats, packed cakes, cereal products, chocolate confectionary, and gluten-free products	- TFA levels of infant and follow up formula remained the same or slightly declined across the sampling years - Infant formulae: 2005: 0.14%wt/wt 2006: 0.08%wt/wt 2009: <3% total fat 2010: 0.15%wt/wt 2012: 0.16%wt/wt 2013: 0.16%wt/wt - Follow-up formulae: 2005: 0.52%wt/wt 2006: 0.55%wt/wt 2009: <3% total fat 2010: 0.26%wt/wt 2012: 0.15%wt/wt 2013: 0.15%wt/wt	- Adapted from free text answer - Information provided did not specify whether %wt/wt refers to %TFA per total fat or per total weight of product.

¹⁵ Hulshof P, Kosmeyer T. Food analyses department Human Nutrition, part 15, fatty acid composition of bakery margarines in the Netherlands 2008. Wageningen University, 2009 (in Dutch)
¹⁶ <http://www.matvaretabellen.no/?language=en>

			<p>2006</p> <ul style="list-style-type: none"> - 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 <p>2008</p> <ul style="list-style-type: none"> - Frying fats (64): 1.1%wt/wt <p>Including:</p> <ul style="list-style-type: none"> - 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 <p>2010</p> <ul style="list-style-type: none"> - Packed cakes sold as ready to eat (32): 1.19%wt/wt <p>2012</p> <ul style="list-style-type: none"> - Chocolate confectionary (31): 2.13%wt/wt <p>2013</p> <ul style="list-style-type: none"> - Gluten-free food products (31): 2.34%wt/wt 	
<p>A - Bialek <i>et al.</i>, Warsaw University of Life Sciences Y - 2009¹⁷</p>		<ul style="list-style-type: none"> - Bitter and milk chocolates for all consumers and chocolate products for children 	<ul style="list-style-type: none"> - Products characterized by varying both the fat content and fatty acid profile. In products for children the increased content of fat, palmitic and α-linolenic acid were detected. 	<ul style="list-style-type: none"> - Extracted from reference¹⁷
<p>A - Zbikowska <i>et al.</i> 2012¹⁸</p>		<ul style="list-style-type: none"> - Eighteen margarines (6 stick, 12 tub) 	<ul style="list-style-type: none"> - Compared with the products formulated in Czech and Poland contained less TFA, but more than Danish and Austria margarines. - The content of TFA varied from 0-7.9% for tub and 0-10.9% for stick products. 58% of tub margarines contained to 0.7% TFA. 	<ul style="list-style-type: none"> - Extracted from reference¹⁸ - Information provided did not specify whether g TFA/100 g refers to g total fat or g product

¹⁷ Bialek M *et al.* Conference Proceedings: food science achievements and challenges, Ed. Warsaw University of Life Sciences, 2013, pp. 374-81.
¹⁸ Zbikowska A *et al.* La Rivista Italiana Delle Sostanze Grasse. 2012;1:62-6.

	<p>Y - 2009/10 U - g/100 g fat g/100 g product</p>	<ul style="list-style-type: none"> - 157 products were analysed for the study: - pastry products (short-crust – 31 samples) - biscuits (29 samples) - crackers (11 samples) - wafers with filling (25 samples) - French pastry cookies (9 samples) - bars and filled chocolates (39 samples) - crisps and fries (24 samples) - vegetable spreading products, the so-called mixes (9 samples) 	<ul style="list-style-type: none"> - High heterogeneity of TFA content in fat extracted from the products (in short-crust biscuits ranged from 0.3 to 24.8 g TFA/100 g fat) - The highest mean content of TFA where found in wafers (1.94 g TFA/100 g of the product). - The most important source of rTFA was butter 	<ul style="list-style-type: none"> - Adapted from free text answer
	<p>Y - 2013</p>	<ul style="list-style-type: none"> - To analyse availability of food products containing hydrogenated fat on the Warsaw market - Products in Warsaw market sold in five stores bigger than 1000 m², and in two smaller discount stores - Cookies, chocolate bars and halvahs, chocolate with filling, soup concentrates, margarine 	<ul style="list-style-type: none"> - Every fourth product was produced with fats which may be an important source of TFA. - The highest number of products containing hydrogenated fat was among chocolate bars with filling. 	<ul style="list-style-type: none"> - Adapted from free text answer
<p>Sweden</p>	<p>A - Mattisson <i>et al.</i> 2011¹⁹ Y - 2007 U - % TFA of total fat</p>	<ul style="list-style-type: none"> - 53 samples of biscuits, cookies, sweets and pop corn 	<ul style="list-style-type: none"> - TFA was detected in 58% of the samples. - 8% of the samples had TFA values of >1% TFA of total fat. - 11% of the samples had TFA values of >2% TFA of 	<ul style="list-style-type: none"> - Adapted from provided document(s)¹⁹

¹⁹ Mattisson I *et al.* Fat Quality 2007, Trends in fatty acid composition over the last decade. 2011, LIVSMEDELSVERKET-National Food Agency (NFA)

				total fat.		
	A - ^{20,21}					- Due to language barriers the information provided ^{20,21} could not be used.
United Kingdom	A - Department of Health (applies only to England) Nutrient Analysis of Fish and Fish Products ²² Y - March 2011 U - g TFA/100 g of food	- 480 food samples. 56 composite samples of Fish and Fish Products	- 8 composite egg samples	- The majority of composites (n. 39) had values of ≤0.01 g TFA/100 g food - 13/56 had values between 0.02-0.04 g TFA/100 g food - For 3/56 products values were not specified - Maximum: 0.12 g TFA/100 g found in fish pie, white fish, retail, baked	- Adapted from provided document(s) ²²	
	A - Department of Health (applies only to England); Nutrient Analysis of Eggs ²³ Y - November 2010 and February 2011 U - g TFA/100 g of food	- new/used oils (74), the most popularly purchased deep-fried food items (80), full meals (19) and doner kebabs (20)		- 2 products had values of 0.01 g TFA/100 g of food - 3 products had values ≤0.02 g TFA/100 g of food - 2 products had values of 0.05 g TFA/100 g of food (maximum) - values for one product were not specified - Overall mean of 0.037 g/100 g of food	- Adapted from provided document(s) ²³	
	A - Department of Health: Analysis of <i>trans</i> and saturated fatty acids (SFA) in fats/oils and takeaway products from areas of deprivation in Scotland ²⁴ Y - 2012 U - g TFA/100 g of oil g TFA/100 g of product			- Oil samples (mean TFA (g/100 g oil) - Beef dripping (n. 13, new): Range: 2.8-5.9 g TFA/100 g of oil. Mean: 4.8 g/100 g oil - Animal origin oil (n. 15, used) Range: 2.3-5.9 g TFA/100 g of oil. Mean: 4.6 g/100 g - Vegetable oil blended (n. 23, new) Range: 0.5-2.2 g TFA/100 g of oil. Mean: 1.4 g TFA/100 g of oil - Vegetable oil (n. 23, old) Range: 0.5-4.3 g TFA/100 g of oil Mean: 1.8 g TFA/100 g of oil - Takeaway food items (mean <i>trans</i> fatty acids (g/100 g portion))	- Adapted from provided document(s) ²⁴	

²⁰ http://www.slv.se/upload/dokument/rapporter/mat_naring/2009_18_riksprojekt_2008_transfetsrör_i_kakor_kex_och_chips.pdf

²¹ http://www.slv.se/upload/dokument/rapporter/mat_naring/2009/2009_livsmedelsverket_13_saser_och_aloevera.pdf

²² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167921/Nutrient_analysis_of_fish_and_fish_products_-_Summary_Report.pdf

²³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167972/Nutrient_analysis_of_eggs_Summary_Report.pdf

²⁴ http://www.foodbase.org.uk/admin/tools/reportdocuments/854-1-1588_Report_of_Analysis_of_Trans_fatty_acids_in_fats_FINAL.pdf

			<p>- Fish (n.9) Range: 0.5-0.9 g TFA/100 g food Mean: 0.63 g TFA/100 g food</p> <p>- Fritters (n.7) Range: 0.2-1.1 g TFA/100 g food Mean: 0.73 g TFA/100 g food</p> <p>- Chips (n.20) Range: 0.04-0.6 g TFA/100 g food Mean: 0.35 g TFA/100 g food</p> <p>- Sausage (n.12) Range: 0.2-0.5 g TFA/100 g food Mean: 0.33 g TFA/100 g food</p> <p>- Vegetable pakora (n. 15) Range: 0.1-0.4 g TFA/100 g food Mean: 0.28 g TFA/100 g food</p> <p>- Chicken pakora (n.11) Range: 0.1-0.3 g TFA/100 g food Mean: 0.18 g TFA/100 g food</p> <p>- Spring rolls (n.6) Range: 0.1-0.2 g TFA/100 g food Mean: 0.14 g TFA/100 g food</p> <p>- Doner kebab (n.20) Range: 0.2-1.8 g TFA/100 g food Mean: 0.89 g TFA/100 g food</p>	
<p>A - Department of Health 2011: Nutrient analysis survey of biscuits, buns, cakes and pastries²⁵ Y - 2008 U - g/100 g of product</p>	<p>- 402 individual pre-packed biscuits/buns/cakes/pastries (62 composite)</p>	<p>- All products had TFA values below 1 g TFA/100 g of product</p> <p>- Lowest values found in foods (examples): Filo pastry: <0.01 g/100 g of product Breadsticks: <0.01 g/100 g of product Cakes from 'healthy eating' ranges: <0.01 g/100 g of product</p> <p>- Highest values found (example of the 2 highest): Shortbread: 0.74 g/100 g of product Cheese straws/twists: 0.78 g/100 g of product</p>	<p>- Adapted from provided document(s)²⁵</p>	
<p>A - Department of Health 2011: Nutrient analysis of a range of processed foods</p>	<p>- 607 individual products manufactured food products such as</p>	<p>- All products, with the exception of 2, had TFA values below 1 g TFA/100 g of product.</p> <p>- Lowest values found in foods (examples) such as:</p>	<p>- Adapted from provided document(s)²⁶</p>	

²⁵ <https://www.gov.uk/government/publications/nutrient-analysis-survey-of-biscuits-buns-cakes-and-pastries>

	with particular reference to TFA ²⁶ Y - 2013 U - g/100 g of product	pizza, quiche, fat spreads, cooking fats and oils, chicken products crisps and savoury snacks, confectionery, chocolate spread, and ice cream (66 composite samples)	Potato chips, oven ready, baked: <0.01 g/100 g of product Crunchy/crispy muesli type cereal with nuts: <0.01 g/100 g of product - Highest values found in: Butter, spreadable, light (60% fat): 1.01 g/100 g of product Butter, spreadable (75-80% fat): 1.38 g/100 g of product	
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Abbreviations: iTFA, industrial *trans* fatty acid; NEVO, Dutch Food Composition Database; R&D, Research & Development; rTFA, ruminant *trans* fatty acid(s); SD, standard deviation; TFA, *trans* fatty acid(s)

²⁶ <https://www.gov.uk/government/publications/nutrient-analysis-of-processed-foods-including-trans-fats>

Table 2 - Summary of responses reporting on TFA consumption/intakes within Europe.

Country	Agency/Author (A), year of analysis (Y), population (P)	TFA intake	Contribution of specific food groups to overall intake	Comments
Austria	A - Austrian Nutrition report ²⁷ Y - 2008 P - Trainees	- Average TFA intake 0.97± 1.3 g/day - High TFA intake (P95) between 2-11.5 g/day		- Adapted from provided document(s) ²⁷
Denmark	A - Danish National Surveys of Diet and Physical Activity Y - 2000-2002, 2003/4 and 2005-2008 as well as analyses of the iTFA content in margarines and different foods on the Danish market 1995, 1999, 2002/3, 2004/5, 2006/7, and 2010 P - 4-9 y, 10-17 y, 18-75 y.	- In the period 2000 to 2008 the average intake of iTFA decreased in all age groups of the Danish population. - The intake was highest among adolescents 10-17 years of age. The intake in the average calculations ranges from 0.19-0.30 g/day (2000-02), 0.11-0.14 g/day (2003/4) and 0.01-0.03 g/day in (2005-8). - In both average and worst case calculations the intake in 2005-2008 has decreased to a tenth of the level in 2000-2002 in most age groups.		- Adapted from provided document(s)
Finland	A - The National FINDIET 2012 Survey ²⁸ Y - 2012 P - 25-74 y	- TFA intakes varied from 0.8-1.1 g/day and 0.39-0.46 E% by gender, age and region	- 60% from milk and meat - 40% from fat products and industrial products	- Extracted from reference ²⁸
Germany	A - Bundesinstitut für Risikobewertung, Stellungnahme 028/2013 ²⁹	- In 2013 the average intake (14-80 y) was estimated as 1.6 g/day or 0.66 E%. For most consumers TFA intake is <1% of their dietary energy intake.		Extracted from reference ²⁹

²⁷ http://bmg.gv.at/cms/home/attachments/5/6/0/CH1048/CMS1288948560136/der_gesamte_ernaehrungsbericht.pdf

²⁸ Anni Helldán, Susanna Raulio, Mikko Kosola, Heli Tapanainen, Marja-Leena Ovasikainen, Suvi Virtanen, Finravinto 2012 -tutkimus – The National FINDIET 2012 Survey. ISBN 978-952-245-950-3 (tryckt); 978-952-245-951-0 (pdf) THL_Raportti_16/2013_187.s. Helsinki 2013.

²⁹ <http://www.bfr.bund.de/cm/343/hoche-der-derzeitigen-trans-fettsaureaufnahme-in-deutschland-ist-gesundheitlich-unbedenklich.pdf>

Hungary	<p>A - Hungarian National Diet and Nutritional Status Survey (OTAP 2009) Y - 2008/9 P - 18-34 y; 35-64 y; 65+ y</p>	<p>- 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 in question³⁰. According to the result of a National Nutritional Survey in Kindergartens (OTEF 2009) in 10% of nurseries the daily menu contained more than 2 E% TFA.</p>	<p>The contribution of foods to overall TFA intake is:</p> <ul style="list-style-type: none"> - Margarine: 36% - Chocolate-like commodities: 29% - Cakes, wafers and biscuits: 17% - Pastries/confectionaries: 12% - Other: 6% 	- Adapted from free text answer
Iceland	<p>A - Diet of Icelanders³¹, National Dietary Survey carried out by the Directorate of Health in Iceland and Icelandic Food and Veterinary Authority Y - 2010/11 P - 6 y, 15 y, 18-80 y</p>	<p>- Children 6 years old: 0.8 E% - 15 year olds: 1.4 E% (3.8 g) per day average - Adults 18-80 years of age: 0.8 E% (1.8 g) per day average.</p>	<p>Contribution to TFA intake:</p> <ul style="list-style-type: none"> - Fat spreads: 16% - Bakery products: 8% - Snacks: 4% 	- Adapted from free text answer

³⁰ Respondents noted that in the worst case scenario, estimated iTFA intake could reach 50.8 g, which is seven times higher than the average.
³¹ http://www.landlaeknir.is/servlet/file/store93/item14901/Hva%C3%B0a%C3%B0or%C3%B0a%20%C3%8Dslendingar_april%202012.pdf

Netherlands	A - National Food Consumption Survey ³² - 2007-2010 Y - 2011 P - 7-69 y	<ul style="list-style-type: none"> - 95-99% of the Dutch population meets recommendations of the Dutch Health Council not to exceed 1 E% from TFA. Habitual mean intake in men: <ul style="list-style-type: none"> - early childhood to 18 y: increases from 1.1-1.4 g/day - 19-69 y: 1.5 g/day Habitual mean intake in women: <ul style="list-style-type: none"> - early childhood to 50y: 1.2 g/day - 51-69y: 1.3 g/day. 	<ul style="list-style-type: none"> - The intake of <i>trans</i> fatty acids favourably decreased due to a decline in levels of industrial <i>trans</i> fatty acids from partially hydrogenated vegetable oils in foods. As a result, the relative contribution of ruminant sources of <i>trans</i> fatty acids increased over time. Main sources of TFA: <ul style="list-style-type: none"> - Dairy products: 34% - Fat: 18% - Cakes: 16% - Meat and meat products: 15% Comparison with 2003 (%E from fat): <ul style="list-style-type: none"> - Cereals: 25% - Cakes: 19% - Meat and dairy products combined: 30% 	<ul style="list-style-type: none"> - Adapted from provided document(s)³²
	A - Temme <i>et al.</i> ³³ Y - 2011	<ul style="list-style-type: none"> - The median usual intake in the reference scenario (before reformulation) was 2.3 g/day or 1 E% (50th percentile). - The median usual intake in the reformulation scenario was 1.9 g/day or 0.8 E% (50th percentile). 		<ul style="list-style-type: none"> - Extracted from reference³³
Norway	A - Food Balance Sheets ³⁴ Y - 2006-2012 A - Household Consumption Survey ³⁵ Y - 2007-2009 Y - 2009/10	<ul style="list-style-type: none"> - Provisional figures for 2012: <ul style="list-style-type: none"> - 0.7 E% - 1.5 g/person/d - Relatively low level of average intake of TFA in 	<ul style="list-style-type: none"> - Milk and dairy products: 66% - Meat and meat products: 24% - Other foods: 10% Main sources of TFA (rTFA/iTFA): <ul style="list-style-type: none"> - The most important source of rTFA: butter 	<ul style="list-style-type: none"> - Adapted from provided document(s)³⁴ - Adapted from free text answer - Adapted from free text answer
Poland				

³² http://www.rivm.nl/dsresource?objectid=rivmp:55436&type=org&disposition=inline&ns_nc=1

³³ Acta Cardiol. 2011;66(6):721-8.

