PS Lifestyle

Lifestyle Test Calculation Criteria - Finland

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101037342.

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Abstract

The following document lists the data sources and the calculation logic and assumptions behind the Lifestyle Test. This document focuses on the Lifestyle Test for Finland.

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Methodology in general

Lifestyle test examines carbon footprints using consumption-based accounting. Consumption-based accounting covers the embedded and indirect emissions of consumption during production induced by household final demand and excludes direct and indirect emissions and footprints of exported goods, the public sector, and capital investment. In a nutshell, to calculate a carbon footprint of a consumption category, the amount of consumption (kg, euros, kWh, km etc.) is multiplied by the carbon emission factor (kgCO2e * kg, euros, kWh, km etc.).

Compared to production-based accounting, which covers only direct emissions generated from the domestic production of goods and services irrespective of whether they are consumed domestically or are exported, consumption-based accounting can be considered a better measure of the global climate impacts associated with individuals' consumption and lifestyles.

More about the methodology of consumption-based accounting can be found for example in the report "1.5-Degree Lifestyles: Towards a fair consumption space for all" by Akenji et al. 2021, pages 32 to 35.

General list of references

If country not specified, the reference is in use in all countries

Mobility, consumption

OECD, year 2020	
Odyssee-Mure, year 2019	
Eurostat, year 2021	
Akenji et al. 2021 (1,5 report)	
ICAO 2019 and Maertens et al 2020	
Statistic Estonia, year 2019	EE
Izmir city, 2019	TR
Izmir Raylı Sistem Documents	TR
Mobilty data excel by partner	DE
Raser et al. 2018	IT
MOL_MOB_PKM_2017	SI
Statistical office of Slovenia, 2018,	SI

Mobility, emission factors

Cut-off Cumulative LCIA v3.8	
Ecoinvent LCIA v3.8	
Akenji et al. 2021 (1,5 report)	

Housing, consumption

Odyssee-Mure, year 2019	
Eurostat, 2020	
IEA, year 2019	
IEA year 2020	
Ministry of Economics and affairs of Estonia, 2013	EE
Statistics Estonia	EE
ICESD 2010	PT

Housing, emission factors

Cut-off Cumulative LCIA v3.8	
Ecoinvent LCIA v3.8	
Akenji et al. 2021 (1,5 report)	
Statistics Finland, 2019, polttoaineluokitus	EE, FI
Salo et al 2019	EE, FI
SYKE 2019	FI
Motiva 2020	FI
Schüppler et al., (2019)	DE

Food, consumption

FAOStat, 2019	
Andmebaasist, Health Statistics, year 2017	EE
Tilastokeskus 2020	FI
Finnish national Findiet survey 2017	FI
National Nutrition Survey II	DE
National sources from partner	GR
Italian National Food Consumption Survey 2005-06	IT
Statista, Portugal, year 2020	PT
Tarımsal Ekonomi ve Politika Geliştirme Enstitüs…	TR
Eurostat, Slovenia, year 2019	SI
Statistical Office of the Republic of Slovenia, year 2018	SI

Food, emission factors

Ecoinvent LCIA v3.8	
Kim et al 2013	
Pulkkinen ym. 2016	
Pulkkinen ym. 2016	
Clune et al 2017	
Hartikainen and Pulkkinen 2016	
Hartikainen and Pulkkinen 2016	
Bryngelsson et al 2016	

Consumption, consumption

Eurostat, year 2021	
Eurostat, year 2019	
Fediaf fact-sheet 2020	
Statistical Office of the Republic of Slovenia, year 2018	SI
TurkStat	TR
Dunyea, 2018	TR

Consumption, emission factors

Exiobase 3.8.2	
Fediaf fact-sheet 2020	
Koivula & Tuominen 2019	EE, FI, SI
Seppälä et al. 2009	FI

Calculation criteria used in the Lifestyle Test in Finland

Living

The environmental impacts of living taken into account in the PSLifestyle tool include construction, the heating of dwellings, and the use of electricity and water and heating the water to bathing temperature at home. The test always begins with a question on household members because the emissions of living are divided between the residents. While doing the lifestyle test, it must be noted that the calculation of consumption-based carbon footprint uses emissions from the lifestyle of an average Finnish citizen and optimizes it to your lifestyle, making it a close approximate of the consumption-based carbon footprint.

