

This paper describes the calculation model for the CO₂ emissions of a game studio. The model is based on our best knowledge and we are happy to hear any feedback from the model to make it better in the future.

This is Open Source: the model is free to use, share and you can use it for your own work and so on. For your further modelling (e.g. excels), please reference this paper, as this model will be every now and then updated.

What are included in the model with prioritization colouring and underlining (two dark orange underlining – high importance / blue and underlined – quite important / lilac line without underlining – nice to have, but not a priority):

- Players (highly important!)
- YouTube audience (highly important if having active YouTube channel(s))
- Work in the office:
 - o Electricity and heating (highly important!)
 - o Waste management of the office (nice to have)
 - o Purchases: office equipment and necessities (partly important, partly nice to have)
 - o Developing the game, so computers, servers, telephones (if there's something that does not come up with office's electricity usage) (somewhere between nice to have and important)
 - o Commuting and post services if relevant to the company (nice to have)
- Work outside the office:
 - o Working from home (highly important if people have been working from home)
 - o Flights (highly important!)
 - o Other travel (nice to have – colouring mainly because of the missing information about hotels)

When doing calculations – if you have to prioritize, we advise to prioritize the emission sources marked as high priority (players, office's electricity and heating, working from home and flights).

Office electricity and heating/cooling: If you can't get some figures because of the information being available from a landlord, please ask the landlord what the source of energy (renewable or not) is. Please let the person asking for calculations know about the unavailability of data, the source of the energy (renewable or not), and size of the office (m²).

Flying: Please note, that last couple of years (2020-2021, even 2022) you have probably travelled less – so it might be good idea to find out baseline for your flying by calculating emissions from 2019 flights.

Please note: This model is not part of some calculation protocol/standardised. However it will help to figure out the emissions and main sources, and what emission scopes are biggest in the company.

All the feedback is welcomed, please contact Elina from Neogames (elina@neogames.fi or 040 842 87 36).

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Index

Background information and side notes	2
Players – mobile games	3
Players – PC and console games	4
YouTube audience	5
Electricity and heating/cooling of the office	6
Office waste management	7
Developing the games (servers etc. that are not part of your office calculations/player calculations)	7
Purchases	8
Commuting, office car, post services	9
Working from home	10
Travelling – flights	10
Travelling – other travel	11

Background information and side notes

Neogames Finland ry, in co-operation with Suomen Pelinkehittäjät ry, has created this model to support game developers to estimate their carbon dioxide emissions. It is free to use for all the companies interested in knowing more about their emissions.

For some emission sources there are good calculators in the internet to use – such as ilmastolaskuri.fi by WWF, which we advise in many cases to use (usable also in English). So if you prefer using some kind of online calculator, you can do that too.

If you can't get some figures because of the information being available from a landlord, make a note about that. Please ask the landlord the source of energy to know whether it is renewable or not.

To have a truthful baseline of flying emissions, we advise to calculate also flying emissions from 2019.

Defining the emission scopes based on this paper:

https://www.ghgprotocol.org/sites/default/files/ghgp/standards_supporting/Diagram%20of%20scopes%20and%20emissions%20across%20the%20value%20chain.pdf