³⁴ <http://www.helseidrektoratet.no/publikasjoner/utviklingen-i-norsk-kosthold-matforsyningsstatistikk-2013>

³⁵ <http://www.helseidrektoratet.no/publikasjoner/utviklingen-i-norsk-kosthold-2010-kortversjon>

		Poland (approximately 1 E%)	<p>consumption, which contributed 0.359 g rTFA/person/day.</p> <ul style="list-style-type: none"> - Products of animal origin (rTFA) are estimated to provide 0.496 g TFA/person/d. Significantly higher consumption of TFA was found in the case of: - Products containing fats of industrial origin: 1.5 g iTFA/person/day - Margarines and other vegetable fats: 0.988 g iTFA/person/day - Potato products (N/A) - Wafers provided the highest average content of TFA: 1.94 g TFA/100 g of product. 	
Sweden	A - National Food Agency, Market Basket Survey 2010 ³⁶ Y - 2012	<ul style="list-style-type: none"> - The average content of <i>trans</i> fatty acids in the market baskets was 1.7 g/person/day compared to 1.9 g/person/day in a previous study from 2005. - TFA exposure corresponds to about 0.5 E%. 	<ul style="list-style-type: none"> - rTFA contributed approximately 75% of total TFA, calculated from food groups. - Main contributors were dairy products (50%), followed by meat (20%), and edible fats (18%). Dairy products also contributed the main part of the individual <i>trans</i> isomers. - A major decrease in <i>trans</i> content was seen in pastries, in 2005 pastries contributed 13% of the total <i>trans</i> fatty acid exposure, compared to 4% in 2010. 	<ul style="list-style-type: none"> - Adapted from provided document(s)³⁶
United Kingdom	A - National Diet and Nutrition Survey ³⁷ : Results from Years 1, 2, 3 and 4 (combined) of the Rolling Programme 2008/9 – 2011/2 Y - 2014	<ul style="list-style-type: none"> - Mean <i>trans</i> fatty acid intakes were less than 2 g/day for all age groups, representing 0.6-0.7% of food energy. Intakes at the upper 2.5 percentile provided 1.1-1.5% of food energy. 	<p>The following food groups each contribute 0.5% or more to average daily TFA intake across all age/sex groups (as % average daily TFA intake for adults):</p> <ul style="list-style-type: none"> - Milk and milk products: 27% - Meat and meat products: 26% - Cereals and cereal products: 17% - Fat spreads: 8% - Vegetables and potatoes: 7% - Miscellaneous, including soup, savoury sauces, pickles, gravies and condiments: 4% - Eggs and egg dishes; Fish and fish dishes; 	<ul style="list-style-type: none"> - Adapted from provided document(s)³⁷

³⁶ Market Basket 2010 - chemical analysis, exposure estimation and health-related assessment of nutrients and toxic compounds in Swedish food baskets. Rapport 7 - 2012.; National Food Agency, Uppsala, Sweden.

³⁷ Bates B, Lennox A, Prentice A, Bates C, Page P, Nicholson S and Swan G (eds), National Diet and Nutrition Survey: Results from Years 1, 2, 3 and 4 (combined) of the Rolling Programme (2008/2009 – 2011/2012)

			Sugar, preserves and confectionery: 3% - Savoury snacks; nuts and seeds; fruit; non-alcoholic beverages; alcoholic beverages: 0%	
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Abbreviations: iTFA, industrial *trans* fatty acid; NIFNS, National Institute for Food and Nutrition Science; rTFA, ruminant *trans* fatty acid(s); TFA, *trans* fatty acid(s)

2.2 Consumers and TFA

Domain 2 of the questionnaire essentially asked whether countries had information on:

- Any past or current national consumer education campaigns to raise awareness on the health effects of TFA consumption;
- Consumer knowledge of TFA, iTFA, rTFA, PHVO (partially hydrogenated vegetable oil) and FHVO (fully hydrogenated vegetable oil), and any potential impact of this knowledge on food choice.

Out of the 25 respondent countries, 6 reported to have (had) national consumer education campaigns on TFA (Figure 1).

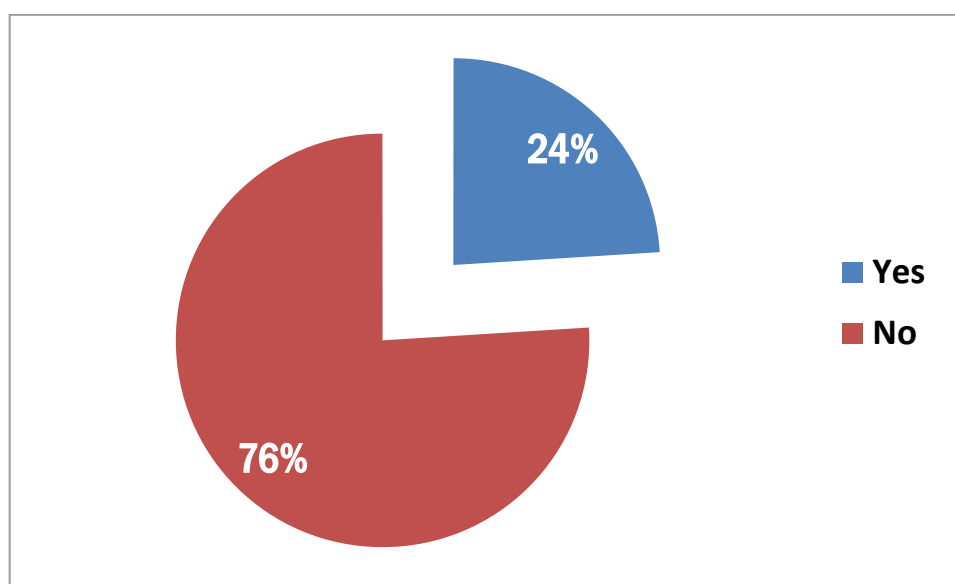


Figure 1 - Have there been any consumer education campaigns to raise awareness on the health effects of TFA consumption in your country from January 2005 onwards? (n=25)

The few campaigns (specific or part of a greater campaign) reported either provided targeted information about TFA and/or its (heart) health effects. Occasionally the campaigns came in the form of generic dietary guidelines (Table 3). In most cases these campaigns were issued by governmental bodies, and, where applicable, multiple channels (TV, online, print, etc.) were used for dissemination.

Table 3 – Summary of responses reporting on national consumer education/awareness campaigns on TFA issues. Individual responses may have been edited for clarity and brevity.

Country	Response
Hungary ^{38,39,40}	- Targeted information and educational campaigns by the Ministry of Human Resources taking place in hospitals and sanitary institutions, social media, TV spots, web
Ireland ⁴¹	- General healthy eating guidelines where information to consumers includes advice on the health effects of iTFA

³⁸ http://www.mnsza.hu/elhizas/transz_zsirok.php

³⁹ <http://www.egeszsegprogram.eu/english.pdf>

⁴⁰ <http://www.egeszseg.hu/>

⁴¹ http://www.fsai.ie/science_and_health/healthy_eating.html

Iceland ⁴²	<ul style="list-style-type: none"> - Education/awareness as part of the country's dietary recommendations published by the Directorate of Health in 2006 - Dedicated media coverage (in print and through TV) prior to the implementation of the legal limit
Latvia ^{43,44}	<ul style="list-style-type: none"> - Education/awareness as part of broader educational campaigns - 'Heart Health' 2013 campaign run by the Ministry of Health with several health promotion activities and public health campaigns to draw attention to the main cardiovascular disease (CVD) risk factors including TFA (plans for the campaign to be continued throughout 2014) - Dietary guidelines, developed by the Ministry of Health, include recommendation to not use food products which contain PHVO
Sweden ^{45,46}	<ul style="list-style-type: none"> - Education/awareness as part of broader information campaigns - Several public campaigns by the consumer organisation Sveriges Konsumenter I Samverkan - The National Food Agency's five dietary guidelines based on the 2005 Swedish Nutrition Recommendations
United Kingdom	<ul style="list-style-type: none"> - Dissemination through talks in communities and through the use of local media - Skills development programmes and programmes available for lower socio-economic status groups

Abbreviations: CVD, cardiovascular disease(s); FHVO, fully hydrogenated vegetable oil(s); PHVO, partially hydrogenated vegetable oil(s); TFA, *trans* fatty acids

Very limited to no information was obtained on consumer knowledge of TFA and the related terms iTFA, rTFA, PHVO and FHVO, and on whether such knowledge affected consumers' food choice.

The data provided are nevertheless summarised in Table 4. Generalisations are difficult to derive from the scant evidence but it seems fair to say that the majority of the EU citizens do not know about TFA and related terms. Where people have heard of these terms they are mostly aware of important food sources and the negative health effects associated with TFA consumption, and a negative health image of TFA prevails. Limited data from Sweden and Norway indicate that about half of consumers wish to avoid (excess) TFA intake, but at the same time TFA – and the reduction thereof – appears to be of concern to only a small fraction of people. Consumer interest in TFA labelling of foods varies substantially between countries. Back in 2003, findings from a Dutch survey including 500 participants showed that 93% of the respondents had never heard of the term TFA.

Table 4 – Summary of responses reporting on consumer knowledge and understanding of TFA and related terms, and impact on food choice. Individual responses may have been edited for clarity and brevity.

Country	Response
Estonia ⁴⁷	- Data on consumer knowledge of TFA from a 2006 survey showed that 55% of 535 Estonians aged 18-74 y were interested in seeing the TFA content of a food product on the

⁴² <http://www.norden.org/en/nordic-council-of-ministers/council-of-ministers/council-of-ministers-for-fisheries-and-aquaculture-agriculture-food-and-forestry-mr-fjls/keyhole-nutrition-label>

⁴³ <http://www.spkc.gov.lv/mili-savu-sirdi/>

⁴⁴ <http://www.spkc.gov.lv/veseliga-uztura-ieteikumi/>

⁴⁵ <http://www.konsumentensamverkan.se/11verk/kampanj/livsmedel/hardatfett/hardfettindex.htm>

⁴⁶ <http://www.slv.se/sv/grupp3/Nyheter-och-press/Nyheter1/Klargorande-om-Livsmedelsverkets-kostrad-om-fettkvalitet/>

⁴⁷ www.agri.ee/sites/default/files/content/uuringud/2006/uuring-2006-toidumargistus.pdf

	package. More interested subgroups were women (62%) and 50-64 y (60%), and interest rose with increasing education level.
Greece ⁴⁸	- The results of a representative nationwide survey with 2,003 Greek adults (>25 y) from 2013 regarding their knowledge, attitude and behaviour towards TFA showed that 29% had heard of the term “ <i>trans</i> fat”; males, >65year-olds, and people with only primary education were more likely to have never heard the term TFA. Of those who had heard the term “ <i>trans</i> fat”, 71% believed that <i>trans</i> fats “harm health” and over 70% indicated bakery products made with puff pastry and patisserie desserts as the major dietary sources of TFA. Very few respondents (0.7%) thought that TFA do not have any effect on health, while 5.7% wrongly believe that they contribute to good health. Of those who had heard of one or more of the various fat types (SFA, PUFA (polyunsaturated fatty acid), MUFA (monounsaturated fatty acid), <i>trans</i>), only 17% reported that “ <i>trans</i> fat” should be reduced. Half of the respondents believed that TFA were not naturally present in foods and nearly 90% believed that TFA could be found in processed foods.
Hungary ^{49,50,51}	- 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.
Lithuania ⁵²	- According to data from a PhD thesis from 2009, 60.4% of Lithuanian adults wished information on other nutrition labelling particulars besides energy, fat, carbohydrate, protein, minerals and vitamins already provided on the food labels. Respondents who wished information on other nutrition labelling particulars were given the list of such particulars and were asked to specify which of those particulars should be declared on food labels. Only 5.3% of respondents expressed a wish for TFA to be declared on food labels.
Netherlands ⁵³	- 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.
Norway	- In a bi-annual survey started in 2007 and last run in 2013, Norwegian consumers were asked which of a number of items they would prefer not to eat or drink too much of. The percentage of respondents mentioning “ <i>trans</i> fat” was 49% in 2007, 56% in 2009, 62% in 2011 and 66% in 2013. Consistently more women than men gave this answer across the years.
Poland ^{54,55}	- Of 600 Polish people (>18 y) interviewed as part of a 5-country survey in 2005, 65% did not know what TFA were and <50% mentioned that food labelling should include information on TFA (survey conducted on behalf of BEUC). - From a multi-country student survey carried out in 2012, “most of the students had heard the term ‘ <i>trans</i> 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 TFA (around 30%). Polish students were not aware of natural sources of TFA (less than 10%). Polish students from studies not related to food and nutrition sciences had less knowledge in the topic of TFA than respondents in the USA and Canada.” At 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 as the main source of TFAs 3 groups of

⁴⁸ http://www.programmed.eu/uploads/tx_ausyibliomed/KnowInTarget_5_Case_study_nutrition_policy_EN.pdf

⁴⁹ http://www.mnsza.hu/elhizas/transz_zsirok.php

⁵⁰ <http://www.egeszsegprogram.eu/english.pdf>

⁵¹ <http://www.egeszseg.hu/>

⁵² http://www.lvb.lt/primo_library/libweb/action/search.do

⁵³ <http://library.wur.nl/WebQuery/groenekennis/1720537>

⁵⁴ <http://www.noeglehullet.dk/NR/rdonlyres/1BF5B95B-3B4D-4138-B806-61DAFD0E4F20/0/20050069201E.pdf>

⁵⁵ The other 4 countries included in the BEUC survey were Denmark, Germany, Hungary and Spain. In each country, a nationally representative sample of 600 participants was interviewed, resulting in a total sample of 3000 respondents. When asked what TFA were, 19% (n=3,000) gave the correct answer. About 16% provided the wrong answer and 65% said they did not know. For more information on the survey, see http://www.vzbv.de/mediapics/beuc_foodstuffs_labelling_09_2005.pdf

	products: shortening, hard margarines and pastry products. The other correct answers related to natural sources of <i>trans</i> fatty acids (milk fat and dairy products) were selected much more often (30% more) by the students from Wageningen University than from SGGW.
Sweden ⁵⁶	<p>- Out of 302 participants from a YouGove study, 6% were concerned about <i>trans</i> fats in foods. In the same sample, 66% believed hydrogenated fat to be unhealthy and 2% claimed it was healthy. 75% believed TFA to be unhealthy and 2% claimed it was healthy. 19 % said that butter was unhealthy, whereas 46 % said that butter was healthy to use in cooking, baking and frying. 57 % said that margarine was unhealthy, 11 % said that margarine was healthy.</p> <p>- Out of 528 participants from a YouGove study, 46% said they avoided TFA, compared to 40% who said they avoided GMO. 34% also said they avoided hydrogenated fats.</p>
United Kingdom	- Although there had been considerable media interest in <i>trans</i> fats, 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. For those consumers that were aware of <i>trans</i> fats and hydrogenated vegetable oils, these food components had a clear negative association.

Abbreviations: BEUC, Bureau Européen des Unions de Consommateurs; FHVO, fully hydrogenated vegetable oil(s); iTFA, industrial *trans* fatty acid(s); MUFA, monounsaturated fatty acid(s); PHVO, partially hydrogenated vegetable oil(s); PUFA, polyunsaturated fatty acid(s); SFA, saturated fatty acids; TFA, *trans* fatty acid(s)

2.3 Strategies to reduce TFA content in foods

Out of the 25 respondent countries, 19 reported to have a national policy or other type of measure in place to reduce TFA levels in foodstuffs (Figure 2). Out of these, 8 instated some form of mandatory regulation, and the remainder employed voluntary measures such as dietary recommendations, nutrition or food labelling or industry self-regulation. Purely public measures were encountered in 12 respondent countries, public-private efforts in 5 countries, and solely private measures in the remaining 2 countries.

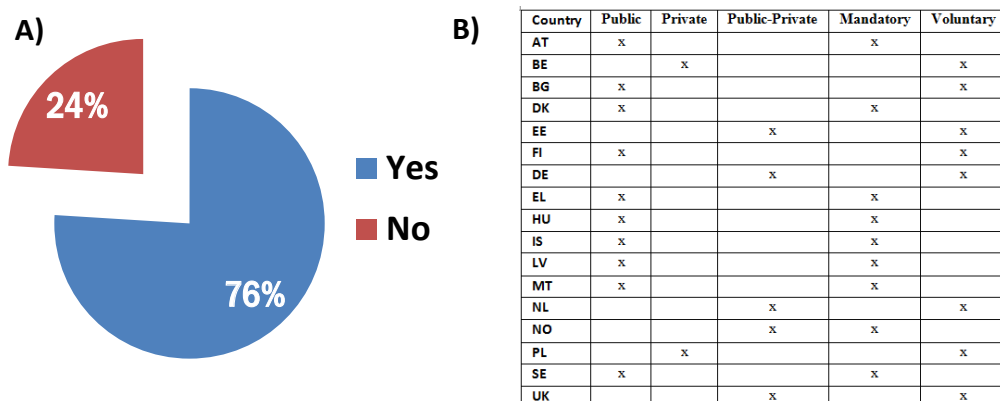


Figure 2 – A) Is there a national policy or measure (public, private or public-private, e.g. legal TFA limits, mandatory TFA labelling or voluntary food reformulation) to reduce TFA levels in foodstuffs currently in place in your country? B) Summary of types of measures described by the respondents. (n=25)

Table 5 provides a summary of the responses on the national legislative measures applied in certain European countries. In 9 countries the measures apply only in the domestic market and in 8 the measures apply both in the domestic market and exports (Q 3.1.1). The main

⁵⁶ Communication with Swedish Retailers Association on YouGove study results (Swedish response); dated January 2014

motivation for introducing the respective measure were concerns about the negative public health effects of TFA consumption (Table 6).