Household members

More people per m2 means less emissions per person. We proportion the energy consumption of your home to all household members. The average household size for Finland is expected to be 1,9 persons according to Eurostat for the year 2022.

Living area

A bigger living area would typically mean higher emissions but would also need to be proportioned with the number of people in the household. The average living space per person for Finland is 41,3 m2 in the year 2020 according to Statistics Finland.

Building type

The environmental impacts of a building are taken into account by using a factor calculated per living area. The age of the building has an impact on the insulation characteristics of the building (lower energy class) which impacts heat energy usage. As an assumption for this test, we assume older houses have lower insulation and thus a lower energy class and use more heat energy. The factor takes account of the land-use change, the manufacturing of materials and the construction, maintenance and demolition of the building.

The kind of house you live in - single family detached house, flats, or terraced house - impacts on the footprint based on construction of the house - detached houses and terraced houses have a construction and maintenance footprint of 6,9 KgCO2e/y/m2 and flats have a construction and maintenance footprint of 8 KgCO2e/y/m2 (Saari, 2001; Salo et al., 2016). Additionally, for electricity consumption it uses the value derived from the weighted average of the electricity mix of Finland is 0,122 KgCO2e (International Energy Agency; Wernet et al., 2016) and proportions it to the number of people in your home based on its size.

When the house is built and energy renovations

The question is based on the assumption that the age of a building is correlated with the level of insulation, i.e., older buildings have lower levels of insulation than newer buildings. Based on multiple studies, insulation decreases the heat energy for a building by 30-40% (Upitis et al., 2020; Savvidou et al., 2020; FHG-ISI, 2012; GJETC, 2020; Ahn et al., 2016; Jezierski et al., 2012). Based on this, it is assumed that houses built before 1990 are assumed to have the least insulation or less than average and houses built after 2010 are assumed to be most insulated or more than average. Houses built between 1990 and 2010 are considered to have average heating insulation. For houses which may be older but newly renovated, a separate question is offered for the users to choose if

their house has been renovated or not and factor for reduction in space heating requirements is between 3-40% depending on the age of the home.

Electricity

The default value for electricity consumption (excluding electricity used for heating) is based on a on the average electricity mix of your country with the average electricity consumption based on data from International Energy Agency. Default emissions of from electricity production are calculated by proportioning the electricity mix of the country with different sources of electricity production with the total energy consumption per capita obtained from the International Energy Agency and emission intensity from the EcoInvent 3.8 database and stands at 0.122 $kgCO_2e/kWh$ (Wernet et al., 2016). For emission intensity associated with solar panels, please refer to EcoInvent 3.8 directly (Wernet et al., 2016).

The greenhouse gas emissions of electricity production take into account the direct emissions of electricity production, or the emissions caused by burning of fuels and the fuel production chain. The coefficient takes account of the land-use changes related to electricity production and is a weighted average of all the electricity production sources used in the country.

Primary heating method

The question concerning the primary heating method of the respondent's home considers the most commonly used heating methods in the country. The emission factor for district heating is 0.158 $kgCO_2e/kWh$ which is the statistical average between 2019-2021 based on information from Statistics Finland (Tilastokeskus).

The response to the earlier question on the kind of electricity the respondent uses is considered in the calculations concerning the electricity consumption of electric heating, a ground-source heat pump or an air-source heat pump. An air-source heat pump is usually used as a complementary heating system, but when used us a primary heating method, there are probably more air-source heat pumps in use than one, and the efficiency of an air-source heat pump was assumed to be about the same as the efficiency of ground-source heating. Emission intensities for other heating sources are either based on data from Statistics Finland (Tilastokeskus) or EcoInvent 3.8 database (Wernet et al., 2016).