Players – mobile games

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Players: how much do they play, the device(s), hosting (and distribution of games)</p> <p><u>HIGH PRIORITY</u></p>	<p>How much do people play: Player data</p> <p>Hosting: service provider like AWS</p> <p>Device(s): tech/player data</p>	<p>How to calculate players' emissions MOBILE:</p> <ol style="list-style-type: none"> How much people play: DAU or MAU figures, 12 months average -> we know how many people play and the amount of devices Device for playing: share of iOS and Android (and others if there is some platform being big) -> we know how many people play with Android and how many with Apple Choose top-device from iOS and Android to make the calculations Assumption: every player plays the game that much they need to recharge the device once a day -> the energy that is needed for 0 %-> 100 % charge (+20% waste) When calculating that every player, every day, recharge their device once a day from zero to full, you get kWh number <p>Battery voltage in use is around 3.7 – 3.8 V in phone batteries.</p> <p>Examples about battery capacities and charging time: iPhone 13 Pro Max: battery capacity 4352 mAh. Estimated full charge time 2h 11 min with 20W (0,02 kW) charger – so to 120 % recharge (estimating 20 % goes to waste) takes 2,62 hours.</p> <p>Samsung Galaxy S21 Ultra 5G Snapdragon: battery capacity 5000 mAh. Estimated full charge time 1h 28 min with 65W (0,065 kW) charger – so to 120 % recharge (estimating 20 % goes to waste) takes 1,76 hours.</p> <p>Calculate together: number of players on that (e.g. iPhone or Samsung) device * charger (kW) * charging time in hours * 365 days a year (when doing yearly calculations = energy (kWh) players use. (And do that to the possible other devices as well).</p> If you know where the players are, you can choose the grid specifically. If not, USA grid is probably average, emission wise. So you need to get the information about the grid's CO₂ emissions. https://www.epa.gov/egrid helps with getting the kWh and the CO₂ emissions of chosen grid together. Figure is 0.889 lbs of CO₂ emissions per kWh (which is 0.403 kgCO₂ emissions per kWh or 0.000403 tCO₂). Calculate together: grid emissions (tCO₂/kWh) with energy players use (kWh) = tCO₂/kWh from players Hosting*: how much energy does that require (kWh) and in what grid that happens (CO₂ emissions per kWh) and add this on top of earlier calculation. 	<p>Scope 3 emissions</p> <p>This model probably leads to bigger emission figures that really comes from players, as probably not all the players have to recharge their phones every day due to playing. However, as this model does not have calculations for internet connection emissions, the bigger numbers compensate lack of that aspect.</p> <p>Battery voltage: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Technology-Media-Telecommunications/gx-tmt-pred15-smartphone-batteries.pdf</p> <p>About batteries and charging time: https://www.dxomark.com/apple-iphone-13-pro-battery-review/ (times from table of "Time to full charge", not from text) Apple charger power: https://www.breakinglatest.news/business/apple-iphone-13-pro-max-charging-power-announced-there-are-surprises-apple-iphone/</p> <p>* Hosting (servers etc.): Please ask the data of hosting emissions/electricity usage from your service provider. AWS has online carbon footprint calculator tool for its customers. https://aws.amazon.com/aws-cost-management/aws-customer-carbon-footprint-tool/</p>

Players – PC and console games

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Players: how much do they play, the device(s), hosting (and distribution of games)</p> <p><u>HIGH PRIORITY</u></p>	<p>How much do people play: Player data</p> <p>Hosting: service provider like AWS</p> <p>Device(s): tech/player data</p> <p>Distribution: if games are distributed in physical copies - distributor</p>	<p>How to calculate players' emissions PC AND CONSOLE:</p> <ol style="list-style-type: none"> Physical distribution: As we don't have an idea what is the most common way globally in waste management of physical copies, we don't have a model to calculate CO₂ emissions of physical copies. Disc raw materials and manufacturing emissions are estimated to be 0.28 kgCO₂/unit*. Physical distribution emissions come also from distribution and end of life management. If you have physical distribution, please include the sales of physical copies to player emissions. How much people play: DAU or MAU figures (if you don't have these figures**), 12 months average and gaming session lengths -> we know how many people play and how much do they play. These should be available for you if people play logged in and online***. Device for playing****: PC: let's estimate that average PC runs with 200-300 W when gaming. Screen 30-50 W. So overall about 350 W. Console: PS5: 210 W // PS4: 150 W // PS3: 190 W Xbox Series X: 220 W // Xbox One X: 180 W // Xbox One: 120 W // Xbox 360: 180W Nintendo Switch: 18 W Wii: 40 W TV: 67 W VR: Headset 4,5 W Please also calculate the computer (see PC estimations above) Calculate together: number of players in a day * game length * devices (kW) * 365 days of a year = energy (kWh) players use. If you know where the players are, you can choose the grid specifically. If not, USA grid is probably average, emission wise. So you need to get the information about the grid's CO₂ emissions. https://www.epa.gov/egrid helps with getting the kWh and the CO₂ emissions of chosen grid together. Figure is 0.889 lbs of CO₂ emissions per kWh (which is 0.403 kgCO₂ emissions per kWh or 0.000403 tCO₂). Calculate together: grid emissions (tCO₂/kWh) with energy players use (kWh) = tCO₂/kWh from players Hosting*****: how much energy does that require (kWh) and in what grid that happens (CO₂ emissions per kWh) and add this on top of earlier calculation. 	<p>Scope 3 emissions</p> <p>Overall note: we do not have the emissions from internet connection in the calculations. We do have some idea how to count that in, so if you are interested to have network&router emissions calculated too, contact Neogames Finland.</p> <p>* Mayers, K., J. Koomey, R. Hall, M. Bauer, C. France, and A. Webb. 2014. The carbon footprint of games distribution. Journal of Industrial Ecology 19(3): 402–415 ** If you don't have any information about player activity, maybe just use sells * game length, or your own estimation. *** Some people may play offline. For consoles good guess might be 10%.</p> <p>**** Figures for PC: If your game is needing a lot of power to run and you estimate that the computers used need more energy, check this: https://www.forbes.com/sites/michaelkanellos/2015/09/07/the-big-surprise-in-home-energy-consumption-gaming-pcs/?sh=73ca31f51bff Figures for PC (used in calculation): https://www.maketecheasier.com/pcs-vs-laptops-vs-tablets-energy-efficient/ Figures for console: https://energyusecalculator.com/electricity_gameconsole.htm and for PlayStation 4 and 5: https://www.playstation.com/en-gb/legal/ecodesign/ TV: https://www.samsung.com/fin/tvs/uhd-4k-tv/tu6905-43-inch-crystal-uhd-smart-tv-ue43tu6905kxxc/ Figures for VR: https://www.thehomehacksdiy.com/how-much-power-watts-does-a-vr-headset-use/</p> <p>***** Hosting (servers etc.): Please ask the data of hosting emissions/electricity usage from your service provider. AWS has online carbon footprint calculator tool for its customers. https://aws.amazon.com/aws-cost-management/aws-customer-carbon-footprint-tool/</p>