Table 5 – Summary of responses reporting on legislation limiting TFA content of foodstuffs. Individual responses may have been edited for clarity and brevity.

Country	Decree	Specifications	Underlying motivation for introduction of measure
Austria	Ministerial Decree No. 267 of 20 August 2009 on <i>trans</i> fat content in food (267. Verordnung des Bundesministers für Gesundheit über den Gehalt an <i>trans</i> -Fettsäuren in Lebensmitteln)	‘It is prohibited to produce or market foodstuffs with a <i>trans</i> fatty acid content exceeding 2 g per 100 g of total fat content’ The limit value as referred to the paragraph may 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 <i>trans</i> 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 <i>trans</i> fatty acid content does not exceed 10 g per 100 g of total fat.	Public health measure, precautionary approach (protecting the most vulnerable such as socially disadvantaged groups)
Denmark	Danish Executive Order No. 160 of 11 March 2003 on the Content of <i>Trans</i> Fatty Acids in Oils and Fats (BEK nr. 160 Transfedtsyre-bekendtgørelsen)	‘The content of <i>trans</i> fatty acids in oils, fats and food products must not exceed 2 grams per 100 grams of oil or fat’	The scientific background for the Danish regulation in 2004 was a risk assessment requested by the Danish Veterinary and Food Administration and carried out by the National Nutritional Council on the basis of the international scientific studies carried out in this area. Furthermore, a number of international organizations, including the World Health Organization (WHO), and The European Food Safety Authority (EFSA) Panel on Dietetic Products, Nutrition, and Allergies recommend, that the intake of TFA should be limited as much as possible. Accordingly, the Nordic Nutrition Recommendations 2012 stated that the intake of TFA should be kept as low as possible.
Iceland	Regulation on the Maximum Levels for <i>Trans</i> -Fatty Acids in Foods	‘It is prohibited to place foods on the market which contain over 2 grams of <i>trans</i> fatty acids per 100 grams of total fat content’	We were convinced at that time that a regulation on restricting TFA in foods would be the most effective tool to decrease TFA in food. Now after almost 3 years since the regulation came into force, we can see the effects of this regulation regarding consumption of TFA in Iceland (TFA has declined from 1.4% (in the survey of 2002) to 0.8% survey 2010-2011).

Hungary	Decree 71 /2013 of the Ministry of Human Resources	<p>'It is forbidden to place on the market food products in which the amount of <i>trans</i> 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</p> <p>(a) the total fat content of the food product is lower than 20%; in this case, the amount of <i>trans</i> fats may not exceed 4 g for every 100 g of the total fat content of said food product;</p> <p>(b) the total fat content of the food product is lower than 3%; in this case, the amount of <i>trans</i> fats may not exceed 10 g for every 100 g of the total fat content of said food product.'</p>	<p>The estimated iTFA intake of the Hungarian population is 6.8 g taking into account the average consumption data of the three day dietary questionnaire and the highest iTFA values of the food category in question. In case of the worth scenario, when for the calculation the highest consumption values were used, the estimated iTFA intake could reach 50.8 g, which is seven times higher than the average value and dramatically increase the risk of cardiovascular disease. Not only adults, but children are also affected by TFA risk. According to the result of a National Nutritional Survey in Kindergartens (OTEF 2009), in 10% of nurseries the daily menu contained more than 2 E% TFA. Infants are affected as well, because TFA consumed by mother appears in breast milk, negatively influencing the healthy development of breast fed infant.</p> <p>In 2011, 130,000 persons have died in Hungary. 50% of the total mortality can be attributed to coronary heart disease (CHD). According to the scientific data, the CHD mortality can be decreased by 6-19% with the decrease of TFA intake to the possible lowest level. In our country this could result saving of 2000-6000 lives annually. There is an international practise regarding the restrictions of iTFA in foods. Since to date there is no harmonised EU approach in Europe regarding TFA regulation, an effective national measure should be taken similarly to other member states, such as Denmark, Austria, etc. The nutrition and health legislation should contribute to limit the iTFA intake thereby facilitating the reduction of incidence of nutrition related non communicable diseases.</p>
Norway	Royal Ministry of Trade and Industry	<p>'The sale to the final consumer of products that are covered by these Regulations and that contain more than 2 grams of <i>trans</i> fatty acids per 100 grams of fat is prohibited'</p>	<p>Health – <i>trans</i> fatty acids have a negative effect on blood lipids and increase the risk of coronary heart disease.</p>

Abbreviations: CHD, coronary heart disease; EFSA, European Food Safety Authority; iTFA, industrial *trans* fatty acid(s); TFA, *trans* fatty acid(s); WHO, World Health Organization

Table 6 – Summary of responses reporting on TFA reduction measures other than generic legal limits. Individual responses may have been edited for clarity and brevity.

Country	National policy/measure in place to reduce TFA in foodstuffs	Underlying motivation for introduction of measure
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Belgium	<p>Voluntary measure – self-regulation Currently no public national policy or measures in place specifically targeting TFA. □ Several companies have developed their own private policies/commitments, or follow those established by the European food associations. We do not have an overview of those private initiatives.</p>	None stated
Bulgaria	<p>Voluntary measure - dietary recommendation 2005 National Ordinance for Reference Intake of nutrients set the Recommended Intake of TFA <1 E%.</p>	None stated
Estonia	<p>Voluntary measure – food labelling Voluntary agreement between state authorities and food producers on the labelling of specific cheese curds and ice creams (traditional milk products in Estonian market) with the names Kohukesed and Plombiir respectively. According to the agreement it is not allowed to use food names Kohukesed and Plombiir in products that in addition to milk fat contain hydrogenated vegetable fats or oils. This voluntary agreement changed the market situation, as the products described before doesn't contain anymore partly hydrogenated vegetable fats/oils.</p>	Questions on the composition of traditional products raised by the media and consumers.
Finland	<p>Legislation and voluntary measure – dietary recommendation The latest Finnish Nutrition Recommendations⁵⁷ (2014) set an intake limit for SFA of less than 10 E% and call for TFA intake to be as low as possible. For spreadable consumer margarine producing plants, the specifications require the fat ingredient to contain less than 1 % of TFA.</p>	Changes at the vegetable fat market in the EU over the last five years regarding the TFA content of industrial margarine and frying fat products coupled with developments in the refining industry (manufacturing of hard vegetable fat ingredients by removing partial hydrogenation process and changing the processes to inter-esterification, fat mixtures and fractionation of fats high in SFA acid content (palm, coconut) thus minimising the industrial formation of TFA).
Germany	<p>Voluntary measure – self-regulation In a joint initiative, the Federal Ministry of Nutrition and Agriculture (BMEL) and the German food industry have agreed a voluntary framework guideline for the minimisation of TFA in foods, issued June 2012. This framework guideline includes product-specific guidelines for 1) specialty margarines; 2) frying fats and oils; 3) cooking fats and oils; 4) snack foods; 5) pastry; 6) processed potato products; and 7) deep-frozen pizza.</p>	

⁵⁷ http://www.ravitsemusneuvoitelukunta.fi/files/attachments/ff/vm/ravitsemussuosituksset_2014_ff_web.2.pdf

Greece	<p>Legislation and voluntary measure – self-regulation</p> <p>There is national legislation regarding the foods allowed to be sold in school canteens (provisions related to maximum TFA content in various food products) in addition to a memorandum (signed in 2014) between the Hellenic Food Authority and the Hellenic Chef Club regarding elimination of TFA from meals served by members of the "Hellenic Chef Club".</p>	Evidence from the scientific literature on the health impacts of TFA as well as WHO recommendations to eliminate industrial TFA.
Latvia	<p>Legislation</p> <p>In the Public Health strategy for 2011-2017 and the Action Plan to Prevent Heart and Cardiovascular Diseases for 2013-2015 TFA reduction activities have been included. According to the policy planning documents it is planned to develop a normative regulation to set legal TFA content limits in food products in Latvia. Ministry of Health has developed a draft normative act were maximum TFA content limits and plan to send the normative regulation for notification. 2012.</p> <p>Nutritional Norms⁵⁸ for a) Educatees of Educational Institutions Implementing Pre-school Educational Programmes; b) Educatees of General Basic Education, General Secondary Education and Vocational Education Institutions; and c) Patients of Medical Treatment Institutions and Clients of Long-term Social Care and Social Rehabilitation Institutions.</p> <p>TFA-related specifications are as follows:</p> <ul style="list-style-type: none"> - Margarine containing PHVO shall not be used in making a dish. - Confectionery containing partially hydrogenated vegetable fats shall not be included in the nutrition. 	The purpose of this Regulation is to ensure the use of healthy and balanced nutrition in educational institutions implementing pre-school education and programmes, general basic education, general secondary education and vocational education institutions, as well as long-term social care and social rehabilitation institutions, and medical treatment institutions. The main motivation to exclude confectionery containing partially hydrogenated vegetable fats from preschool, school, social care and social rehabilitation and medical treatment institution meals was to limit the consumption of foods that are not necessary for children's, patients' and social care institution clients' daily consumption (for example food products that contain TFA).
Malta	<p>Voluntary measure – dietary recommendation</p> <p>Two documents including 'The Healthy Weight for Life Strategy 2012' and the 'Food and Nutrition Action Plan 2014'^{59,60} recommend measures to reduce TFA in food.</p>	To reduce the impact of <i>trans</i> fats on obesity and other health effects.

⁵⁸ http://www.vve.gov.lv/export/sites/default/docs/LRTA/MK_Noteikumi/Cab_Reg_No_172_-_Nutritional_Norms_for_Educatees_of_Educational_Institutions.doc

⁵⁹ <https://ehealth.gov.mt/download.aspx?id=6910>

⁶⁰ https://ehealth.gov.mt/healthportal/health_promotion/campaigns/2014_campaigns/national_food_and_nutrition_policy.aspx

Netherlands	<p>Voluntary measure – self-regulation</p> <p>Between 2003 and 2010 by means of self-regulation the Dutch Task Force for the Improvement of the Fatty Acid Composition (Task Force Verantwoorde Vetzoursamenstelling) has achieved substantial reductions⁶¹ in the TFA and SFA in products from the most important sectors working with (processed) vegetable oils and fats. Currently, a measure which applies to a number of dairy, fat, snack, cereals and meat and meat products is the 'healthy choice logo' managed by the private sector. To obtain the logo products must meet maximum criteria for the content of various nutrients, among which TFA.</p>	<p>The negative health effects of TFA were considered by the margarine, fats and oils industry. As early as 1994 the Dutch margarine manufacturers decided actions to reduce the TFA levels in their products, taking effect in 1995 in combination with new legislation on nutrition labelling. Shortly after, other sectors like the confectionary and snacks industry started to consider TFA reduction policies. In 2003, the Task Force for the Improvement of Fatty Acid Composition was established (enlarged to the total fatty acid composition in 2005) and acted as a self-regulatory initiative stimulating the food industry to reformulate foods towards a lower TFA and SFA content available in the domestic market; the actions on margarine were applicable to products available to at least the EU market.</p>
Poland	<p>Voluntary measure – self-regulation</p> <p>Voluntary food reformulation actions by producers are in place.</p>	<p>Knowledge of the adverse impact of TFA on human health; prevalence of TFA in different types of Polish foods (according to results from monitoring of TFA levels in foodstuffs); producer awareness of TFA and encouragements to reduce or eliminate the TFA content in food products.</p>
Sweden	<p>Voluntary measure – nutrition labelling</p> <p>Recent development includes considerable revision of the criteria for using the Keyhole symbol in 2004 resulted in the ordinance LIVSFS 2005:9⁶² which for the first time (since the keyhole was established in 1989) took fat quality into account. The criteria included thresholds for SFA and TFA content in edible fats (not more than 33 % of the total fat content). In 2009, the iTFA content in oil and/or other fats used in any product may not exceed 2 g per 100 g according to the Annex of LIVSFS 2009:6⁶³ published 17 June 2009. The condition for SFA as maximum 33% of total fat content in edible fats was also kept.</p>	<p>Since a long time back advice on what type of fat we should eat has been a vital part of the National Food Agency's (NFA) dietary recommendations. The Swedish Nutrition Recommendations (2005) showed that the intake of SFA and TFA should be limited to a total of 10 percent of the total energy intake. The remaining fat should come from MUFA and PUFA. The NFA launched five dietary guidelines⁶⁴ in 2005, based on the Swedish nutrition recommendations. Three of these were related to fat quality and included advice on fish, on fats with better fat quality and keyhole-labelled food leading to reductions in SFA and TFA intakes by keeping PUFA intakes up. Following that advice would reduce ones intake of saturated fat and <i>trans</i> fat but keep the intake of polyunsaturated fat up.</p>

⁶¹ http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf

⁶²

http://www.slv.se/upload/dokument/remisser/remisser_2008/Remiss_ang%20f%c3%bb6rslag%20till%20%c3%a4ndrig%20av%20livsmedelsverkets%20f%c3%b6reskrifter%20LIVSFS%202005_9%20dm%205159_07.pdf

⁶³

http://www.slv.se/upload/nfa/documents/food_regulations/Nyckel%c3%a51_dec_2009_6%20eng.pdf

⁶⁴

<http://www.slv.se/sv/grupp3/Nyheter-och-press/Nyheter/Klargorande-om-Livsmedelsverkets-kostrad-om-fettkvalitet/>

<p>United Kingdom</p>	<p>Voluntary measure – self-regulation and dietary recommendation</p> <ol style="list-style-type: none"> 1. “Update on TFA and health – Position statement by the Scientific Advisory Committee on Nutrition”⁶⁵ 2. England: Public Health Responsibility Deal Food Network: Pledges F3(a) on not using ingredients that contain TFAs and F3(b) on removing artificial TFA from products within 12 months⁶⁶, as well as guidance for small businesses.⁶⁷ 3. “Revised Dietary Goals for Scotland” include a goal for the average intake of TFA to remain below 1 E%.⁶⁸ 	<p>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 TFA intakes and CHD, and for adverse effects on circulating lipoprotein concentrations, to recommend that the average population intake of TFA should not exceed 2% food energy. This recommendation was endorsed by the Scientific Advisory Committee on Nutrition in 2007.</p> <p>While population average intakes (0.5 E% from TFA in 2010/12) are well within public health recommendations, the possibility that artificial TFA 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 <i>trans</i> fats are reduced to a minimum. The first pledge acknowledged the fact that some organisations had already removed TFA from their products. The second committed companies to remove artificial TFA from their products within the next 12 months.</p> <p>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.</p>
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Abbreviations: BMEL, Federal Ministry of Nutrition and Agriculture; COMA, Committee on Medical Aspects for Cardiovascular Disease; MUFA, mono-unsaturated fatty acid(s); NFA, national food agency; PHVO, partially hydrogenated vegetable oil(s); PUFA, poly-unsaturated fatty acid(s); SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s); WHO, World Health Organization

⁶⁵ http://www.sacn.gov.uk/pdfs/sacn_trans_fatty_acids_report.pdf

⁶⁶ <https://responsibilitydeal.dh.gov.uk/food-pledges>

⁶⁷ <https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/01/Artificial-trans-fats-advice-Final.pdf>

⁶⁸ <http://www.scotland.gov.uk/Resource/0042/00421385.pdf>

Out of 19 country respondents, only three stated to have carried out an impact assessment prior to implementing their respective measure. A common feature was the involvement of relevant stakeholders, resulting in broad support of the measure eventually taken.

Out of the 21 countries who answered the question on monitoring of TFA in foodstuffs and population TFA intakes, 11 confirmed to be carrying out such monitoring. The data provided largely indicate declining levels of TFA in foodstuffs over time (Table 7).

Table 7 – Summary of responses reporting on country monitoring of TFA presence in foodstuff and/or population TFA intakes. Individual responses may have been edited for clarity and brevity.