Location in Finland

The location of home defines how much less/more heating energy is needed in comparison to the average consumption of heating energy. Homes in Northern Finland have space heating requirements 20-25% higher than Southern Finland and homes in Central Finland require space heating 10-15% more than homes in Southern Finland as per data from Motiva. The higher space heating requirements are due to progressively colder climate from Southern Finland to Central and Northern Finland.

Heating

Keeping your home at a warmer temperature in winter typically also consumes more energy. As per calculation, a 2 degree rise in temperature means 10% more heat energy used and 2 degrees fall in temperature means 10% less heat energy used as referenced by Motiva.

Showering

The time spent in a shower affects water consumption and therefore also the amount of heating energy used for heating the water. This question takes into account the amount of water consumed in a shower and the amount of heat required to raise the temperature of water to showering temperature. For more information on calculations please contact D-Mat Oy directly.

Mobility

The average kilometer estimates on the use of different means of transport are based on Organisation for Economic Co-Operation and Development (OECD) statistics on Transportation.

Driving

The carbon footprint of driving is calculated based on the annual number of kilometres driven, type of fuel and the average number of people driving a car. The climate emissions consist of the fuel consumption, the manufacturing of the car and the emissions from building the road infrastructure.

The generated emissions are divided between the number of people typically driving a car, and therefore it is asked how many people usually travel with you in a car. The emission factors for different fuel types are based on data from EcoInvent who should be contacted directly for more information (Wernet et al., 2016).

Public transport

Public transport includes travel by bus, train, tram, and metro. The relative shares of the different means of public transport are based on Organisation for Economic Co-Operation and Development (OECD) statistics on Transportation. The shares were used as a basis for calculating a weighted average emission factor for public transport (0.075 $KgCO_2e$/passenger-km). The emission factors of different means of transport are based on the emission factors reported by EcoInvent 3.8 database (Wernet et al., 2016).

Air travel

The emission factor per hour for air travel is based on the average greenhouse gas emissions per kilometre based on Akenji et al., 2021. The emissions of individual flights depend on such factors as the air fleet, aircraft occupancy rate, allocation of emissions between passengers and cargo, as well as taking account of the impact of clouds in the higher atmosphere. At the moment, the calculations include fuel consumption, and the CO2e-emissions from the energy and materials used for building aircraft and airports.

In addition to direct CO_2 emissions, air traffic increases atmospheric radiative forcing, as a result of fine particles released high in the atmosphere and changes in cloud cover, for example. There is considerable uncertainty associated with these estimates; however, the latest research paper, published in 2020, estimates that 66 per cent of the total climate impact of aviation comes from sources other than the direct impact of the carbon dioxide in fuel (Lee et al., 2020). Consequently, it is justified to multiply the carbon footprint based on fuel consumption by three to account for other causes of radiative forcing that are known in the light of current knowledge (Lee et al., 2020). We further take into account the average speed of a commercial aircraft based on statistics reported by airline companies (Schiphol.nl, n.d.).

Travel by ferry

This question considers the emissions that happen due to the running of the ferry service - manufacturing and fuel consumption – and for calculating emissions we take into account the typical ferry destinations (Tallinn, Stockholm, and Travemunde) based on statistics. This is done to calculate the distance travelled in the ferry to appropriately calculate the emissions.

Walking or biking

Walking and biking are considered to be carbon-free alternative means of transport and not part of the footprint calculation. This question is asked to be able to offer more precise 100 smart actions after taking the test.

Food

Eating habits

The carbon footprint of the person taking the lifestyle test is affected by the amount of food they eat and the amount of waste this generates as well as the relative amounts of different ingredients used. It is assumed that a respondent who eats less/more compared to other people at a mealtime, eats 15% smaller/larger portions per meal.

In the lifestyle test, the respondent's diet is further calculated on the basis of the ingredients he, she or they consume at mealtimes. The consumption of various products either reduces or increases the footprint, depending on whether the respondent eats less or more of such products compared to the average consumption habits in Finland. The reducing/increasing effect of the choices is deducted from/added to the carbon footprint of an average Finn and based on our calculations it is approximately 2.0 tons a year. The consumption phase of food, including cooking and grocery shopping, is allocated to other domains such as housing and transport. For more information on calculations please contact Sitra.