YouTube audience

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Viewing: watch time (h), device(s), location (country)</p> <p>HIGH PRIORITY (except in the case of not having active YouTube attendance)</p>	<p>Watch time: YouTube</p> <p>Location: YouTube</p> <p>Device: Own estimation</p>	<p>YouTube provides channel administration with following information:</p> <ul style="list-style-type: none"> - top 10 countries - watch time (hours) in those top 10 countries and overall - device share in top 10 countries <p>Google has announced, that every YouTube video streamed has zero carbon footprint from Google data centers. This means that there is no need for calculating streaming emissions, just the end device.*</p> <p>Calculate together: watch time (in hours) * device consumption (kWh/h) * emissions of the country's (or countries') grid (CO₂/kWh) = the emissions of YouTube audience.</p> <p>Estimations of device consumptions:</p> <ul style="list-style-type: none"> - Mobile around 2,8-2,9 W - Tablet around 5 W - TV (43") around 67 W - PC around 300 W, laptop around 90 W (YouTube does not say is it PC or laptop, just computer) <p>If you know where the viewers are, you can choose the grid specifically. If not, USA grid is probably average, emission wise. So you need to get the information about the grid's CO₂ emissions. https://www.epa.gov/egrid helps with getting the kWh and the CO₂ emissions of chosen grid together. Figure is 0.889 lbs of CO₂ emissions per kWh (which is 0.403 kgCO₂ emissions per kWh or 0.000403 tCO₂).</p>	<p>Scope 3 emissions</p> <p>If you have active YouTube channel(s) with a lot of viewers, the emissions can be quite significant.</p> <p>* YouTube streaming carbon footprint https://www.youtube.com/howtubeworks/progress-impact/sustainability/</p>