Country	Response
Austria	Results of market control actions (2011 and 2013) proved that no product contained more than 2% TFA (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 TFA were found.
Belgium	There is a regular monitoring of TFA content in food via the Belgian Food Composition Database. ⁷ TFA population intake is currently being assessed in the context of the Food consumption survey 2014.
Denmark	<p>The content of TFA has been monitored in foods on the Danish market for the last 30 years. In margarines and shortenings, the level of iTFA has gradually declined. In 1999, there was practically no iTFA left in margarines. However, due to difficulties with development of alternatives with similar properties, iTFA was present in shortenings until 2004. Very important, the iTFA content was generally reduced in margarines and shortenings without increasing the amount of SFA, but with an increased level of MUFA.</p> <p>The Danish Veterinary and Food Administration in collaboration with the National Food Institute, Technical University of Denmark carried out a number of surveys of the content of TFA in foods on the Danish market before and after the Danish regulation was introduced 1 January 2004. Products were selectively collected on the basis of existing knowledge about which food categories would typically contain iTFA. Corrections were made from the contribution of rTFA from fat in milk. It was presumed that the mean content of butyric acid in fat from milk is 3.6% and that the mean content of rTFA in fat from milk is 6%. Food samples were collected in 2002/3, 2004/5, 2006/7, 2010 and 2012/13.</p> <p>The desired effect of the Danish regulation is clear from the results. Most of the products complied with the regulation already in 2004-5. In following years (2006-7, 2010 and 2012-13) only occasional transgressions have been found. Thus, the surveys demonstrate a continual decrease in the number of products, which do not comply with the Danish maximum limit for TFA. Exceeding levels of iTFA were typically found in cakes, biscuits, cookies, waffles, microwave popcorn, French fries and deep fried potatoes as well as in some types of candy, in particular caramel. It was the experience that the industry either reduced the level of iTFA in products found to contain too high levels or replaced the products with alternative products.</p>
Finland	Monitoring of: TFA in food products – 2007, 2009, 2011, and 2013 TFA intake – FINDIET 2002, 2007, and 2012
Hungary	iTFA content of foods marketed in Hungary monitored annually since 2009. - 2014 results by food category ⁶⁹ and in alphabetical order ⁷⁰
Netherlands	In the NEVO database individual fatty acid data are recorded as detailed as possible, but without distinction between ruminant and other forms of TFA. Data are a combination of analyses and delivered data from industry. A very rough comparison of

⁶⁹ <http://www.oeti.hu/download/tfacsop.pdf>

⁷⁰ <http://www.oeti.hu/download/tfa.pdf>

	TFA levels in breads and cakes between NEVO 2001 and NEVO 2013 - done by calculating average TFA content of each food group in both years, just to get a quick idea if levels have changed or not - suggests a substantial reduction of ca. 75%.
Norway	National Food Composition Database includes values for TFA, which are partly based on Norwegian analyses performed after the year 2000, and partly calculated on the basis of results from Transfair, a European collaborative project carried out during 1995-97. However, information from a series of Norwegian food companies shows that the content of TFA from industrially processed fat is probably a lot lower today than a few years ago for a number of products. Partially hardened fat is often replaced with fat types that are more SFA (palm oil, coconut oil). ⁷¹ Calculated TFA intake (2 g/d) based on Food Balance Sheets 2006-2012 (see table 2 at ⁷²).
Poland	Data collected in 2005, 2006, 2008, 2009, 2010, 2011, 2012 and 2013. ^{73,74,75,76,77,78,79}
United Kingdom	<p>1. Nutrient survey of flours and grains.⁸⁰</p> <ul style="list-style-type: none"> - With very few exceptions, TFA levels barely exceeded the limit of detection <p>2. Nutrient Analysis of Biscuits, Buns, Cakes and Pastries.²⁵</p> <ul style="list-style-type: none"> - "In all samples, where previous data were available for comparison, levels of <i>trans</i> fat had reduced considerably compared with previous analyses of similar foods carried out over the last 15-30 years." <p>3. Nutrient analysis of a range of processed foods with particular reference to <i>trans</i> fats.²⁶</p> <ul style="list-style-type: none"> - "Results show that levels of <i>trans</i> fat have reduced considerably compared with previous analyses of similar foods carried out over the last 20-30 years where available." <p>4. Nutrient Analysis of Fish and Fish Products²²</p> <ul style="list-style-type: none"> - With very few exceptions, TFA levels barely exceeded the limit of detection <p>5. Nutrient Analysis of Eggs.^{Error! Bookmark not defined.}</p> <ul style="list-style-type: none"> - With very few exceptions, TFA levels barely exceeded the limit of detection <p>6. Nutrient Analysis of Fruit and Vegetables.⁸¹</p> <ul style="list-style-type: none"> - Samples rarely analysed for TFA, and where it was done, levels were close to limit of detection <p>7. Analysis of <i>trans</i> and SFA acids in fats/oils and takeaway products from areas of deprivation in Scotland.²⁴</p> <ul style="list-style-type: none"> - "levels of TFA in foodstuffs investigated in this study are within the expected ranges and not found to be particularly elevated in the fats/oils and foods sampled" <p>For details of TFA population intakes: National Diet and Nutrition Survey: Results from Years 1, 2, 3 and 4 (combined) of the Rolling Programme (2008/2009 – 2011/2012).³⁷</p> <ul style="list-style-type: none"> - "Overall mean total fat and TFA intakes were in line with recommendations" - "Mean intakes of [...] TFA [...] were lower [...] than in previous surveys." - "mean intake of TFA provided 0.6-0.7% of food energy for all age/sex groups, and thus met the Dietary Reference Value (no more than 2 E%). 'Milk and milk products', 'meat and meat products' and 'cereals and cereal products' were the main contributors to intake, partly from naturally occurring <i>trans</i> fats in dairy products and the meat of ruminant animals."

Abbreviations: iTFA, industrial *trans* fatty acid(s); MUFA, mono-unsaturated fatty acid(s); NEVO, Dutch Food Composition Database; PHVO, partially hydrogenated vegetable oil(s); PUFA, poly-unsaturated fatty acid(s); rTFA, ruminant *trans* fatty acid(s); SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s)

⁷¹ http://www.matportalen.no/verktoy/the_norwegian_food_composition_table/about_the_table_values

⁷² <http://www.helsedirektoratet.no/publikasjoner/utviklingen-i-norsk-kosthold-matforsyningsstatistikk-2013/Publikasjoner/Utviklingen%20i%20norsk%20kosthold%202013.pdf>

⁷³ Bromat Chem Toksykol. 2005;38(2):113-8.

⁷⁴ Żyw Człow Metabol. 2006;33(2):107-22.

⁷⁵ Żyw Człow Metabol. 2007;34(3/4):915-20.

⁷⁶ Żyw Człow Metabol. 2008;35(3):223-33.

⁷⁷ Żyw Człow Metabol. 2010;37(4):247-54.

⁷⁸ 2nd MoniQA International Conference "Emerging and persisting food hazards: Analytical challenges and socio-economic impact". Krakow, Book of abstracts – 08-10.06.2010, 104

⁷⁹ Żyw Człow Metab. 2011;38:4-13.

⁸⁰ http://www.foodbase.org.uk/results.php?f_report_id=438

⁸¹ <https://www.gov.uk/government/publications/nutrient-analysis-of-fruit-and-vegetables>

Seven countries (out of 25 responding) said they had information on nutrient profile changes related to product reformulation to lower TFA content (Table 8). From the data provided, it appears that slight to substantial increases in SFA are most commonly observed, but findings depend very much on the foods and food groups considered. Monitoring results from Denmark after introducing the legal TFA limit suggest that although in a large number of products TFA was largely replaced with SFA, the majority of these products are biscuits, cakes, sweets and certain fast foods. In French fries or frozen potatoes that make for a higher overall fat intake, TFA was mainly replaced with MUFA. Data from national food consumption surveys in Austria suggest that there were no differences in population SFA intake before and after the introduction of the legal limit in 2009. Data from the Netherlands (voluntary self-regulation approach) as well as from industry indicates that whereas initially SFA played an important part in replacing TFA, further innovation efforts led to a decrease in SFA content along with TFA.

Table 8 – Summary of responses regarding data on nutrient profile changes resulting from food reformulation efforts to reduce TFA content. Individual responses may have been edited for clarity and brevity.

Country	Response
Denmark	In more than two thirds of the products (<i>e.g.</i> sweets, cakes and cookies as well as fast food such as pie and tortilla), iTFA were mainly substituted with SFA as expected. In some cases, the SFA source was coconut fat, thus increasing the content of the lower-molecular-weight fatty acids, <i>e.g.</i> lauric acid, whereas in other cases, palm oil was added instead of partially hydrogenated oils, hence increasing the content of palmitic acid. On the contrary, most French Fries and frozen potatoes products were enriched in MUFA, resulting in significantly healthier products. The levels of iTFA in fried products from the big burger chains are particular important in relation to intake of iTFA due to their widespread use. It is important to notice that a lot of new fat alternatives have been developed during recent years, <i>e.g.</i> mixtures of completely hydrogenated fats and non-hydrogenated fats (instead of partial hydrogenation of the fats), enzymatic inter-esterification (more specific than chemical inter-esterification), and emulsifier-liquid oil blends.
Finland	The same eight food items (minced beef, French fries, microwave popcorn, ice cream of vegetable fat, chocolate or peanut butter, soft ice cream, biscuits, margarine for baking) have been analysed for fatty acids in 1995 and in 2009. The TFA content decreased but the SFA content increased. The TFA content of breast milk has also decreased from 1990's to 2010's, but so has the SFA content in breast milk. Current contents at www.fineli.fi
Greece	Analytical results for 31 margarine brands, which showed that while TFA levels had been reduced by about 95%, levels of either saturated or <i>cis</i> -unsaturated fatty acids had increased in each brand. ⁸²
Latvia	Food product reformulation is voluntary and some food producers have reduced TFA in food products (only some food product groups, like waffles, ice-cream, chocolate). No actual data provided.
Netherlands	Overview of the mean food composition changes in total fat, SFA, TFA, MUFA and PUFA comparing data from 2001 and 2010 for five food categories (potato products; bread, pastry, cakes and biscuits; (Meat) snacks and salads; fats and margarines). ⁸³ Average TFA levels were reduced significantly in all food groups except fats and margarines. The average total fat and SFA concentrations did not change significantly in any food group or subgroup. The MUFA and PUFA content did not change significantly in any of the food groups.

⁸² Int J Food Sci Nutr 2011;62(7):685-91.

⁸³ Acta Cardiol 2011;66(6):721-8.

United Kingdom	The Food Standards Agency Board paper on TFA (December 2007) provided data on compositional changes in industrially-processed oils supplied for use in food groups that are key contributors to artificially-sourced TFA. ⁸⁴
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Abbreviations: iTFA, industrial *trans* fatty acid(s); MUFA, mono-unsaturated fatty acid(s); PUFA, poly-unsaturated fatty acid(s); rTFA, ruminant *trans* fatty acid(s); SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s)

Five out of 25 countries said they had data on which TFA alternatives were used for reformulating foods (Table 9). The choice of alternatives largely depended on the food group and production process, but it mainly comprised of non-hydrogenated vegetable fats and oils (*e.g.* palm, palm kernel, coconut, rape, sunflower). Where applicable, blending, complete hydrogenation, and new processes such as inter-esterification were employed to yield the desired product characteristics. In cases where PHVO were still in use, these were said to comply with pre-specified TFA limits.

Table 9 – Summary of responses regarding data on TFA alternatives used for reformulating foods. Individual responses may have been edited for clarity and brevity.

Country	Response
Denmark	Food samples were collected in 2002/3, 2004/5, and 2006/7. Of these, 60 paired samples (defined as samples included in two of the three investigations and with higher levels of iTFA in the first determination than in the second) were identified. Comparisons of the fatty acid profiles showed that, in 68% of the products (<i>e.g.</i> sweets, cakes and cookies as well as fast food such as pie and tortilla), iTFA were mainly substituted with SFA (SFA). In some cases, the SFA 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 MUFA were used. The surveys showed that the iTFA content has been reduced or removed from most products with originally high iTFA content, like French fries, microwave oven popcorn and various bakery products, so that iTFA are now insignificant for the intake of TFA in Denmark. ⁸⁵
Netherlands	In case of frying oils successful implementations of breeding methods resulted in high-oleic seed oils that deliver superior stability in use. In case of margarine hardstocks, applications of tropical oils (mainly palm and coconut, as well as their fractions) in combination with fully hydrogenated oils helped to populate the list of potential hardstocks. Their functionality was further improved and tailored for particular applications using chemical and enzymatic rearrangement in combination with blending and allowed to perfectly match current industrial needs at acceptable cost in use. Other hardstocks, such as stearic fractions of seed and tropical oils, could be potentially in scope, but for several reasons (mainly cost, availability and natural variation in triglyceride composition) are not yet widely used; however, this situation might change in time. ⁸⁶
Poland	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 TFA content is low (below 0.2%). Till 2013 all Nestlé products have been reformulated according to the Company Policy (CO) on TFA levels (<i>e.g.</i> bars, ice-cream, culinary products, wafers). Non-hydrogenated fats and partly hydrogenated fats have been used which had specific fatty acid profile with TFA levels in line with the CO requirements. Additional information on chips: There are limited data on <i>trans</i> fats in potato chips, however so far 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 (products manufactured in Poland).

Abbreviations: CO, Company Policy; iTFA, industrial *trans* fatty acid(s); MUFA, mono-unsaturated fatty acid(s); PHVO, partially hydrogenated vegetable oil(s); SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s)

⁸⁴ <http://collections.europarchive.org/tna/20100927130941/http://food.gov.uk/multimedia/pdfs/board/fsa071207.pdf>

⁸⁵ *Eur J Lipid Sci Technol* 2009;111:574-83.

⁸⁶ Wesdorp L (2014) *trans* Fats Replacement Solutions in Europe. In: Kodali DR. (editor), *Trans Fats Replacement Solutions*. AOCS Press

When asked whether the countries were currently considering any measures to reduce population exposure to TFA (Figure 2), 5 out of 24 respondents said this was the case. Of these, 3 actually already have measures in place; the remaining two are either promoting food reformulation (including TFA levels) as part of their national non-communicable disease (NCD) prevention plan or have produced a draft normative act based on legislation adopted elsewhere. Of note, 13 of the 24 respondents said their country was waiting for the EC report due on 13 December 2014 before deciding on any national action. In this context, one MS stated that it "favours an EU norm to regulate a maximum level of TFA. There should be an even market/level playing field in the EU where companies do not encounter different legislation in all separate Member States." Another MS noted that "industry would prefer that this area was harmonized at EU level."

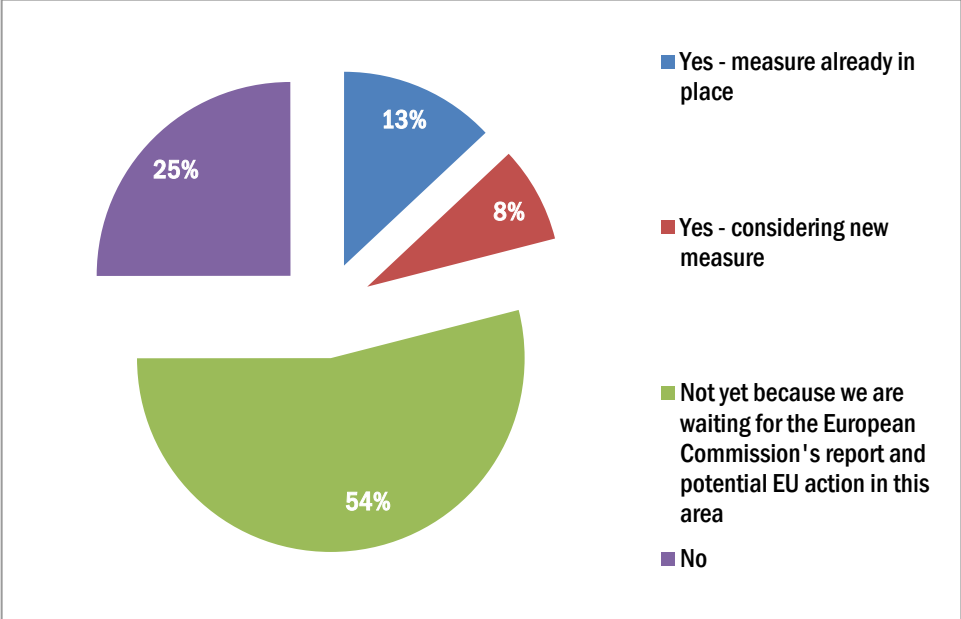


Figure 2 - Is your country currently considering any measures to reduce population exposure to TFA? (n=24)

2.4 Impact and effectiveness of strategies aiming to reduce population exposure to TFA

When asked whether they had any data on the impact of the measure(s) adopted by their country in reducing TFA levels in foodstuffs and/or population intake, 4 of 20 respondents confirmed this. Both the legal limit imposed in Austria, Denmark and Iceland and the voluntary self-regulation in the Netherlands were considered effective in achieving the desired reduction in food TFA levels and hence population TFA exposure (Table 10). From the very limited data reported back on associated changes in overall nutrient intakes, it appears that no significant change in SFA, MUFA or PUFA intake occurred.

Table 10 – Summary of responses regarding impact of TFA measures adopted on food TFA levels and/or population TFA and overall nutrient intakes. Individual responses may have been edited for clarity and brevity.

Country	Impact of adopted measure(s) on TFA levels in foodstuffs and/or population intake	Impact on overall population nutrient intakes
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Austria	None of the products analysed during market controls in 2011 and 2013 exceeded the legal limit of 2% set in 2009.	No significant difference in SFA intake compared to Data of the Austrian Nutrition Report 2008. ^{87,88}
Denmark	The desired effect of the Danish regulation is clear from the results. Most of the products complied with the regulation already in 2004/5. In following years (2006/7, 2010 and 2012/13) only occasional transgressions have been found. Thus, the surveys demonstrate a continually decrease in the number of products, which do not comply with the Danish maximum limit for TFA.	We have such data, however not presently ready to be forwarded. Data may be forwarded at a later stage if desirable.
Iceland	The national survey "Diet of Icelanders, National Dietary Survey 2010-2011" was carried out by the Directorate of Health in Iceland and Icelandic Food and Veterinary Authority. The results of the Survey indicate that the goal of limiting the consumption of TFA to <1 E% (as per WHO recommendation) has been accomplished. TFA has almost disappeared from most local foods in Iceland. TFA as a ratio of the total fat consumption has declined from 1.4% (in the survey of 2002) to 0.8% according to survey in 2010/11. We are convinced that the regulation has had an effect on this development.	According to our national survey of 2010-2011 the intake of SFA is on average 14.5 E%. According to this survey there is a small decrease since the last survey in 2002. Intake of SFA in 2002 was 14.8 E%.
Netherlands	Due to the work of the Task Force on Fatty Acid Composition, the content of TFA from plant-based sources has dropped to very low levels in all affiliated branches of the Task Force and this has led to a total average intake of TFA that lies under the maximum recommended amount. The National Institute for Public Health and the Environment concludes that the health gain with respect to TFA is achieved. Compared to the current situation, we could only go backward and lose 'health' (life years). That is what we want to prevent.	The average total fat and SFA concentrations did not significantly change in any food group or subgroup. The MUFA and PUFA content of the Task Force' foods did not change significantly in any of the food groups. ⁸⁹

Abbreviations: MUFA, mono-unsaturated fatty acid(s); SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s); WHO, World Health Organization

Of the 20 respondents to our call for data on consumer food costs related to the TFA measures, none reported to have any such information. Insights into costs for FBOs were available only from Sweden (from an impact assessment in 2008), where it was pointed out that all changes to food labels or packaging of products were associated with costs. However, the voluntary Keyhole labelling scheme allowed companies to adapt the timing so that all changes could be effected in conjunction when new packaging material is ordered. In cases where products no longer meet the Keyhole requirements, adequate transition times help companies minimise cost.