The ingredients with significant climate impact have been classified into various categories: beef / pork, chicken, fish, and eggs / hard and soft cheeses / dairy products / drinks. An average portion size was calculated for each category and a portion-specific weighted emission factor was calculated based on the percentage of the various ingredients in the portion.

In the beginning the type of diet is asked. If person is a carnivore it takes into consideration the carbon footprint of all the remaining food categories that are not specifically asked about in a separate question. For a pescatarian, the carbon footprint of other foods is multiplied by a factor of 1.8. In the case of a vegetarian, this multiplier increases to 2.0. Lastly, for a vegan, the carbon footprint of these other foods is multiplied by 2.25. This is because the pescatarians, vegetarians, and vegans do not eat less in absolute terms but would have to consume more of these other food categories to have a sufficient intake of nutrients. The multipliers are based on Sitra's calculations.

Food categories

Beef

Beef was classified under its own category due to having higher emission factors than other foods. Finns consume annually approximately 19 kg of beef per person (Luke Statistics database: Consumption of food commodities per capita (kg/year), 2020). Since the consumption amount of beef is not available as weight that that we find in stores, the emission factor is converted using

factors for live weight to carcass weight (Clune et al., 2017). For exact figures on the emission factors of beef, please contact Ecoinvent directly (Wernet et al., 2016).

Hard and Soft Cheese

This category includes soft and hard cheese products made from cow's milk. The average of emission intensities of soft and hard cheese is based on how much are they consumed. Finns consume annually approximately 28 kg of cheese per person (Valsta et al., 2018). An emission factor of 7,3 kg CO_2e per kg has been assigned to soft cheeses (Kim et al., 2013). For exact figures on the emission factors of hard cheese, please contact Ecoinvent directly (Wernet et al., 2016).

Pork, Chicken, fish, or eggs

Annually, Finns consume an average of 30.8 kg of pork, 26.4 kg of poultry, 15.2 kg of fish and other seafood, and 11.9 kg of eggs and egg products per person (Luke Statistics database: Consumption of food commodities per capita (kg/year), 2020).The emission factor of pork is slightly higher than that of other foods in the category but, on the other hand, significantly lower than the emission factor of beef. Different foods are proportioned based on how these are consumed on average. An emission factor 3.39 kg CO_2e per kg has been assigned to eggs and egg products (Clune et al., 2017). Since the consumption amount of pork, chicken, and fish and other seafood is not live weight that is available in stores, the emission factor from Ecoinvent is converted using factors for live weight to carcass weight (Clune et al., 2017; Wernet et al., 2016). For exact figures on the emission factors of pork, chicken, and fish, please contact Ecoinvent directly (Wernet et al., 2016).

Dairy products

Milk and dairy products were highlighted as the fourth category since their high consumption has an effect on the carbon footprint. Finns consume annually approximately 104 kg of liquid milk and approximately 50 kg of other dairy products (excluding cheese) per person (Luke Statistics database: Consumption of food commodities per capita (kg/year), 2020; Valsta et al., 2018). The categories under dairy products are liquid milk, concentrated milk, cream and cream products, and fermented milk products. For exact figures on emission factors on concentrated milk, cream and cream products, and fermented milk products, please contact Ecoinvent directly (Wernet et al., 2016).

Beverages

The emission factors for different drinks are based on the sources Bryngelsson et al. (2016), Hartikainen and Pulkkinen (2016) and Wernet et al. (2016). The emission factors used are the following: 0.9 kg CO_2e per kg for fruit and vegetable juices, 0.49 kg CO_2e per kg for soft drinks and 1.4 kg CO_2e per kg for alcoholic beverages (Bryngelsson et al., 2016; Hartikainen & Pulkkinen, 2016). For exact figures on emission factors of coffee and tea, please contact Ecoinvent directly (Wernet et al., 2016).