Electricity and heating/cooling of the office

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Electricity usage of the building – how much electricity is used (kWh) and what is the source (renewable etc.)</p> <p>HIGH PRIORITY</p>	<p>Landlord. If the building is own, there should be some kind of manager that has this information.</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - the source of your electricity (is it renewable or not?) - How much energy are you using? (kWh) <p>If you are using renewable energy, according to Helen (energy company in Helsinki area) the CO₂ emissions would be 0 kg/kWh. This number can be used in other parts of Finland as well.</p> <p>In Finland, according to Motiva, CO₂ emissions from one kWh: 0.089 kg CO₂/kWh = 0.000089 t CO₂/kWh.</p> <p>In Europe, according to EEA, average CO₂ emissions from one kWh: 0.281 kg CO₂/kWh = 0.000281 t CO₂/kWh (2018).</p> <p>You can also use this kWh to CO₂ emissions calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator</p>	<p>Scope 2 emissions</p> <p>https://www.helen.fi/en/electricity/electricity-products-and-prices/environmental-electricity and https://www.helen.fi/en/company/energy/energy-production/specific-emissions-of-energy-production</p> <p>Average CO₂ emissions per kWh: https://www.motiva.fi/ratkaisut/energia/nkaytto-suomessa/co2-paastokertoimet https://www.eea.europa.eu/data-and-maps/indicators/overview-of-the-electricity-production-3/assessment</p> <p>Can't get this data from your landlord? Make a note and ask about the source of energy (renewable or not?).</p>
<p>Heating and cooling – source of the energy (renewable etc.) and how much is used (kWh).</p> <p>HIGH PRIORITY</p>	<p>Landlord should have information about the source of heating and cooling.</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - the source of the heating and cooling (is it renewable?) - How much are you using heating/cooling? (kWh) <p>District heating in Helsinki area (using Helen – usable in other parts of Finland as well): CO₂ emissions of basic district heating are 0.177 kg CO₂/kWh = 0.000177 t CO₂/kWh. CO₂ emissions for renewable district heating are 0 kg CO₂/kWh (if you are using 100 % renewable district heating – according to Helen it is climate neutral).</p> <p>District cooling: According to Helen, CO₂ emissions are 0 kg/kWh. According to WWF Finland, the average CO₂ emissions are 0.045 kg/kWh = 0.000045 t CO₂/kWh. If you are not buying cooling from Helen, use WWF's number.</p> <p>If you are doing calculations outside Finland, please check if there is some information from your local energy company, as there might be differences in availability of renewable district heating etc.</p> <p>If you are using some other sources, like oil, see https://www.forestresearch.gov.uk/tools-and-resources/fthr/biomass-energy-resources/reference-biomass/facts-figures/carbon-emissions-of-different-fuels/</p>	<p>Scope 2 emissions</p> <p>https://www.helen.fi/en/company/energy/energy-production/specific-emissions-of-energy-production</p> <p>Can't get this data from your landlord? Make a note and ask about the source of energy (renewable or not?).</p>

Office waste management

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Waste management – waste types and amount of the waste</p> <p>NICE TO HAVE</p>	<p>Landlord should have information about the amount of each waste type</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - which wastes do you produce - how much waste do you produce (you should be able to find these figures from the waste bill) – per waste category <p>As there is not up-to-date index figures to configure amount of waste to emissions in Helsinki area from our environmental agency, I advise using Ilmastolaskuri:</p> <p>https://www.ilmastolaskuri.fi/ (Calculate the carbon footprint with free trial -> go to the fourth page and give the information there -> go to the summary page to get the figures)</p> <p>If you have some index figures in your own area, please calculate them together with the amount of waste you are producing.</p>	<p>Scope 3 emissions</p> <p>The weight of each waste type can be found from the waste bill.</p> <p>Can't get this data from your landlord? Make a note about that. Fortunately this should not be that big part of game studio's emissions.</p>

Developing the games (servers etc. that are not part of your office calculations/player calculations)

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Developing and maintaining the game – energy usage (kWh) of computers, servers, telephones, data services and so on... and source of energy</p> <p>A PRIORITY</p>	<p>Probably tech / service provider</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - the energy usage (kWh) - source of energy for those facilities <p>PLEASE NOTE – here you should calculate those game related emissions that are not part of your office's energy usage (or home offices – that is later in this paper) or player emissions (hosting).</p> <p>If you are using renewable energy, according to Helen (energy company in Helsinki area) the CO₂ emissions would be 0 CO₂/kWh.</p> <p>In Finland, according to Motiva, CO₂ emissions from one kWh: 0.131 kg CO₂/kWh = 0.000131 t CO₂/kWh.</p> <p>In Europe, average CO₂ emissions from one kWh: 0.281 kg CO₂/kWh = 0.000281 t CO₂/kWh. (2018).</p> <p>You can use kWh to CO₂ emissions calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator</p>	<p>Scope 2 emissions</p>