Despite not holding original data, Denmark noted that *"the Danish industry did not complain that they suffered financial losses, as a result of the introduction of legislation restricting the use of industrially produced TFA in foods on the Danish market. On the contrary, producers developed new methods of production, improving the production process and in some cases without substituting TFA with SFA, following the introduction of the Danish legislation. Thus,*

⁸⁷ http://bmg.gv.at/cms/home/attachments/5/6/0/CH1048/CMS1288948560136/der_gesamte_ernaehrungsbericht.pdf

⁸⁸ http://www.bmg.gv.at/home/Schwerpunkte/Ernaehrung/Rezepte_Broschueren_Berichte/Der_Oesterreichische_Ernaehrungsbericht_2012

⁸⁹ Acta Cardiol 2011;66(6):721-8.

it appears that the economic consequences for the industry in Denmark following the introduction of the TFA Order have been limited." On the other hand, Hungary reported the view of the Federation of Hungarian Food Industries that "industrial fats of a TFA 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 (

Table 11).

Table 11 – Summary of responses as to food business operator (FBO) sector (e.g. small and medium-sized enterprise (SME), producers of specific foods) facing particular challenges due to TFA measure(s) adopted. Individual responses may have been edited for clarity and brevity.

Country	Response
Bulgaria	Producer of margarines (Unilever) changed the technology and use the new one – inter-esterification
Denmark	The adjustments observed in Denmark after introduction of the Danish regulation were made relative 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, apparently needed more time to adjust. The demand for longer time to eliminate TFA 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.
Germany	Implementation of the specific product guidelines is a particular challenge for small craft bakeries. Recipes partly need changing to maintain texture and taste despite substitution of baking fats. Comprehensive application of the product guidelines is also difficult to achieve due to the large number of such enterprises.
Hungary	Product reformulation requires professional knowledge, recipe and technological changes, investments (sometimes it means purchasing a new machine), and renewal of contracts with suppliers of primary ingredients (contracts are usually signed for a period of 12 months). The number of SME 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% TFA content are by 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. (View of Federation of Hungarian Food Industries.)
Iceland	To our knowledge there are some food categories (two here in Iceland) that face challenges in decreasing TFA. On one hand cod liver oil in capsules and in the other hand couverture chocolate or dip for ice cream.
Ireland	The extent of challenges faced by a particular FBO sector will largely depend on the nature of any EU Regulation brought into force to limit or reduce TFA in food e.g. rTFA) vs iTFA. The dairy and meat sector may be affected because their products contain rTFA that are not easily removed and there are indications in the scientific literature that rTFA are not as bad as iTFA. However, the evidence is not yet definitive.
Netherlands	The main difference is between ruminant and industry TFA, i.e. changing what is present in the base products or what appears during processing.
United Kingdom	The Food Standards Agency in Scotland commissioned a separate study to investigate levels of <i>trans</i> and SFA in fats/oils and takeaway products from deprived areas of Scotland. It had previously been reported that those living in deprived areas might have higher intakes of <i>trans</i> fats due to consumption of takeaway foods and use of oils high in <i>trans</i> fats; this study of around 200 samples was carried out to investigate these claims. The study found that the

	levels of <i>trans</i> fats in the sampled takeaway fats/oils and foods were not found to be at a level of public health concern. ⁹⁰
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Abbreviations: FBO, food business operator(s); iTFA, industrial *trans* fatty acid(s); rTFA, ruminant *trans* fatty acid(s); SFA, saturated fatty acid(s); SME, small and medium-sized enterprise(s); TFA, *trans* fatty acid(s)

As to the final question whether the TFA measure(s) adopted had differential effects on TFA intakes in certain population (sub-)groups, only the Netherlands responded, saying TFA consumption was low in all age/gender groups.

⁹⁰ http://www.foodbase.org.uk/admintools/reportdocuments/854-1-1588_Report_of_Analysis_of_Trans_fatty_acids_in_fats_FINAL.pdf

3. RESULTS OF THE STAKEHOLDER CONSULTATION ON TFA IN FOODSTUFFS IN EUROPE

The survey (see Annex II) was answered by 13 stakeholders (although not all respondents completed all sections). Seven of these stakeholders did not consent to the detailed publication of their reply, hence the information provided by these stakeholders is considered generically, without giving individual details. Hyperlinks and references provided by the respondents are listed in ANNEX IV. Table 12 describes those respondents who consented to the publication of their replies.

Table 12 – Stakeholder survey respondent description

Respondent	Description
British Retail Consortium (BRC)	Private sector stakeholder. The BRC is the UK's retail organisation, representing over 5000 companies.
European Consumer Association (BEUC)	Non-profit non-governmental organisation. BEUC acts as the umbrella group in Brussels for its members and its main task is to represent them at European stage and defend the interests of all of Europe's consumers. BEUC represents 41 independent national consumer organizations from 31 European countries from the EU, EEA and applicant countries.
Associazione Italiana Lattiero-Casearia (Assolatte)	Private sector stakeholder representing the Italian dairy industry. Assolatte brings together more than 250 companies, from small, medium and large national organisations, private organisations and cooperatives, to large international companies. The association represents all products that are derived from milk, such as drinking milk in all its types, yogurt and other fermented milk, butter and all cheeses. The milk comes from cows, ewes, goats and buffaloes.
European Dairy Association (EDA)	Private sector stakeholder, representing the European dairy industry in Brussels. It represents associations and companies in nearly all European member states; that is around 12.000 processing sites and over 99% of the milk collected and processed in the EU (plus in some candidate countries).
Milchindustrie-Verband e.V. (MIV)	Private sector stakeholder. MIV is the umbrella organisation of the German milk processing companies. Approximately 100 high-performing privately owned, cooperative and multinational companies. Around 95 per cent of German milk deliveries or 26 million tons of milk and 100% of the export volume are covered by the association's members.
Nestlé	Private sector FBO. Food and beverage organisation encompassing the entire Nestlé Group.

Abbreviations: EEA, European Economic Area; FBO, food business operator(s)

3.1 TFA in foods

Domain 1 of the questionnaire asked about existing data on the TFA content of foods. Out of the 12 stakeholders that responded, seven provided information relating to the TFA content of the food products they supply and seven stakeholders also had data on future projections regarding the TFA content of their food products. Table 13 provides a summary of data on TFA content in food and foodstuffs supplied by industry. The main food groups reported on are composite foods such as: margarine products, processed foods and take away products (biscuits, cakes, pizzas, confectionery, waffles, pastries, and chips), snack products, breakfast cereals, fats and oils, meat and meat products, milk and dairy products. Food samples were often pre-selected for their likelihood to contain TFA and indeed the studies cited report

several food products containing TFA (content higher than 2% TFA per total fat). Decreases over time in TFA content of several product categories are observed.

Table 13 – Summary of responses reporting on the TFA content of the food products supplied by stakeholders. Individual responses may have been edited for clarity and brevity.

Stakeholder	Agency/Author (A), year of product sampling (Y) and unit of measure (U):	TFA content of foods	Comments
BRC	A - BRC Y – 2007 U – not stated	Commodities analysed for average TFA content: - Dairy products and analogues: 0.7 - Meat and meat products: 0.3 - Bakery ware (bread, cakes, pastries, etc.): 0.1 - Fats and oils (includes spreads): 0.1 - Ready meals: 0.1 - Breakfast cereals (includes bars): <0.1 - Fish and fish products: <0.1 - Confectionery (Chocolate & sugar-based): <0.1 - Eggs and egg products: <0.1 - Seasonings (including stock cubes): <0.1 - Savoury snacks: <0.1 - Dehydrated soups: <0.1 Highest vs lowest total TFA content for individual food products: - Highest: Butter: 2.9 - Lowest: Thick and creamy soup: 0.02	- Adapted from provided document(s)
BEUC	A - The European Consumer Organisation ⁹¹ Y - 2014 U - g TFA/100 g g iTFA/100 g iTFA % total fat	Margarine products: - 11/22 products ⁹² : >2 g TFA/100 g. 2/22 products: >20 g/100 g - 22% of tested margarines had iTFA levels between 2% and 6% ⁹³ total fat. Processed foods (biscuits, waffles, pizzas, cakes, sweets): - 60% wafers (6/10) and 30% chocolate waffles (5/17) tested ⁹⁴ contained >2 g iTFA/100 g fat. - Ham and cheese pizza: up to 4.6% iTFA ⁹⁵ - 10 biscuit types from Latvia: >5 g TFA/100 g Take-away products (chips, fish and chips):	- Adapted from provided document(s) ⁹¹ - Where not stated the information provided did not specify whether g TFA/100 g refers to g total fat or g product

⁹¹ Information (covered in footnotes 2 to 7) was taken from: http://www.beuc.org/publications/beuc-x-2014-010_the_consumer_case_for_eu_legal_restrictions_on_the_use_of_artificial_trans_0.pdf

⁹² Jedlé nejedlé tuky, D Test, November 2013 www.dtest.cz

⁹³ Trans fatty acid isomers and the trans-9/trans-11 index in fat containing foods, Department of Nutritional Physiology, Institute of Nutrition, Friedrich Schiller University Jena, Germany, 2011

⁹⁴ Test hořických trubiček a plněných oplatek, D Test, January 2014 www.dtest.cz

⁹⁵ Pizzas de jamon y queso refrigeradas, Organizacion de Consumidores y Usuarios (OCU), February 2012

		<ul style="list-style-type: none"> - Chips: up to 8% iTFA/total fat⁹⁶ - Chips: two samples collected in Germany had high TFA content (15.2% and 12.3% respectively)⁹⁷ - Fish and Chips: two UK samples containing >2% TFA 	
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Abbreviations: iTFA, industrial *trans* fatty acid(s); TFA, *trans* fatty acid(s)

Table 14 provides a summary of the data relevant to estimates of future TFA content in foodstuffs including PHVO-free products and setting TFA maximum limits.

Table 14 – Summary of responses reporting on future projections of TFA content in foodstuffs. Individual responses may have been edited for clarity and brevity.

Stakeholder	Response
BRC	Following its commitment (2007/08) to the EU Platform on Diet, Physical Activity and Health (2005), the BRC pledged that all own-brand food ranges of its member retail companies ⁹⁸ would be HVO-free by the end of 2007. It followed that BRC members removed all hydrogenated vegetable oils from foodstuffs by the beginning of 2008 and, currently, they have no intention to reintroduce them.
Nestlé	See table 16

Abbreviations: HVO, hydrogenated vegetable oil(s); PHVO, partially hydrogenated vegetable oil(s); TFA, *trans* fatty acid(s)

3.2 Consumers and TFA

Domain 2 of the questionnaire (12 respondents) asked for stakeholder data on consumer understanding of iTFA/rTFA, PHVO and FHVO, their perceived healthfulness and whether TFA labelling and TFA knowledge by consumers may affect their food choices.

The respondents had little robust data as to consumers' knowledge on and perceived healthfulness of TFA, iTFA, rTFA, PHVO, FHVO, and if and how these affected consumer food choice. It appears that consumers do not regard TFA as a top health concern, but they acknowledge TFA as harmful for health, particularly over other types of fats (*e.g.* SFA); yet an understanding of what constitutes harmful doses is lacking (Table 15). On these grounds, BEUC voiced the concern that relying on consumer TFA knowledge to achieve lower intakes was not a feasible approach. Furthermore, the dairy industry was concerned that a mandatory declaration of TFA could unnecessarily worry consumers and lead to avoidance of dairy products with their natural content of rTFA.

Table 15 – Summary of responses reporting on consumer knowledge and understanding of TFA and related terms, and impact on food choice. Individual responses may have been edited for clarity and brevity.

Stakeholder	Response
BRC	General feedback from customers and focus groups carried out in 2005/6 show that customers are aware that TFA are harmful for health, but do not have an understanding of which quantities are harmful. Nonetheless, consumers judge TFA to be more of a problem than other fats (<i>e.g.</i> SFA). The removal of TFA in 2007/8 has resulted in reduced

⁹⁶ Analyse: Friteries, Test-Achats, Janvier 2011

⁹⁷ *Trans* fatty acid isomers and the *trans-9/trans-11* index in fat containing foods, Department of Nutritional Physiology, Institute of Nutrition, Friedrich Schiller University Jena, Germany, 2011

⁹⁸ Member companies operating in the UK: ASDA, Coop, Boots, Iceland, Marks & Spencer, Sainsbury's, Tesco, Waitrose.

	customer queries, possibly indicating that TFA are no longer a top health concern among consumers
BEUC	Perceived healthfulness of TFA is dependent on consumer knowledge of TFA. Yet consumer knowledge can vary depending on overall nutritional knowledge, which is often linked to socio-economic status. This implies that not all consumers may have an understanding of what TFAs are, particularly among lower socio-economic status groups. Yet, it is among this particular population group that high amounts of TFA are still consumed. Similarly, what emerges from the responses is that there are also few data on whether consumer knowledge on TFA might affect their food choices. Differences in understanding across consumer groups imply that certain consumer groups may not possess the required knowledge to influence such a decision, and their food choices, as such, are not affected. As a result, (BEUC state that) it has been suggested that relying on consumer TFA knowledge is not a feasible approach to help achieve lower consumption levels. Labelling necessitates a certain level of nutrition knowledge in order to fully understand and make sense of the information it provides. However, the majority of consumers struggle to fully understand what TFA, PHVO and FHVO are. This is especially true among specific population groups, such as low-income population, children, teenagers and young adults. It should be noted that the information provided here is not derived from primary research carried out by BEUC. ^{99,100}
MIV	Expect consumers to have little knowledge on TFA; however, due to the negative connotations associated with TFA, they expect that consumers might avoid consuming dairy products, should labelling contain information on TFA presence.

Abbreviations: FHVO, fully hydrogenated vegetable oils; PHVO, partially hydrogenated vegetable oils; SFA, saturated fatty acid(s); TFA, *trans* fatty acid(s)

3.3 Strategies to reduce TFA content in foods

Domain 3 of the questionnaire asked about stakeholders' strategies to reduce TFA content in foods. This includes previous and/or current attempts and challenges faced in reducing or stopping TFA use in products, its cost estimates as well as cost estimates following introduction of mandatory TFA labelling. Domain 3 also addressed whether reformulation has led to any innovation such as development of new patents.

Nearly all stakeholders have or are currently working on strategies to reduce TFA in foodstuffs. Table 16 describes these attempts more closely.

Table 16 – Summary of responses reporting on previous and/or current strategies to reduce TFA content in foods. Individual responses may have been edited for clarity and brevity.

Stakeholder	Response
BRC	BRC members had removed hydrogenated vegetable oils from their food products by the beginning of 2008, with no intention to reintroduce them in future.
Nestlé	Since the establishment of Nestlé's policy on TFA (1999), TFA levels in Nestlé products have been significantly reduced and the vast majority are now PHVO-free. The Policy update aims to remove TFA originating from PHVO from all its food and beverage products by the end of 2016 and help consumers achieve target daily TFA intake ($\leq 1\%$ total energy intake) corresponding to recommendations by WHO and other leading international and national authorities.

Abbreviations: PHVO, partially hydrogenated vegetable oils; TFA, *trans* fatty acid(s); WHO, World Health Organization

Some of the most commonly faced challenges in reformulating products consisted of finding suitable alternatives to PHVO/TFA, as well as maintaining specific sensory properties,

⁹⁹ [Bulletin of the World Health Organisation. 2013;91:262-9H.](#)

¹⁰⁰ [Journal of Public Policy & Marketing. 2008;27\(1\):83-9.](#)

particularly taste and texture of products. Difficulties encountered in trying to achieve the above include maintaining hardness of fats, oxidative stability, melting properties and aeration. Additional challenges resulting from reformulation include added costs in terms of resources, purchase of new equipment, research & development, changes in packaging and labelling. No data in relation to cost estimates following the implementation of measures to reduce or eliminate TFA were obtained from the responses. Information on potential costs incurred, should TFA labelling be introduced in foodstuff is presented in Table 17. Innovation has led to the development of products with reduced fat content through the use of (for example) more liquid fats, alternative ingredients and raw materials. In some cases, this has resulted in patent applications being granted across the industry (e.g. Nestlé).

Table 17 – Summary of responses regarding expected costs from introducing mandatory TFA labelling in foodstuff. Individual responses may have been edited for clarity and brevity.

Stakeholder	Response
EDA, Assolatte, MIV ¹⁰¹	Costs associated with TFA labelling, should it be introduced, would be significant. Potential costs would have to cover: change of labels, including printing of new packaging, internal and external controls, and additional administrative costs for official controls to verify information reported on the label. An indirect cost which is foreseen is that caused by consumer loss of confidence and image of dairy products, and a consequential reduction in sales following labelling of rTFA, which would be associated to negative perceptions related to TFA.
BRC	Generally a label change costs an average of £1000-1500. Updating the nutrition panel will constitute a substantial change; the whole label will need to be re-plated or re-designed to accommodate the extra line in the nutrition panel.

Abbreviations: rTFA, ruminant *trans* fatty acid(s); TFA, *trans* fatty acid(s);

3.4 Impact and effectiveness of strategies aiming to reduce population exposure to TFA

Domain 4 of the questionnaire concerns information on the impact and effectiveness of strategies aiming to decrease population exposure to TFA. It addresses matters such as: whether product reformulation has had an impact on sales and cost to the consumers; data on whether the nutritional profile of reformulated products varies significantly from the original; the environmental impact resulting from reducing or removing TFA, PHVO and FHVO; the impact on consumer health of alternative technologies used to reduce or remove PHVO. Furthermore, any information on potential future legislation related to TFA which may be supported or adopted by a specific stakeholder is covered here.