Eating outside and food delivery

As concerns meals eaten outside the home, the energy consumption used for providing the service, or preparing the food (1 kWh/time eating out), was taken into account. A carbon footprint of a food delivery or a restaurant visit takes into consideration the average transport to or from the restaurant and the average energy consumption of restaurant service per customer. Question also takes into consideration the average carbon footprint of waste in take-away meals (Crawford, 2021; Shopfood, 2020; Statista Research Department: Frequency of dining at restaurants or other out-of-home dining establishments in Europe as of 3rd quarter, 2015; United Nations Environment Programme, 2021).

Food waste

Finnish people throw away approximately 67 kg of edible food a year (United Nations Environment Programme, 2021), which increases the carbon footprint. The emission factor for food waste was calculated based on the biowaste of an average Finn person eating a mixed diet (Wernet et al., 2016). For exact figures on emission factors for food waste, please contact Ecoinvent directly (Wernet et al., 2016).

Consumption

Living, mobility and food are the most significant sub-sectors in the carbon footprint of an average consumer. It would require a number of questions to make a comprehensive estimate and analysis of the climate emissions of other sectors of personal consumption. In such a case, the effort it would require for a respondent to complete this section would no longer be in proportion to the significance of this sub-sector. However, in the lifestyle test we wanted to highlight a few important matters, acknowledging that other choices (such as services and interests) have an impact as well. In this calculator, the sub-sectors included consumption of household goods, leisure, summer cottages and pets.

Shopping habits

On average, the combined climate emissions of furnishings and home care products, clothes and footwear, goods related to spare time activities and hobbies, audiovisual devices, as well as books, magazines, newspapers, and paper products amount to approximately 5381 e/person/year (Eurostat Dataset: Final consumption expenditure of households by consumption purpose (COICOP 3 digit), 2019). Carbon intensities are from Exiobase 3.8. (Stadler et al., 2021). To make consumption amounts compatible with Exiobase carbon intensities, conversion from consumer prices to basic prices is needed. Conversion includes removal of value-added tax and VAT rates in 2019 were taken from Avalara website (Avalara: Finnish VAT, 2019).

Second-hand

The carbon footprint of a person buying recycled clothing or electronics is estimated to be smaller than that of an average consumer, because buying recycled products, does not generate the climate emissions caused by the manufacturing of new goods and clothes. This reduction in carbon footprint only applies to the share of clothes and electronics, which is 18 % of all consumption of household goods in Finland (Eurostat Dataset: Final consumption expenditure of households by consumption purpose (COICOP 3 digit), 2019). If the person answers they do not shop secondhand, the carbon footprint of consumption is not affected. If they answer they seldom shop secondhand, we assume they buy 10% secondhand, if they answer that they purchase mostly secondhand we assume that 80% of the clothes and electronics are bought second-hand.

Pets

Pets bring joy to people's lives and are often treated as members of the family. However, pets also consume natural resources in the form of food and different services and products. Pets can be of very different size, anything from tiny hamsters to horses. Therefore, we ask about the expenditure on pets to determine the emissions. The estimate about the average monetary value of the products and services Finns use for their pets is based on FEDIAF Annual Report (2022) and Eurostat (2019). The emissions of food consumed by pets were estimated by comparing the nutritional values of dog and cat foods and using the emission factors of the Sitra's estimations for the emission factors, since dogs and cats are the most common household pets.

Cottages

In the question about cottages, the assumption is that the summer cottage is modestly equipped. It is assumed that basic heating is maintained in a cottage used year-round even when it is not in active use. For cottages used throughout the year, it is assumed that the cabin is better equipped with proper insulation and indoor toilet. The earlier answer given by the respondent on whether he, she or they use ordinary or ecological electricity was considered when calculating electricity consumption. The climate emissions generated by the use of a cottage are divided between people using a cottage on a regular basis.

In addition to electricity consumption, the lifestyle test accounts for the climate impacts of the consumption of raw materials needed for building the cottage, land use and maintenance of the cottage. The emission factor used is based on the calculation made by Koivula et al., (2019). The estimates of the average usage of cottages in summer and winter (days/year) are based on the statistics of the Free-Time Residence Barometer (Finnish Consulting Group Oy, 2016).