Purchases

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Purchases – what is purchased and how much</p> <p>Tech purchases: A PRIORITY</p> <p>Other purchases: NICE TO HAVE</p>	<p>Probably administrative</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - what you have purchased - how much you have purchased <p>TECH (DEVICES THAT WERE PURCHASED): For Finnish users: These can be calculated with WWF's Ilmastolaskuri. https://www.ilmastolaskuri.fi/ (Calculate the carbon footprint with free trial -> go to the third page and give the information there -> go to the summary page to get the figures)</p> <p>Estimations of different devices – including manufacturing, and many cases transportation and recycling (not the use, which is included in energy consumption in the office or at home). All numbers are per one device!</p> <ul style="list-style-type: none"> - smartphone 58.5 kg of CO₂ = 0.0585 t/CO₂ - laptop 155.6 kg of CO₂ = 0.1556 t/CO₂ - computer monitor <ul style="list-style-type: none"> o LCD 327.6 kg of CO₂ = 0.3276 t/CO₂ o LED 208 kg of CO₂ = 0.208 t/CO₂ - tablet computer 162 kg of CO₂ = 0.162 t/CO₂ - printer 78 kg of CO₂ = 0.078 t/CO₂ - multipurpose device (printing, scanning...) 410 kg of CO₂ = 0.410 t/CO₂ <p>FOR OFFICE EQUIPMENT AND PAPER: For Finnish users, WWF's Ilmastolaskuri is very good https://www.ilmastolaskuri.fi/ (Calculate the carbon footprint with free trial -> go to the third page and give the information there -> go to the summary page to get the figures)</p> <p>New furniture (not recycled!):</p> <ul style="list-style-type: none"> - task chair 72 kg of CO₂ = 0.072 t/CO₂ - visitor chair 36 kg of CO₂ = 0.036 t/CO₂ - work station desk 45 kg of CO₂ = 0.045 t/CO₂ - 6 people table 228 kg of CO₂ = 0.228 t/CO₂ - sofa 90 kg of CO₂ = 0.09 t/CO₂ - armchair 43 kg of CO₂ = 0.043 t/CO₂ - bookcase 18 kg of CO₂ = 0.018 t/CO₂ - cabinet 48 kg of CO₂ = 0.048 t/CO₂ <p>FOOD (IF YOU CAN AND IT IS RELEVANT): If there is food available on the office for employees that has of course carbon footprint too. If you know, which items and how much is purchased, you should be able to calculate CO₂-emission for that too. Most of the calculators available calculate from personal point of view (what is your diet), but this might work if you want to take this into calculations: https://myemissions.green/food-carbon-footprint-calculator/</p> <p>Some figures useful for office environment:</p> <ul style="list-style-type: none"> - black tea or coffee: 0.021 kg of CO₂ = 0.000021 t/CO₂ per cup (source: Guardian's article) - a large cappuccino: 0.235 kg of CO₂ = 0.000235 t/CO₂ per cup (source: Guardian's article) - bananas: 0.48 kg of CO₂ = 0.00048 t/CO₂ per kilo of bananas - apples: 0.015-0.3 kg of CO₂ = 0.000015-0.0003 t/CO₂ per kilo of apples (depending on transportation) - milk: 0.8-1.3 kg of CO₂ = 0.0008-0.0013 t/CO₂ per litre (in Finland/Valio). Global average 2.5 kg CO₂ = 0.0025 t/CO₂ per litre. 	<p>Scope 3 emissions</p> <p>Tech: numbers come from: WWF's Ilmastolaskuri coefficients</p> <p>Furniture – if wanting to see more information about numbers or need information about e.g. kitchen units, check (they have average carbon footprint for different furniture): http://www.healthyworkstations.com/resources/Environment/FIRA.CarbonFootprint.pdf</p> <p>Please note, that different sources and calculators have different coefficients, so if you use, for example, WWF's Ilmastolaskuri, and want also to calculate the purchases with these coefficients given from different sources, the results might be different.</p>

Commuting, office car, post services

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>If relevant: commuting (estimation how much your employees commute), company car (how much kilometers is it driven and what is the fuel), post services (how much is used, the company providing the service)</p> <p>NICE TO HAVE</p>	<p>Administration or HR or Service provider</p>	<p>COMMUTING: You need to have estimation of commuting needs of your employees to calculate this.</p> <p>If you are supporting your employees' commuting or know their commuting needs, this can be calculated on those assumptions. For Finnish users, WWF's Ilmastolaskuri helps calculations a lot: https://www.ilmastolaskuri.fi/ (Calculate the carbon footprint with free trial -> go to the second page, choose "Travel between home and workplace", and give the information there -> go to the summary page to get the figures)</p> <p>USING COMPANY CAR: You need to know:</p> <ul style="list-style-type: none"> - the kilometres the car has gone through last year - the fuel of the car <p>WWF's Ilmastolaskuri (https://www.ilmastolaskuri.fi) can be used for this too (the second page has also passenger car in there)</p> <p>First you need information how much fuel has been used by driving the company car (if company has electric car, the electricity used to reload car batteries should be on office's electricity usage – if not, follow instructions from that part to calculate kWh -> CO₂ emissions). If you don't have exact information about that, but have figures or estimations of the kilometres travelled, calculate the fuel usage: kilometres * average fuel consumption of the vehicle.</p> <p>When you have information about fuel usage, combine that figure with emissions per litre: Diesel: 0.002689 tCO₂ / litre Gasoline: 0.002348 tCO₂ / litre</p> <p>Calculate: fuel usage (litres) * emissions of the fuel per litre = emissions.</p> <p>POST SERVICES: You need to know:</p> <ul style="list-style-type: none"> - who is the service provider for your post services - how much are you using the service <p>There is no calculator for this – please ask from your post services provider!</p> <p>Finnish post service Posti provides information about CO₂ emissions to those who use OmaPosti. And Posti actually compensates 100 % of all the emissions in Finland.</p>	<p>Commuting, post services: Scope 3 emissions</p> <p>Company car: Scope 1 emissions</p> <p>GHG emissions from typical passenger vehicle: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle</p>