No data were provided on the impact of TFA- and/or PHVO-related product reformulation on sales and market shares. Regarding the impact of reformulation on cost to the consumer, information was limited. The BRC reported that in the UK, TFA removal was voluntary; therefore companies carrying out reformulation were able to do so in their own time, resulting in minimum costs for themselves as well as the consumers. Likewise, in Denmark the consumer sales prices were not affected by the implementation of the legislation, which was welcomed by the Danish consumer organisation. As regards the nutritional profile of reformulated products, TFA reduction has been achieved in margarines while maintaining

¹⁰¹ All provided the same response

SFA content as low as possible. Furthermore, Nestlé highlighted its policy to remove TFA from its products while ideally also reducing the sum of TFA and SFA content.

There were no responses relating to the environmental impact resulting from PHVO/FHVO reduction or removal from foodstuff. However, Nestlé cited its Responsible Sourcing Guidelines, which cover the sourcing of sugar, soya, palm oil and other commodities, making reference to land use rights. Nestlé policies include assessments of suppliers to determine the status of land ownership and any land conflicts, and ensure that the principles of free, prior and informed consent are applied during the due diligence process leading to any new land acquisition.

The final section of the survey addressed whether respondents have issued an opinion on TFA and/or on the potential future of TFA-related legislative measures. In general, the majority of responses favour the development of policies restricting TFA use in foodstuff, whether these are mandatory or voluntary. Table 18 summarises these responses together with any reference to existing commitments and opinions regarding TFA provided by the respondents throughout the consultation.

Table 18 – Summary of responses reporting on opinions on TFA and/or any potential future legislative measures related to TFA. Individual responses may have been edited for clarity and brevity.

Stakeholder	Response
BRC	The BRC committed on behalf of its members, at the beginning of 2006, to removing hydrogenated vegetable oils from all own brand foods by the end of 2007 and provide progress updates every six months. The commitment was achieved in January 2008. An additional opinion is in preparation.
BEUC	In BEUC's view, protecting all consumers can only be achieved by way of European legislation banning/limiting iTFA. A ban would benefit all consumers, without exception. Harmonised measures will also push industry to reduce TFA to the lowest levels possible, which is the long-term goal in terms of public health. Consequently BEUC sees no reason why a maximum limit for iTFAs in food (such as that in force in Denmark - namely 2 g/100 g of fat), whether pre-packaged or sold in restaurants/take-away premises, could not be extended to the whole EU. Therefore, BEUC urges the Commission to introduce restrictions on iTFAs as this is the only policy intervention that can significantly reduce iTFAs in the food supply chain and ensure a high level of consumer protection. BEUC favours legally binding restrictions on the use of iTFA, which it believes should be introduced by the European Commission. It sees this as the only policy option that will ensure all consumers, including vulnerable population groups, are protected. According to BEUC, previous mandatory/voluntary labelling of TFA has failed to protect consumers, and BEUC therefore believes this option should not be considered by regulators.
Assolatte	See opinion by EDA
EDA	rTFA are not a public health concern at current levels of intake. The following considerations apply: <ul style="list-style-type: none"> The average intake of total TFA is so low in the majority of European countries that it is not a public health concern anymore (as confirmed by EFSA in its scientific opinion on nutrient profiles (EFSA Journal (2008) 644, 1-44). rTFA cannot be reformulated as such. Therefore, labelling of natural TFA would not lead to reduced intake of ruminant TFA from dairy products. On the contrary, labelling of natural TFA could have a significant negative impact on the overall consumption of dairy foods. This would not be in line with dietary recommendations in Europe as dairy products provide many essential nutrients to the European diet that are required for

	health.
MIV	See opinion by EDA
Nestlé	<p>This Policy forms a central part of Nestlé's aim to enhance the quality of life of its consumers by providing healthier and tastier food and beverage choices. Nestlé actively supports scientific advancements in the area of TFA and their effects on health. It also continues to drive technological innovations that will enable the elimination of TFA from partially hydrogenated oils in their products without compromising on safety, quality and taste.</p> <p>Nestlé reiterates its commitment to continuous improvement with this Policy update to remove TFA originating from partially hydrogenated oils from all its food and beverage products and help consumers achieve target daily TFA intake corresponding to recommendations from WHO and other leading international and national authorities.</p> <p>At the end of 2013 most of its food and beverage products met its TFA policy which it is further strengthened by including the removal of all <i>trans</i> fats originating from PHVOs from all its food and beverage products by the end of 2016. To continue along this line of work, Nestlé supports voluntary food reformulation policies and agreements aiming to reduce TFA between industry and national governments, supported at EU level. Nestlé has also put forward the argument that very little can be done from a technological point of view to reduce the levels of rTFA in raw materials containing ruminant fats. In line with most of the existing established national legislation related to TFA, Nestlé does not consider TFA of ruminant origin and therefore rTFA is out of the scope of the Nestlé TFA policy.</p>

Abbreviations: EFSA, European Food Safety Authority; iTFA, industrial *trans* fatty acid(s); rTFA, ruminant *trans* fatty acid(s); TFA, *trans* fatty acid(s)

4. CONSULTATION ON POLICY OPTIONS: POSSIBLE STRATEGIES TO REDUCE TFA CONSUMPTION IN EUROPE

Five members of the Advisory Group¹⁰² responded to this second round of consultation.

Mandatory TFA content declaration (option 1) was not seen as the best alternative by any of the respondents. Points brought up included that mandatory TFA labelling "would increase consumer confusion", "have little impact at consumer level", "will not ensure a level playing field for food business operators" and "will not eliminate the few remaining TFA health issues across all EU countries in the same way".

Three of the respondents indicated a preference for introducing an EU-wide legal limit for TFA (option 2). The reasons behind this preference were "public health benefits are considered to be highest for this option" and that a limit would "eliminate the TFA issue and establish the same standard across all EU countries".

One respondent indicated that "considering the small quantity of natural TFA we believe that new legislative proposals are not necessary" which is seen as support for options 3 (voluntary agreements towards reducing TFA in foods and diets) and 4 (no further action towards reducing TFA in foods and diets). Two respondents commented specifically on these options indicating that "they will maintain consumers confusion on TFA due to the current full/partial hydrogenation labelling and its lack of understanding by consumers", and that this "will however not eliminate the TFA issue across all EU countries."

Two respondents explicitly requested abandoning the requirement for listing PHVO and FHVO as ingredients as they deemed this confusing the consumer. These respondents support

¹⁰² BEUC, Copa-Cogeca, Eurogroup for Animals, FEDIOL, IMACE

setting a TFA limit if it was "intrinsically coupled with the deletion of the current obligation to label full/partial hydrogenation." In addition, whereas two respondents consider that TFA from all sources should be handled similarly (based on the EFSA opinion¹⁰³), one respondent highlighted that a distinction between rTFA and iTFA should be made.

Last, one respondent voiced the opinion that encouraging more sustainable diets, including less and better meat and dairy was the best approach for limiting TFA consumption.

¹⁰³ [EFSA Journal 2010;8\(3\):1461](#)

5. OTHER IMPACTS OF TFA-RELATED POLICIES

5.1 Environmental impact

Any potential environmental impact resulting from iTFA removal hinges on the substitute used. Palm oil, as a noticeable replacement of PHO in Europe has been criticised as environmentally unsustainable because of concerns of tropical deforestation and peat land destruction and their contribution to climate change and loss of biodiversity. There is no European estimate of how much palm oil would be/is used in the reformulation efforts to replace iTFA. A 2009 assessment of the environmental impact of diet changes in the EU indicates that limiting TFA intake was "not likely to have high environmental implications" as it would "not lead to major changes in primary food production."¹⁰⁴ Consumption statistics for the EU-27 show that palm oil use for food, personal care and oleo-chemical products has changed little (+6%) over the period 2006-2012.¹⁰⁵ Also, that PHO use in food has been already reduced much in the EU and that any remaining PHO would likely not be replaced with palm oil alone supports this idea.

5.2 Other impacts

For most food products, reducing TFA levels is feasible. Some FBO have faced challenges in implementing measures to reduce and/or stop PHO usage e.g. associated with identifying alternatives that maintain specific sensory properties of the product.

Additional challenges may include added costs in terms of resources, purchase of new equipment, research and development, packaging and labelling. Some argue that these challenges may be more acute for small-medium enterprises (SMEs). Others, however, note that there are successful examples of support to SMEs for product innovation and development such as government co-financed food technology transfer centres and research associations.¹⁰⁶

Labelling costs include change of labels, including printing of new packaging, internal and external controls, and additional administrative costs for official controls to verify information reported on the label.

An indirect cost foreseen by the dairy operators is that caused by a potential consumer loss of confidence in and image of dairy products, leading to sales reductions should the mandatory labelling apply to rTFA.

While Denmark noted that the Danish industry did not report financial losses as a result of introduction of their legislation, Hungary reported the view of the Federation of Hungarian Food Industries that industrial fats of a TFA content below 2% are more expensive.

¹⁰⁴ Tukker et al. 2009. Environmental impact of diet changes in the EU. EUR 23783 EN

¹⁰⁵ Gerasimchuk & Koh (2013) The EU Biofuel Policy and Palm Oil: Cutting Subsidies or cutting rainforest? The International Institute for Sustainable Development

¹⁰⁶ Traill et al. (2012): Reformulation for healthier food: a qualitative assessment of alternative approaches. <http://purl.umn.edu/123511> (accessed September 2014)

Finally, providing an incentive for food reformulation has the potential to prompt innovation in the food sector.

6. CONCLUDING REMARKS

From May to November 2014, the European Commission conducted consultations among the Working Group on Regulation (EU) No 1169/2011 on the provision of food information to consumers comprising Member States and Iceland and Norway, as well as other stakeholders, members of the Advisory Group on the Food Chain and Animal and Plant Health, regarding *trans* fatty acids in foods. These consultations were carried out in order to better inform the preparation of the report from the Commission to the European Parliament and the Council regarding the presence of and appropriate means for reducing trans fat in foods and in the overall diet of the Union population. This Staff Working Document summarises the evidence collected. Twenty five countries, namely 23 MS of the EU28, Iceland and Norway answered the questionnaire detailed in Annex I, and fourteen stakeholders answered the questionnaire detailed in Annex II. A targeted second round of consultation took place with the Advisory Group on the Food Chain and Animal and Plant Health.

The data provided by the respondents illustrate that the majority of products tested throughout Europe contain little or no TFA, but that some products still have high iTFA levels. Meat, dairy products, convenience food, bakery products, deep-fried products, cakes and biscuits are some of the main TFA sources. Similarly, average population intakes of TFA in Europe mostly are below the WHO threshold of 1 E%, but certain parts of the population (across all ages) may still consume excess TFA. EFSA states that "*TFA intakes should be as low as is possible within the context of a nutritionally adequate diet*"¹⁰³, and estimates from Denmark suggest that average TFA intakes well below 0.1 E% are achievable.

There is little data regarding the knowledge of the EU population about TFA, its occurrence in foods, its sources and health effects. This may be partly owing to the fact that few countries responding to the consultation⁵ have run campaigns to increase consumer awareness about this matter. Where people claim to have heard of TFA, connotations are mostly negative; intentions to avoid (excess) TFA have been voiced in surveys in Norway and Sweden. Much less can be said about consumers' awareness and understanding of (the difference between) rTFA and iTFA, PHVO and FHVO. The overall lack of knowledge about TFA has to be considered inasmuch as education is important for the population to be able to make informed decisions. If consumers are insufficiently informed about TFA, related nutrition labelling information may not yield the intended benefit regarding food purchasing decisions and consumer health. Furthermore, the dairy sector is concerned about consumers being driven away unduly from dairy products (a source of rTFA) if TFA has to be mentioned on the nutrition label. Then again, from the scarce data available it would appear that TFA is of only minor concern to food shoppers.

Reformulation efforts to reduce TFA in foodstuffs have happened to various degrees across the EU, partly in response to legal TFA limits, partly through industry self-regulation or public-private partnerships. Effective and substantial reductions of TFA in the food chain have been reported both in countries with legal limits (*e.g.* Denmark) and in countries with

voluntary actions by the industry (*e.g.* Netherlands). In many cases this was achieved without increasing SFA levels. The measures taken are commonly driven by public health concerns related to excess TFA intakes, and food sector representatives have developed corresponding commitments and policies. Product reformulation may present a challenge depending on food category and technical prowess of the manufacturer, yet little is known about the financial implications for businesses and consumers. Likewise, the environmental impact of TFA alternatives is difficult to estimate in the absence of quantitative data.

Of note, over half of the responding countries⁵ said they were waiting for an EU level decision before considering TFA-related measures to reduce population exposure. Another 21% have already taken such measures or are currently considering them. Likewise, some food sector representatives have voiced their desire for a harmonised approach across Europe. In the consultation held with the Advisory group on the Food Chain and Animal and Plant Health, three of the five respondents voiced a preference for introducing EU legislation setting a TFA limit on fat basis in food products.

ANNEXES

ANNEX I



22nd of April 2014

Subject: Questionnaire on trans fatty acids in foodstuffs in Europe

Within the frame of the Regulation (EC) No1169/11 (1) on the provision of food information to consumers, the European Parliament and the Council requested that *'by 13 December 2014, the Commission, taking into account scientific evidence and experience acquired in Member States, shall submit a report on the presence of trans fats in foods and in the overall diet of the Union population. The aim of the report shall be to assess the impact of appropriate means that could enable consumers to make healthier food and overall dietary choices or that could promote the provision of healthier food options to consumers, including, among others, the provision of information on trans fats to consumers or restrictions on their use. The Commission shall accompany this report with a legislative proposal, if appropriate'*.

The European Commission's in-house science service, the Joint Research Centre (JRC), is collecting evidence on a number of issues related to trans-fatty acids (TFA) in foods to inform the preparation of this report. An important element of this work is consultation with stakeholders. To inform its work, the JRC is hereby requesting evidence-based factual input on several TFA related issues via the questionnaire below.

To ensure we can process your questionnaire as fast as possible, we kindly ask you to ensure your replies and any documents uploaded are in one of the working languages of the European Commission (English, French or German).

Responses to the questionnaire are expected by the 19th of May 2014.

The JRC wishes to thank in advance all participants for their time, support and contribution.

Name of respondent		
Affiliation		
Address		
Email address		
Date completed		
Colleagues consulted: (add extra rows if needed)	Name	Affiliation

Do you consent to the publication of your reply and name?

- We / I consent to the publication of this reply, personal data included
- We / I consent to the publication of this reply in an anonymous form
- We / I do not consent to the publication of this reply

1. Domain: Trans fatty acids in foods and diets	
1.1 Does your ministry have any data (from January 2005 onwards) on the trans fatty acid (TFA) composition of food products in your country (including information provided by stakeholders)?	
<input type="checkbox"/> Yes	
<input type="checkbox"/> No	
If yes, please upload such data below and briefly provide the following information:	
Year of product sampling:	
Please provide reference(s) for latest version(s) and web link	
1.2 Does your ministry currently have any national data on the trans fatty acid intake of your country's population?	
<input type="checkbox"/> Yes	
<input type="checkbox"/> No	
If yes, please upload such data below and briefly provide the following information:	

Year of survey/analysis:

Where possible, please detail:

- a) Are the data stratified by population groups (e.g. by gender, age, socio-economic status)?
- Yes
 No

Please summarise the results?

- b) Do the data differentiate between subtypes of TFA (industrially produced (iTFA) and/or ruminant (rTFA))?

- Yes
 No

Please summarise the results?

- c) What is the contribution of specific food groups to overall intake?

- d) If there is any additional information of interest, please add it here:

Please provide reference(s) for latest version(s) and web link

2. Domain: Consumer understanding of trans fatty acids

2.1 Have there been any consumer education campaigns to raise awareness on the health effects of TFA consumption in your country from January 2005 onwards?

- Yes
 No

Please summarise the results

	Year of survey/analysis:
	Please provide reference(s) for latest version(s) and web link
2.2 Do you have any data on consumer knowledge of TFA (including information provided by stakeholders)?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, please upload such data below and briefly provide the following information:	
	Please detail whether the data represent differing consumer groups (e.g. by gender, age, socio-economic status): <input type="checkbox"/> Yes <input type="checkbox"/> No
	Please summarise the results?
	Year of survey/analysis:
	Please provide reference(s) for latest version(s) and web link
2.2.1 Do you have any data on whether the TFA knowledge affects consumer's food choice?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	

	<p>If yes, please upload such data below and briefly provide the following information:</p> <p>Please detail whether the data represent differing consumer groups (e.g. by gender, age, socio-economic status):</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Please summarise the results?</p> <p>Year of survey/analysis:</p> <p>Please provide reference(s) and web link</p>
<p>2.3 Do you have any data on consumers' knowledge and perceived healthfulness of partially hydrogenated vegetable oils (PHVO) and fully hydrogenated vegetable oils (FHVO)?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
	<p>If yes, please upload such data below and briefly provide the following information:</p> <p>Please detail whether the data represent differing consumer groups (e.g. by gender, age, socio-economic status):</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Please summarise the results?</p> <p>Year of survey/analysis:</p>

	Please provide reference(s) and web link
2.3.1 Do you have any data on whether labelling of PHVO and FHVO on food and drink packages affects consumer's food choice?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, please upload such data below and briefly provide the following information:	
Please detail whether the data represent differing consumer groups (<i>e.g.</i> by gender, age, socio-economic status): <input type="checkbox"/> Yes <input type="checkbox"/> No Please summarise the results? Year of survey/analysis:	
2.4 Do you have any data on consumer's knowledge on iTFA and rTFA?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, please upload such data below and briefly provide the following information:	
Please detail whether the data represent differing consumer groups (<i>e.g.</i> by gender, age, socio-economic status): <input type="checkbox"/> Yes <input type="checkbox"/> No Please summarise the results?	