Action Recommendations

Once the lifestyle test is completed, actions are recommended directly based on the responses of the lifestyle test. The impact of the recommended tips/actions on the result of the test is based on the impact of the action on an average Finnish citizen and is proportioned to the result of the lifestyle test. The use of averages has means that some actions might not give the most appropriate emission reduction, however, we are continuously working to evolve the logic behind the action recommendations and would be updating the logic.

Sources

Avalara. (2019). *Finnish VAT*. Avalara, Inc. https://www.avalara.com/vatlive/en/country-guides/europe/finland.html

Lewis Akenji, Magnus Bengtsson, Viivi Toivio, Michael Lettenmeier, Tina Fawcett, Yael Parag, Yamina Saheb, Anna Coote, Joachim H. Spangenberg, Stuart Capstick, Tim Gore, Luca Coscieme, Mathis Wackernagel, Dario Kenner. 2021. *1.5-Degree Lifestyles: Towards A Fair Consumption Space for All*. Hot or Cool Institute, Berlin. https://hotorcool.org/wp-content/uploads/2021/10/Hot_or_Cool_1_5_lifestyles_FULL_REPORT_AND_ANNEX_B.pdf

Ahn, B., Kim, J., Jang, C., Leigh, S., & Jeong, H. (2016). *Window retrofit strategy for energy saving in existing residences with different thermal characteristics and window sizes*. Building services engineering research & technology, 37(1), 18-32. https://doi.org/10.1177/0143624415595904.

Bryngelsson, Wirsenius, Hedenus, & Sonesson. (2016). How can the EU climate targets be met? A combined analysis of technological and demand-side changes in food and agriculture. *Food Policy*, *59*, 152–164. https://doi.org/10.1016/j.foodpol.2015.12.012

Clune, Crossin & Verghese. (2017). Systematic review of greenhouse gas emissions for different fresh food categories. *Journal of Cleaner Production*, *140*, 766–783. https://doi.org/10.1016/j.jclepro.2016.04.082

Crawford. (2021, January 18). *Home-delivered food has a huge climate cost. So which cuisine is the worst culprit?* The Conversation. http://theconversation.com/home-delivered-food-has-a-huge-climate-cost-so-which-cuisine-is-the-worst-culprit-151564

Eurostat. (2019). *Dataset | Eurostat*. Final Consumption Expenditure of Households by Consumption Purpose (COICOP 3 Digit). Final consumption expenditure of households by consumption purpose (COICOP 3 digit) - Data Europa EU

FEDIAF. (2022). *FEDIAF | Statistics*. European Statistics 2022. https://europeanpetfood.org/about/statistics/

Finnish Consulting Group Oy. (2016). (pdf) Mökkibarometri 2016. Microsoft Word - Raportti_Mokkibarometri_2016_100316B.docx (mmm.fi)

Fraunhofer Institut für System- und Innovationsforschung (FhG ISI)/Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit(BMU) (2012): *Policy Report. Contribution of Energy Efficiency Measures to Climate Protection within the European Union until 2050*. Berlin: BMU.

GJETC, 2020, *Energy efficiency in buildings, particularly for heating and cooling*. http://www.gjetc.org/wp-content/uploads/2021/03/GJETC-WG-2-output-paper.pdf

Hartikainen & Pulkkinen. (2016). *Summary of the chosen methodologies and practices to produce GHGE-estimates for an average European diet*. http://urn.fi/URN:ISBN:978-952-326-314-7

International Energy Agency (IEA). (n.d.). Retrieved 15 June 2023, from https://www.iea.org/countries/finland

Jezierski, W., Sadowska, B., & Pawłowski, K. (2021). *Impact of Changes in the Required Thermal Insulation of Building Envelope on Energy Demand, Heating Costs, Emissions, and Temperature in Buildings*. Energies (Basel), 14(1), 56. https://doi.org/10.3390/en14010056.