Working from home

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Working from home – especially if there has been most of the company or big part on WFH mode</p> <p>HIGH PRIORITY</p>	<p>HR (probably knows how many have been on WFH mode and in which set up)</p>	<p>You need to know/figure out:</p> <ul style="list-style-type: none"> - How many people have been working from home? (can be split to smaller timescales if there is differences) - How many days are those people working from home? - What is the set at home? And working hours <ul style="list-style-type: none"> o Display 35 W o Laptop 65 W o 8 hours per day <p>➔ Daily consumption per one employee with this set is 0,8 kWh</p> <p>➔ Daily consumption per employee * number of employees on WFH mode * days on WFH mode = remote work total energy</p> <ul style="list-style-type: none"> - How much CO₂ emissions comes from using one kWh? Please find that information for your country if there is specific information (In Finland 0.089 kg CO₂/kWh = 0.000089 t CO₂/kWh.). If you can't find more information, use this calculator for calculating the CO₂ emissions of the total remote work energy (kWh to CO₂ emissions calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) <p>➔ remote work total energy * grid emissions = the emissions from working from home</p>	<p>Scope 2 emissions</p> <p>As you probably don't know what kind of energy the employees have at their home, it is good to use average grid and its CO₂ emissions in these calculations. If you do know more specifically, please use more specific information. Electricity from renewable sources has 0 kg of CO₂ per kWh.</p> <p>Average CO₂ emissions per kWh in Finland: https://www.motiva.fi/ratkaisu/energiankaytto_suomessa/co2-paastokertoimet</p>

Travelling – flights

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Flights – where have you been flying and how much</p> <p>HIGH PRIORITY</p>	<p>Administration or service provider (travel agency)</p>	<p>You need to know:</p> <ul style="list-style-type: none"> - how much people have been flying (from your own administration or travel agency) - we recommend calculating also 2019 flying emissions to have truthful picture about flying in times without pandemic <p>There are multiple calculators to count CO₂ emissions of flying (some airlines have their own too), here are couple:</p> <p>https://www.icao.int/environmental-protection/carbonoffset/pages/default.aspx</p> <p>https://calculator.carbonfootprint.com/calculator.aspx?tab=3</p>	<p>Scope 3 emissions</p> <p>Please note that you have probably not been flying around that much 2021 than usually – so your emissions from flying are smaller than they'd normally be.</p>

Travelling – other travel

Information needed	Where to get it	Processing it	Please note / which emission scope
<p>Other travel – how much, where, how</p> <p>NICE TO HAVE</p>	<p>Administration or service provider (travel agency)</p>	<p>TRAINS AND BUSES:</p> <p>You need to know:</p> <ul style="list-style-type: none"> - how travelling has been done by trains and busses <p>Couple of calculators with trains and busses:</p> <p>https://calculator.carbonfootprint.com/calculator.aspx?tab=6</p> <p>https://www.ilmastolaskuri.fi/ (Calculate the carbon footprint with free trial -> go to the second page and give the information there -> go to the summary page to get the figures)</p> <p>HOTELS:</p> <p>Ask from the service provider if they could provide you the CO₂ emissions of the stay.</p>	<p>Scope 3 emissions</p> <p>Staying in the hotel also produces emission (mainly with electricity usage), but unfortunately there is not some index number to use. It is estimated that 6 % of carbon footprint of global tourism comes from lodging (sustainabletravel.org/issues/carbon-footprint-tourism/)</p>