	<p>Year of survey/analysis:</p> <p>Please provide reference(s) and web link</p>
<p>2.4.1 Do you have any data on whether the rTFA and iTFA knowledge affects consumer's food choice?</p>	
<p><input type="checkbox"/> Yes</p>	
<p><input type="checkbox"/> No</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p> <p>Please detail whether the data represent differing consumer groups (e.g. by gender, age, socio-economic status):</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>Please summarise the results?</p> <p>Year of survey/analysis:</p> <p>Please provide reference(s) and web link</p>	
<p>3. Domain: Trans fatty acid composition and strategies to reduce population exposure to trans fatty acids</p>	
<p>3.1 Is there a national policy or measure (public, private or public-private, e.g. legal TFA limits, mandatory TFA labelling or voluntary food reformulation) to reduce TFA levels in foodstuffs currently in place in your country?</p>	
<p><input type="checkbox"/> Yes</p>	
<p><input type="checkbox"/> No (Go to question 3.5)</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p>	
<p>Year:</p>	
<p>Please provide reference(s) for latest version(s) and web link</p>	

<p>3.1.1 Do these national measures (such as legal TFA limits, mandatory TFA labelling or voluntary food reformulation) apply to products in the domestic market or also to those produced for export? Please select the most relevant answer below:</p> <p><input type="checkbox"/> Domestic market</p> <p><input type="checkbox"/> Exports</p> <p><input type="checkbox"/> Both</p>	
<p>3.2 What were the motivations behind the implementation of this policy/measure? (please provide in the box below any related information which may help us address this question)</p>	
<p>Please provide reference(s) for latest version(s) and web link</p>	
<p>3.3 Have you performed an impact assessment prior to the implementation of such policy/measure?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p>	
<p>Year of survey/analysis:</p>	<p>Please provide reference(s) for latest version(s) and web link</p>
<p>3.4 Does your country regularly monitor the presence of TFA in foods and/or TFA population intakes?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p>	
<p>Year:</p>	<p>Please provide reference(s) for latest version(s) and web link</p>

<p>3.5 Where there has been reformulation of food products to reduce TFA content, do you have any data on the changes in the nutritional profile <i>e.g.</i> sugar, mono-unsaturated fat in the reformulated products in your country?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If yes, please upload such data below and briefly provide the following information:</p>	
Year:	Please provide reference(s) for latest version(s) and web link
<p>3.6 Where there has been reformulation of food products to reduce PHVO usage, do you have any data on what the replacements were <i>e.g.</i> sunflower oil or FHVO in your country?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If yes, please upload such data below and briefly provide the following information:</p>	
Year:	Please provide reference(s) for latest version(s) and web link
<p>3.7 Is your country currently considering any measures to reduce population exposure to TFA?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Not yet because we are waiting for the European Commission's report and potential EU action in this area</p> <p><input type="checkbox"/> No</p> <p>If yes, please upload such data below and briefly provide the following information:</p>	
Year:	Please provide reference(s) for latest version(s) and web link

<p>4. Domain: Impact and effectiveness of strategies aiming to reduce population exposure to trans fatty acids</p> <p>COMPLETE THIS SECTION IF YOU HAVE RESPONDED 'YES' AT QUESTION 3.1</p>	
<p>4.1 Do you have any data on the impact of the measure(s) adopted by your country in reducing TFA levels in foodstuffs and/or population intake?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p>	
<p>Year of survey/analysis:</p>	<p>Please provide reference(s) for latest version(s) and web link</p>
<p>4.2 Do you have any data on whether (and how) these measures impacted on overall nutrient intake (e.g. saturated fat)?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
<p>If yes, please upload such data below and briefly provide the following information:</p>	
<p>Year of survey/analysis:</p>	<p>Please provide reference(s) for latest version(s) and web link</p>
<p>4.3 Do you have data on the impact of the measure on food costs to the consumers?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	

If yes, please upload such data below and briefly provide the following information:

Please detail whether the data represent differing consumer groups (e.g. by gender, age, socio-economic status):

- Yes
- No

Please summarise the results?

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link

4.4 Do you have data on the impact of the measure on costs for food business operators (FBO)?

- Yes
- No

If yes, please upload such data below and briefly provide the following information:

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link

4.5 Is there any FBO sector (e.g., SMEs, producers of specific foods) that faces particular challenges?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
If yes, please specify in the box below:	
4.6 Do you have any data outlining the effectiveness of the measures across different population sub-groups?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
If yes, please upload such data below and briefly provide the following information:	
	Year of survey/analysis:
	Please provide reference(s) for latest version(s) and web link

ANNEX II



12/05/2014

Subject: Questionnaire on trans fatty acids in food products/foodstuffs in Europe

Within the frame of the Regulation (EC) No1169/11 (1) on the provision of food information to consumers, the European Parliament and the Council requested that *'by 13 December 2014, the Commission, taking into account scientific evidence and experience acquired in Member States, shall submit a report on the presence of trans fats in foods and in the overall diet of the Union population. The aim of the report shall be to assess the impact of appropriate means that could enable consumers to make healthier food and overall dietary choices or that could promote the provision of healthier food options to consumers, including, among others, the provision of information on trans fats to consumers or restrictions on their use. The Commission shall accompany this report with a legislative proposal, if appropriate'*.

The European Commission's in-house science service, the Joint Research Centre (JRC), is collecting evidence on a number of issues related to trans-fatty acids (TFA) in foods to inform the preparation of this report. An important element of this work is consultation with stakeholders. To inform its work, the JRC is hereby requesting evidence-based factual input on several TFA related issues via the questionnaire below encompassing a number of working areas.

To ensure we can process your questionnaire as fast as possible, we kindly ask you to ensure your replies and any documents uploaded are in one of the working languages of the European Commission (English, French or German).

Responses to the questionnaire are expected by the 24th of June 2014.

The JRC wishes to thank in advance all participants for their time, support and contribution.

Name of organisation	
Description of organisation	<p>Please indicate the role of your organisation for the purposes of this consultation (more than one option is allowed):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Private sector food-business operator <input type="checkbox"/> Umbrella organisation <input type="checkbox"/> Non-profit NGO (non-governmental organisations) <input type="checkbox"/> Other international organisation (EU and non-EU institutions) <input type="checkbox"/> Academia <input type="checkbox"/> Other (please specify)
Description of organisation	

How many companies/ food business operators does your organization represent?	
Name of respondent	
Affiliation	
Address/Country	<p>Please indicate the country where you are located.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Belgium <input type="checkbox"/> Bulgaria <input type="checkbox"/> Czech Republic <input type="checkbox"/> Denmark <input type="checkbox"/> Germany <input type="checkbox"/> Estonia <input type="checkbox"/> Ireland <input type="checkbox"/> Greece <input type="checkbox"/> Spain <input type="checkbox"/> France <input type="checkbox"/> Croatia <input type="checkbox"/> Italy <input type="checkbox"/> Cyprus <input type="checkbox"/> Latvia <input type="checkbox"/> Lithuania <input type="checkbox"/> Luxembourg <input type="checkbox"/> Hungary <input type="checkbox"/> Malta <input type="checkbox"/> Netherlands <input type="checkbox"/> Austria <input type="checkbox"/> Poland <input type="checkbox"/> Portugal <input type="checkbox"/> Romania <input type="checkbox"/> Slovenia <input type="checkbox"/> Slovakia <input type="checkbox"/> Finland <input type="checkbox"/> Sweden <input type="checkbox"/> United Kingdom <input type="checkbox"/> Other (please specify)
If other, please specify	
Email address	
Date completed	

Do you consent to the publication of your reply and name?

- We / I consent to the publication of this reply, personal data included
- We / I consent to the publication of this reply in an anonymous form
- We / I do not consent to the publication of this reply

1. Domain 1: Trans fatty acids in foods	
1.1 Do you have data on (trends in) the trans fatty acid (TFA) content of the food products supplied by your company/the food business operators (FBOs) you represent/in your region of work?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
	Year of sampling: Please provide reference (s) for latest version (s) and web link:
1.2 Do you have projections into the near future (e.g. next 2 to 5 years) on TFA content of the food products supplied by your company/the FBOs you represent/in your region of work?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
	Year of sampling: Please provide reference (s) for latest version (s) and web link:
2. Domain 2: Consumer understanding of trans fatty acids	
2.1 Do you have any data on consumer knowledge on and perceived healthiness of TFA?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	

Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?

- No
- Yes

Please summarise the results:

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link:

2.1.1 Do you have any data on whether consumers' knowledge of TFA affects (or would affect) their food choice?

- No
- Yes, please upload such data below and briefly provide the following information:

<p>Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes</p> <p>Please summarise the results:</p> <p>Year of survey/analysis:</p> <p>Please provide reference(s) for latest version(s) and web link:</p>	
<p>2.2 Do you have any data on consumers' knowledge on and perceived healthfulness of partially hydrogenated vegetable oils (PHVO) and fully hydrogenated vegetable oils (FHVO)?</p>	
<p><input type="checkbox"/> No</p>	
<p><input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:</p>	

Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?

- No
- Yes

Please summarise the results:

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link:

2.2.1 Do you have any data on whether labelling of PHVO and FHVO on food and drink packages (e.g. mention and position in the ingredients list, claim the absence of (partially/fully) hydrogenated oils/fats) affects consumers' food choice?

- No

- Yes, please upload such data below and briefly provide the following information:

Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?

- No
- Yes

Please summarise the results:

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link:

2.3 Do you have any data on consumer's knowledge on and perceived healthiness of naturally occurring ruminant trans fatty acids (rTFA), in particular in comparison with industrially produced trans fatty acids (iTFA)?

- No

Yes, please upload such data below and briefly provide the following information:

Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?

- No
- Yes

Please summarise the results:

Year of survey/analysis:

Please provide reference(s) for latest version(s) and web link:

2.3.1 Do you have any data on whether consumers' knowledge on rTFA and iTFA affects (or would affect) their food choice?

- No

Yes, please upload such data below and briefly provide the following information:

	<p>Are the data stratified by differing consumer groups (e.g. by gender, age, socio-economic status)?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>Please summarise the results:</p> <p>Year of survey/analysis:</p> <p>Please provide reference(s) for latest version(s) and web link:</p>
<p>3. Domain 3: Strategies to reduce TFA content in foods</p>	
<p>3.1 Has your company (or the FBOs you represent/or FBOs in your region of work) previously sought to or is it currently attempting to reduce or eliminate PHVO/TFA usage in its products?</p> <p><input type="checkbox"/> Yes (please describe the approach used)</p>	
<p><input type="checkbox"/> No</p>	
<p>3.1.1 What are/were the specific challenges your company (or the FBOs you represent/or FBOs in your region of work) faces/faced in reducing or stopping PHVO/TFA usage?" Please describe below:</p>	
<p></p>	

3.2 Do you have any estimates on costs incurred by your company/the FBOs you represent/or FBOs in your region of work due to this measure?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Year of analysis:	
Please provide reference(s) and latest link(s):	
3.3 Do you have any estimates of potential costs incurred by introduction of mandatory TFA labelling in foodstuffs?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Year of analysis:	
Please provide reference(s) and latest link(s):	
3.4 Has food reformulation led to innovation (e.g. new patents) in your company/FBOs that you represent/or FBOs in your region of work?	
<input type="checkbox"/> No <input type="checkbox"/> If yes, please describe briefly	
4. Domain 4: Impact and effectiveness of strategies aiming to reduce population exposure to trans fatty acids	
4.1 Do you have any data on the impact of TFA/PHVO-related product reformulation on sales/market shares?	

<input type="checkbox"/> No <input type="checkbox"/> If yes, please describe briefly	
Year of analysis:	Please provide reference(s) and latest link(s):
4.2 Do you have any data on the impact of TFA/PHVO-related product reformulation on costs to the consumers?	
<input type="checkbox"/> No <input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Do the data represent differing consumer groups (e.g. socio-economic status)?	
<input type="checkbox"/> No <input type="checkbox"/> Yes	
Please summarise the results:	
Year of survey/analysis:	
Please provide reference(s) for latest version(s) and web link:	
4.3 Where products have been reformulated, do you have any data on how the overall nutritional profile of the products compared to the original formula (e.g. changes in saturated fatty acids or overall fatty acid profile, sugar, salt contents)?	

<input type="checkbox"/> No	
<input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Year of analysis:	
Please provide reference(s) for latest version(s) and web link:	
4.4 Do you have any data on TFA reduction achievements and challenges (of your company/the FBOs that you represent/or FBOs in your region of work) for specific food categories (e.g. bakery products, fats and oils) or food sectors (e.g. small-to-medium enterprises; savoury frozen products; biscuits; oil and fats)?	
<input type="checkbox"/> No	
<input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Year of analysis:	
Please provide reference(s) for latest version(s) and web link:	
4.5 Do you have any data on the environmental impact resulting from reducing usage of or removing PHVO in the products produced by your company/the FBOs that you represent/or FBOs in your region of work in food products (e.g., due to change of raw materials or alternative technology applied)?	
<input type="checkbox"/> No	
<input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
Year of analysis:	
Please provide reference(s) for latest version(s) and web link:	
4.5.1 Do you have any data on the (absence of) impacts on health of alternative technologies (e.g. interesterification, enzymatic processes, fractionation) used to reduce/remove PHVO in food products?	
<input type="checkbox"/> No	

<input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
	Year of analysis: Please provide reference(s) for latest version(s) and web link:
4.6 Has your company/FBOs that you represent/or FBOs in your region of work issued an opinion on TFA and/or potential future TFA-related legislative measures so far?	
<input type="checkbox"/> No	
<input type="checkbox"/> Yes, - in preparation	
<input type="checkbox"/> Yes, please upload such data below and briefly provide the following information:	
	Year of analysis: Please provide reference(s) and latest link:
4.7 Please add in the box below any additional information considered to be of importance and not covered by the questionnaire	

ANNEX III

Hyperlinks and references provided by country respondents:

Austria:

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2009_II_267/BGBLA_2009_II_267.pdf
- http://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2010_II_343/BGBLA_2010_II_343.pdf
- http://bmg.gv.at/cms/home/attachments/5/6/0/CH1048/CMS1288948560136/der_gesamte_ernaehrungsbericht.pdf
- http://www.bmg.gv.at/home/Schwerpunkte/Ernaehrung/Rezepte_Broschueren_Berichte/Der_Oesterreichische_Ernaehrungsbericht_2012

Belgium:

Information on the TFA composition of food products and intakes

- www.internubel.be
- www.nubel.com
- www.nubel.be

Bulgaria

Information on the TFA composition of food products and intakes

- <http://www.lex.bg/bg/laws/ldoc/2135508428>

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- <http://www.mh.government.bg/Articles.aspx?lang=bg-BG&pageid=515&categoryid=5626&articleid=6381>

Denmark

Information on the TFA composition of food products and intakes

- http://www.foedevarestyrelsen.dk/english/SiteCollectionDocuments/25_PDF_word_filer%20til%20download/07kontor/Maerkning/Trans_fatty_acid.DOC
- Bysted, A. Æ. Mikkelsen, T. Leth: Substitution of trans fatty acids in foods on the Danish market. Eur J Lipid Sci Technol. 2009, 11, 574-583.

Estonia

Information on the TFA composition of food products and intakes

- <http://www.tarbijakaitseamet.ee/et/node/3120>
- Meremäe, K., Roasto, M., Kuusik, S., Ots, M. and Henno, M. (2012), Trans Fatty Acid Contents in Selected Dietary Fats in the Estonian Market. Journal of Food Science, 77: T163–T168.

Information on consumers' understanding

- <http://www.agri.ee/sites/default/files/content/uuringud/2006/uuring-2006-toidumargistus.pdf>

Finland

Information on the TFA composition of food products and intakes

- www.fineli.fi
T. Ritvanen, T. Putkonen and K. Peltonen, "A Comparative Study of the Fatty Acid Composition of Dairy Products and Margarines with Reduced or Substituted Fat Content," Food and Nutrition Sciences, Vol. 3 No. 9, 2012, pp. 1189-1196.
- <http://www.julkari.fi/handle/10024/110839>

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.ravitsemusneuvottelukunta.fi/files/images/vrn/2014/ravitsemusosuusitukset_2014_fi_web.pdf
- <http://urn.fi/URN:ISBN:978-952-245-951-0>

Germany

Information on the TFA composition of food products and intakes

- http://www.bvl.bund.de/SharedDocs/Downloads/01_Lebensmittel/02_BUEp_dokumente/buep_berichte_archiv/BUEp_Bericht_2008.pdf?__blob=publicationFile&v=6
- http://www.bvl.bund.de/SharedDocs/Downloads/01_Lebensmittel/02_BUEp_dokumente/buep_berichte_archiv/BUEp_Bericht_2011.pdf?__blob=publicationFile&v=4
- <http://www.bfr.bund.de/cm/343/hoehede-der-derzeitigen-trans-fettsaeureaufnahme-in-deutschland-ist-gesundheitlich-unbedenklich.pdf>

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Inhalt.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Rahmenleitlinien.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Margarinen.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Frittieroele.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Siedeele.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_FeineBackwaren.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Knabberartikel.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Kartoffelverarbeitung.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Leitlinie_Tiefkuehlpizzen.pdf?__blob=publicationFile
- http://www.bmel.de/SharedDocs/Downloads/Ernaehrung/Rueckstaende/Trans-Fettsaeuren/TFA_Inhalt.pdf?__blob=publicationFile

Greece

Information on the TFA composition of food products and intakes

- Girvalaki C, Vardavas CI, Tsimpinos G, Dimitreli G, Hassapidou MN, et al. (2013) Nutritional and Chemical Quality of Traditional Spreads and Pies of Mediterranean Diet of Greece. *J Food Nutr Disor* 2:1.