Kim, Thoma, Nutter, Milani, Ulrich & Norris. (2013). Life cycle assessment of cheese and whey production in the USA. *The International Journal of Life Cycle Assessment*, *18*(5), 1019–1035. https://doi.org/10.1007/s11367-013-0553-9

Koivula, Tuominen, Lahtinen, Poutamo & Saloranta. (2019). *Etelä-Savon matkailun hiilijalanjälki. Kohti vastuullista matkailua*. http://www.theseus.fi/handle/10024/170534

D.S. Lee, D.W. Fahey, A. Skowron, M.R. Allen, U. Burkhardt, Q. Chen, S.J. Doherty, S. Freeman, P.M. Forster, J. Fuglestvedt, A. Gettelman, R.R. De León, L.L. Lim, M.T. Lund, R.J. Millar, B. Owen, J.E. Penner, G. Pitari, M.J. Prather, R. Sausen, L.J. Wilcox, *The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018*, Atmospheric Environment, Volume 244, 2021, 117834, ISSN 1352-2310,

https://doi.org/10.1016/j.atmosenv.2020.117834.

Luke. (2020). *Consumption of food commodities per capita by Year and Commodity*. Statistics Database. Consumption of food commodities per capita by Year and Commodity. PxWeb (luke.fi)

Organisation for Economic Cooperation and Development (OECD). (n.d.). Retrieved 15 June 2023, from https://stats.oecd.org/Index.aspx?DataSetCode=ITF_INDICATORS

Saari A, 2001. *Rakennusten ja rakennusosien ympäristöselosteet.*

Salo, M., Nissinen, A., Mattinen, M., Manninen, K., Dahlbo, H., Judl, J. (2016). *Ilmastodieetti - mihin sen antamat ilmastopainot perustuvat?*. https://wwwp5.ymparisto.fi/ilmastodieetti_storage/documentation/Laskentaperusteet.pdf

Savvidou, G., Nykvist, B., *Heat demand in the Swedish residential building stock – pathways on demand reduction potential based on socio-technical analysis*, Energy Policy, Volume 144, 2020, 111679, ISSN 0301-4215. https://doi.org/10.1016/j.enpol.2020.111679.

Schiphol. (n.d.). Retrieved 15 June 2023, from https://www.schiphol.nl/en/you-and-schiphol/page/five-questions-about-aircraft/

Shopfood. (2020, November 9). *What's the Average Distance for Food Delivery Services?* https://www.shopfood.com/online-shopping/whats-the-average-distance-for-food-delivery-services/

Sitra. (n.d.). *Front page*. Sitra. Retrieved 20 March 2023, from https://www.sitra.fi/en/

Stadler, Wood, Bulavskaya, Södersten, Simas, Schmidt, Usubiaga, Acosta-Fernández, Kuenen, Bruckner, Giljum, Lutter, Merciai, Schmidt, Theurl, Plutzar, Kastner, Eisenmenger, Erb, Koning, Tukker. (2021). *EXIOBASE 3* (3.8.2) [Data set]. Zenodo. https://doi.org/10.5281/ZENODO.5589597

Statista Research Department. (2015). *Frequency of dining at restaurants or other out-of-home dining establishments in Europe as of 3rd quarter 2015*. Statista. https://www.statista.com/statistics/683959/eating-out-frequency-europe/

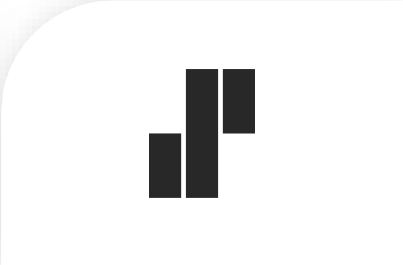
United Nations Environment Programme, U. N. (2021). (pdf) *UNEP Food Waste Index Report 2021.* https://wedocs.unep.org/bitstream/handle/20.500.11822/35280/FoodWaste.pdf

M. Upitis, I. Amolina, I. Geipele, N. Zeltins: *Measures to achieve the energy efficiency improvement targets in the multi-apartment residential sector*, Latvian Journal of Physics and Technical Sciences, 2020, https://sciendo.com/pdf/10.2478/lpts-2020-0032

Valsta, Kaartinen, Tapanainen, Männistö & Sääksjärvi. (2018). *Ravitsemus Suomessa: FinRavinto 2017 -tutkimus*. https://www.julkari.fi/handle/10024/137433

Wernet, Bauer, Steubing, Reinhard, Moreno-Ruiz & Weidema. (2016). The ecoinvent database version 3 (part I): Overview and methodology. *The International Journal of Life Cycle Assessment*, *21*(9), 1218–1230. https://doi.org/10.1007/s11367-016-1087-8

Project partners



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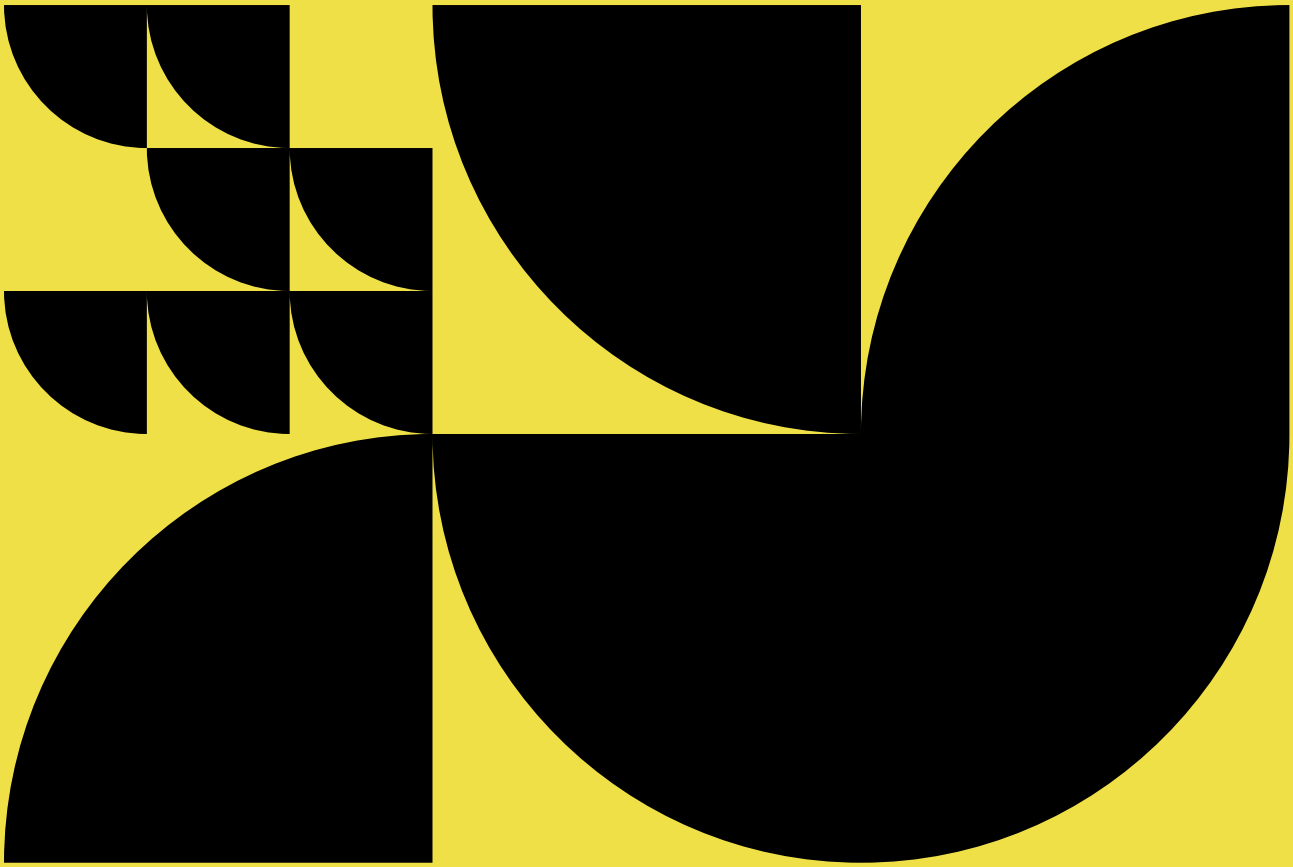

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101037342.

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