Information on consumers' understanding

- http://www.knowintarget.eu/wp-content/uploads/2013/05/5.2-5.4.Final_Report_Trans_Fat.pdf

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- Kroustallaki P, Tsimpinos G, Vardavas CI, Kafatos A. Fatty acid composition of Greek margarines and their change in fatty acid content over the past decades. *Int J Food Sci Nutr*. 2011 Nov;62(7):685-91.

Hungary

Information on the TFA composition of food products and intakes

- <http://www.oeti.hu/download/tfa.pdf>
- <http://www.oeti.hu/download/tfacsop.pdf>

Information on consumers' understanding

- http://www.oeti.hu/download/gyakori_kerdesek_a_transz-zsirsavakrol.pdf
- http://www.mnsza.hu/elhizas/transz_zsirok.php
- <http://www.egeszseg.hu/?s=transz>
- http://www.oeti.hu/download/tfa_szorolap.pdf
- <http://www.egeszsegprogram.eu/english.pdf>

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.mkrt.hu/userfiles/71_2013%20emmi_%20tfa.pdf

Ireland

Information on the TFA composition of food products and intakes

- https://www.fsai.ie/uploadedFiles/Monitoring_and_Enforcement/Monitoring/Surveillance/trans_fatty_survey_retail07.pdf
- https://www.google.com/url?q=http://www.fsai.ie/WorkArea/DownloadAsset.aspx%3Fid%3D8304&s_a=U&ei=HrxwU5WCOIaxyATY8IKwDQ&ved=0CAgQFjAC&client=internal-uds-cse&usg=AFQjCNEqHalJ-l21BEZ_xQrGDzxKGcGkag
- Cantwell, M. M., Flynn, M. A. T., Cronin, D., O'Neill, J. P. and Gibney, M. J. (2005), Contribution of foods to trans unsaturated fatty acid intake in a group of Irish adults. *Journal of Human Nutrition and Dietetics*, 18: 377–385.
- Marie M Cantwell, Michael J Gibney, Denis Cronin, Kate M Younger, John P O'Neill, Linda Hogan and Mary AT Flynn (2005). Development and validation of a food-frequency questionnaire for the determination of detailed fatty acid intakes. *Public Health Nutrition*, 8, pp 97-107.

Information on consumers' understanding

- http://www.fsai.ie/science_and_health/healthy_eating.html
- https://www.fsai.ie/uploadedFiles/Monitoring_and_Enforcement/Monitoring/Surveillance/trans_fatty_survey_retail07.pdf
- https://www.google.com/url?q=http://www.fsai.ie/WorkArea/DownloadAsset.aspx%3Fid%3D8304&s_a=U&ei=HrxwU5WCOIaxyATY8IKwDQ&ved=0CAgQFjAC&client=internal-uds-cse&usg=AFQjCNEqHalJ-l21BEZ_xQrGDzxKGcGkag

Iceland

Information on the TFA composition of food products and intakes

- http://www.matis.is/media/fraedslu/ISGEM_Fitusyrur_2008.pdf
- http://nnc2012.is/DownloadHandler.ashx?pg=24a78e3f-f247-4b5b-8ca2-54203882dae8§ion=c9bb0668-30a0-4c4c-bd53-1062b74329be&file=O649_NNC2012_abstract_The+Diet+of+Icelanders.pdf
- http://www.landlaeknir.is/servlet/file/store93/item14901/Hva%20bor%C3%B0a%20%C3%8Dslendingar_april%202012.pdf

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

<http://www.reglugerd.is/interpro/dkm/WebGuard.nsf/aa0d47377abc977400256a090053ff91/815ae117f9cdfb2c002578380006d866?OpenDocument&Highlight=0%2ctransfitus%u00fdra>

Latvia

Information on consumers' understanding

- <http://www.spkc.gov.lv/mili-savu-sirdi/>
- <http://www.spkc.gov.lv/veseliga-uztura-ieteikumi/>
- http://www.vm.gov.lv/images/userfiles/phoebe/aktualitates_aktualitates_augsas_virsdala_ba89d22083b17edac22575a6002bb060/trans_tauki.pdf

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.vvc.gov.lv/export/sites/default/docs/LRTA/MK_Noteikumi/Cab_Reg_No_172_-_Nutritional_Norms_for_Educatees_of_Educational_Institutions.doc

Lithuania

Information on consumers' understanding

- [http://primo.laba.lt/primo_library/libweb/action/display.do;jsessionid=213FFA79C27FBE98FD3610723FCA771F?tabs=detailsTab&ct=display&fn=search&doc=VUB01000405116&indx=4&recIds=VUB01000405116&recIdxs=3&elementId=3&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&tab=local&dstmp=1400853537169&vl\(freeText0\)=Choice%20of%20foodstuffs&vid=LABT_VU1&mode=Basic](http://primo.laba.lt/primo_library/libweb/action/display.do;jsessionid=213FFA79C27FBE98FD3610723FCA771F?tabs=detailsTab&ct=display&fn=search&doc=VUB01000405116&indx=4&recIds=VUB01000405116&recIdxs=3&elementId=3&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&tab=local&dstmp=1400853537169&vl(freeText0)=Choice%20of%20foodstuffs&vid=LABT_VU1&mode=Basic)

Malta

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- <https://ehealth.gov.mt/download.aspx?id=6910>
- https://ehealth.gov.mt/healthportal/health_promotion/campaigns/2014_campaigns/national_food_and_nutrition_policy.aspx

Netherlands

Information on the TFA composition of food products and intakes

- <http://www.rivm.nl/nevo>
- Temme EH, Millenaar IL, Van Donkersgoed G, Westenbrink S. Impact of fatty acid food reformulations on intake of Dutch young adults. *Acta Cardiol.* 2011 Dec;66(6):721-8.
- Hulshof P, Kosmeyer T. Food analyses department Human Nutrition, part 15, fatty acid composition of bakery margarines in the Netherlands 2008. Wageningen University, 2009 (in Dutch).
- (Rossum CTM van, Fransen HP, Verkaik-Klosterman J, Buurma-Rethans EJM, Ocke MC. Dutch National Food Consumption Survey 2007-2010: Diet of children and adults aged 7 to 69 years. Rivm-rapport nr. 350050006. Bilthoven, 2011

Information on consumers' understanding

- Consumentenonderzoek verborgen vetten
- Spreads Ingredients Declaration Study – Unilever (power point presentation)

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- <http://www.choicesprogramme.org/>
- <http://www.hetvinkje.nl/>
- <http://www.hetvinkje.nl/fr>
- http://www.vetzuursamenstelling.nl/download/MVO_Taskforce-eindrapportage-2010.pdf
- Wesdorp L 2014. Trans Fats Replacement Solutions in Europe. In: Kodali DR. (editor), *Trans Fats Replacement Solutions*, chapter 13.
- Temme EH, Millenaar IL, Van Donkersgoed G, Westenbrink S. Impact of fatty acid food reformulations on intake of Dutch young adults. *Acta Cardiol.* 2011 Dec;66(6):721-8.

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- Żbikowska A., Kowalska M., Rutkowska J. The quality of Polish spreadable fats especially with emphasis on trans isomers content. *La Rivista Italiana Delle Sostanze Grasse*. 2012;1:62-6
- Rutkowska J., Adamska A., Sinkiewicz I., Białek M., Composition of fatty acids in selected sort of biscuits, offered for children. *Acta Alimentaria*. 2012;41(4):433-42.
- Białek M., Rutkowska J., Adamska A., Assessment of the fatty acid composition of selected chocolates and chocolate products for children available on domestic markets. In *Conference Proceedings: food science achievements and challenges*, Ed. Warsaw University of Life Sciences, 2013, pp. 374-381.
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- Mojska H., Gielecińska I., Balas J., Pawlicka M., Szponar L. Trans fatty acids in foods in Poland: monitoring Study. *Żyw Człow Metabol.*, 2006;33(2):107-22.
- Mojska H., Gielecińska I., Szponar L., Marecka D., Pawlicka M. Trans fatty acids in fast foods in Poland. *Żyw Człow Metabol.*, 2007;34(3/4):915-20.
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- Mojska H., Żukowska K., Stoś K. Trans fatty acids in infant formulas and follow-up formulas in Poland. *Żyw Człow Metab.*, 2010;37(4):247-54.

- Mojska H., Żukowska K., Stoś K. Trans fatty acids level in frying fats in Poland., Book of abstracts – 2nd Moni QA International Conference “Emerging and persisting food hazards: Analytical challenges and socio-economic impact”. Krakow, 08-10.06.2010, 104
- Mojska H., Jasińska E., Żukowska K. Żyw. Trans fatty acids content in frying fats in Poland. Człow. Metab. 2011, 38; 4-13
- www.gis.gov.pl
- SYLWIA ONACIK-GUR, ANNA ŻBIKOWSKA, MAŁGORZATA KOWALSKA: Źródła izomerów trans kwasów tłuszczowych na polskim rynku; Probl Hig Epidemiol 2014, 95(1): 120-124

Information on consumers' understanding

- Normy Żywienia Człowieka (Polish Dietary Reference Intake), edited by Jarosz M., NFNI 2012
- Nutritional guidelines for healthy children aged 1-3 years - Polish Expert Group statement - Part I - Energy and nutritional components demand. Dobrzańska A., Charzewska J., Weker H., Socha P., Mojska H., Książek J., Gajewska D., Szajewska H., Stolarczyk A., Marć M., Czerwionka-Szaflarska M., Ryżko J., Wąsowska-Królikowska K., Chojnowska z., Chybicka A., Horvath A., Socha J. Standardy Medyczne. Pediaatria, 2012, 9, 3; 313-316.
- Nutritional guidelines for healthy children aged 1-3 years – Polish Expert Group statement. Part II – Individual nutritional components review. Dobrzańska A., Charzewska J., Weker H., Socha P., Mojska H., Książek J., Gajewska D., Szajewska H., Stolarczyk A., Marć M., Czerwionka-Szaflarska M., Ryżko J., Krystyna Wąsowska-Królikowska K., Chojnowska Z., Chybicka A., Horvath A., Jerzy Socha J. Standardy Medyczne. Pediaatria, 2013,17,1; 94-100
- <http://www.izz.waw.pl/en/>
- <http://www.sggw.pl/en/>
- <http://www.bromatologia2014.confer.uj.edu.pl/-start>
<http://www.noeglehullet.dk/NR/rdonlyres/1BF5B95B-3B4D-4138-B806-61DAFD0E4F20/0/20050069201E.pdf>

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- Trans fatty acids in infant formulas and follow-up formulas in Poland. Mojska H., Żukowska K., Stoś K., Żyw. Człow. Metab., 2010, 37, 4, 247-254
- Trans fatty acids level in frying fats in Poland. Mojska H., Żukowska K., Stoś K., Book of abstracts – 2nd MoniQA International Conference “Emerging and persisting food hazards: Analytical challenges and socio-economic impact”. Krakow, 08-10.06.2010, 104
- Trans fatty acids content in frying fats in Poland. Mojska H., Jasińska E., Żukowska K. Żyw. Człow. Metab. 2011, 38; 4-13

Sweden

Information on the TFA composition of food products and intakes

- <http://www7.slv.se/Naringssok/soklivsmedel.aspx>
- Wallin, L., Wretling, S., & Mattisson, I. (2009). Trans fatty acids in cookies/biscuits and crisps - labelling and content (In Swedish). NFA Report 18.
- http://www.slv.se/upload/dokument/rapporter/mat_naring/2009_18_riksprojekt_2008_transfettstyror_i_kakorkex_och_chips.pdf
- Mattisson, I., Gard, C., Staffas, A., & Åstrand, C. (2009). Ready-made sauces, gluten-free products and Aloe Vera (In Swedish). NFA Report 13
- http://www.slv.se/upload/dokument/rapporter/mat_naring/2009/2009_livsmedelsverket_13_saser_och_aloevera.pdf
- Mattisson I, Trattner I, & Wretling S. Fat Quality 2007 (2011). Trends in fatty acid composition over the last decade. NFA Report 27.
- http://www.slv.se/upload/dokument/rapporter/mat_naring/2011/2011_livsmedelsverket_27_trends_fatty_acid_2011.pdf
- Becker, W., Market Basket 2010 - chemical analysis, exposure estimation and health-related assessment of nutrients and toxic compounds in Swedish food baskets, 2012, LIVSMEDELS VERKET- National Food Agency (NFA).

Information on consumers' understanding

- <http://www.slv.se/sv/grupp3/Nyheter-och-press/Nyheter1/Livsmedelsverket-kommenterar-transfett-i-livsmedel/>
- <http://www.konsumentssamverkan.se/11verk/kampanj/livsmedel/hardatfett/hardfettindex.htm>
- http://www.konsumentssamverkan.se/press/hardat_080929.htm
- http://www.konsumentssamverkan.se/11verk/kampanj/livsmedel/hardatfett/hardat_lista.htm
- <http://www.konsumentssamverkan.se/11verk/kampanj/livsmedel/hardatfett/vilseledande.htm>
- <http://www.konsumentssamverkan.se/11verk/kampanj/saker/forbud.htm>
- http://www.konsumentssamverkan.se/nyhetsbrev2/Enkat/enkat_transfett_res.htm
- Information on strategies to reduce population exposure to TFA and their impact and effectiveness
- <http://www.slv.se/sv/grupp3/Nyheter-och-press/Nyheter1/Klargorande-om-Livsmedelsverkets-kostrad-om-fettkvalitet/>
- http://www.slv.se/upload/dokument/remisser/remisser_2008/Remiss_ang%20f%c3%b6rslag%20till%200%c3%a4ndrig%20av%20Livsmedelsverkets%20f%c3%b6reskrifter%20LIVSFS%202005_9%20dnr%205159_07.pdf
- http://www.slv.se/upload/nfa/documents/food_regulations/Nyckel%c3%a51_dec_2009_6%20eng.pdf
- <http://www.slv.se/sv/grupp3/Nyheter-och-press/Nyheter1/Klargorande-om-Livsmedelsverkets-kostrad-om-fettkvalitet/>

Norway

Information on the TFA composition of food products and intakes

- <http://www.matvaretabellen.no/?language=en>
- <http://www.helsedirektoratet.no/publikasjoner/utviklingen-i-norsk-kosthold-matforsyningsstatistikk-2013/Publikasjoner/Utviklingen%20i%20norsk%20kosthold%202013.pdf>
- <http://www.helsedirektoratet.no/publikasjoner/utviklingen-i-norsk-kosthold-2010-kortversjon/Publikasjoner/utviklingen-i-norsk-kosthold-2010-kortversjon.pdf>

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- <http://lovdata.no/forskrift/2014-01-16-34>

United Kingdom

Information on the TFA composition of food products and intakes

- http://www.foodbase.org.uk/results.php?f_report_id=438
- <https://www.gov.uk/government/publications/nutrient-analysis-survey-of-biscuits-buns-cakes-and-pastries>
- <https://www.gov.uk/government/publications/nutrient-analysis-of-processed-foods-including-trans-fats>
- <https://www.gov.uk/government/publications/nutrient-analysis-of-fish>
- <https://www.gov.uk/government/publications/nutrient-analysis-of-eggs>
- <https://www.gov.uk/government/publications/nutrient-analysis-of-fruit-and-vegetables>
- http://www.foodbase.org.uk/admintools/reportdocuments/854-1-1588_Report_of_Analysis_of_Trans_fatty_acids_in_fats_FINAL.pdf
- <https://www.gov.uk/government/publications/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012>

Information on consumers' understanding

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- http://www.sacn.gov.uk/pdfs/sacn_trans_fatty_acids_report.pdf
- <https://responsibilitydeal.dh.gov.uk/food-pledges>
- <https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/01/Artificial-trans-fats-advice-Final.pdf>
- <http://www.scotland.gov.uk/Resource/0042/00421385.pdf>
- <https://www.gov.uk/government/publications/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012>
- <http://collections.europarchive.org/tna/20100927130941/>
- <http://food.gov.uk/multimedia/pdfs/board/fsa071207.pdf>

- http://www.foodbase.org.uk//admintools/reportdocuments/854-1-1588_Report_of_Analysis_of_Trans_fatty_acids_in_fats_FINAL.pdf
- <https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/01/Artificial-trans-fats-advice-Final.pdf>

ANNEX IV

Hyperlinks and references provided by stakeholders:

BEUC

Information on consumers' understanding

- <http://www.who.int/bulletin/volumes/91/4/12-111468/en/>
- <http://journals.ama.org/doi/abs/10.1509/jppm.27.1.83>
- http://www.gezondheid.belgie.be/internet2Prd/groups/public/@public/@shc/documents/ie2divers/19080447_fr.pdf

Information on strategies to reduce population exposure to TFA and their impact and effectiveness

- <http://www.who.int/bulletin/volumes/91/4/12-111468/en>
- http://www.beuc.org/publications/beuc-x-2014-010_the_consumer_case_for_eu_legal_restrictions_on_the_use_of_artificial_trans_0.pdf

Nestlé

Information on the TFA composition of food products and intakes

- http://www.nestle.com/asset-library/Documents/Library/Documents/About_Us/Nestle-Policy-Trans-Fat.pdf

Other

- <http://www.nestle.com/csv/rural-development-responsible-sourcing/responsible-sourcing/deforestation>
- http://www.nestle.com/asset-library/Documents/Library/Documents/Corporate_Social_Responsibility/Nestle-CSV-Summary-Report-2013-EN.pdf
- <http://www.nestle.com/csv/nutrition/saturated-fats>

MIV

Information on the TFA composition of food products and intakes

- <http://www.milchindustrie.de/themen/wissenschaft-forschung/milchfett-zum-backen-ist-gesund>