

ZSE CARBON REPORT

CO₂

2020

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1.INTRODUCTION

ABOUT ZSE

Západoslovenská energetika, a.s. (“ZSE”) with headquarters in Bratislava has been part of the E.ON energy group since 2002. Its main activity is providing electricity and gas supply in western Slovakia.

The company's key areas of operation are:

- electricity distribution system operation in western Slovakia,
- sale of electricity and gas,
- complex solutions aimed at using renewable sources and smart home technologies,
- deployment of charging stations and development of e-mobility in Slovakia

Among the internal ZSE group policies there is a long-term support of the SDGs – Sustainable Development Goals. The company is one of the Slovak leaders in responsible entrepreneurship, fully aware of its impact on the climate and environment. The report on the carbon footprint of the company is a proof of that.

PROJECT STEPS AND TIMEFRAME

Individual cooperation steps were taken within approximately 6 months.

Project start: August 2021

Project termination: January 2022

1. STAGE: August – November 2021
 - Qualitative and quantitative questionnaire mediation
2. STAGE: September – October 2021
 - Education of company employees
3. STAGE: November 2021
 - Status analysis of ZSE focused on waste management in the company administrative premises
4. STAGE: December 2021
 - Evaluation of the environmental impact of the company in 2020
5. STAGE: January 2022
 - Partial carbon footprint calculation, proposal of measures and report preparation

AIM AND STARTING POINT

The report outcomes should support ZSE journey towards full compliance with the ESG criteria and the implementation of measures for gradual improvement of the emission balance and decrease of the carbon footprint towards net-zero.

Project aims were the following:

- qualitative evaluation: understanding the current situation and direction of the entire ZSE, its current priorities and setup, including the analysis to map the waste management situation in administrative premises of the company;
- quantitative evaluation: calculating the carbon footprint
- defining basic possible measures aimed at decreasing the overall impact on the climate and environment focused on decreasing the company's carbon footprint in the future;
- employee education.

Originally, basic analysis of environmental sustainability in 2020 was only supposed to deal with ZSE administrative headquarters on Čulenova 6, Bratislava. After reviewing the submitted data in the questionnaire-type survey and several discussions, the focus of the analysis and the form of its outputs were partially re-evaluated, as the data provided were incomplete.

Based on the agreement with the ordering party – ZSE, we decided to calculate the partial carbon footprint of ZSE's headquarters on Čulenova 6, calculate the selected areas of activities of the entire company which were not included in ZSE's Sustainability Report and calculate the greenhouse gas emissions produced by transportation and small machinery. This report is therefore a supplement to ZSE 2020 Sustainability Report which, among other things, includes the emission balance of greenhouse gases of main activities of the entire ZSE and its subsidiaries in 2020.

The year 2020 can be considered the first year of evaluating the company's carbon footprint and will serve as the basis for comparison with the results in the next periods. However, it is also important to note that this year was largely marked by the pandemic caused by the spread of the corona virus SARS-CoV-2, which is why the analysis results in this particular year may be skewed compared to the past and the future. In the future it is therefore important to compare the result taking into account all the relevant changes which occurred, such as hybrid forms of work and others.

Due to the pandemic, the company introduced changes in 2020/2021 compared to the previous (pre-pandemic) year 2019, namely:

- Increase of permitted remote work compared to 2019 – 82% of employees.
- Time spent being physically present at the worksite – decrease by 78%.

New requirements/conditions for the employees:

- Higher demands on the self-discipline of employees working from home, higher demands on managers with regard to “remote” employee management, increased pressure to communicate online (online meetings, online educational activities,...).
- Providing employees with IT devices allowing them to work from home.

New requirements/conditions for the customers

- Increased pressure on digitization of processes, activation of the e-Invoice and the online customer portal.

Change in the supplier–customer relationship

- Online communication with suppliers via the Portal of Suppliers and tenders organised online using certified applications.

2. QUALITATIVE EVALUATION

EVALUATION OF THE QUESTIONNAIRE SURVEY

The main aim of the qualitative evaluation via questionnaire survey was to gain an overview of activities and direction of the entire ZSE when it comes to circular economy, carbon footprint and overall environmental sustainability. The questions were worded to allow us to evaluate the company's current standing, what steps were taken in this respect and what steps are planned in the future. The questionnaire survey monitored 2020, and partly also 2021.

ZSE aims to ensure climate-friendly and economically sustainable energy business. ZSE activities correspond to the SDGs in all its areas of operation. In 2014, the company established the ZSE Foundation to support – through own strategic partnerships and grant programmes – changes in the society and immediate surroundings, and the foundation continues this mission to date. Grant applications are intended for employees as well as for the development of regions or disadvantaged groups. A large part of work is dedicated to improving education at schools. In 2021, the Foundation responded to the current situation caused by the pandemic and directed the funds also that way.

Activities concerning SDG12: Ensure sustainable consumption and production patterns

Even though Malženice CCGT power plant operated by ZSE Elektrárne, s.r.o. is a fossil source, thanks to modern technology and maximum efficiency of almost 58.5%, the power plant emits only one third of the yearly emissions of a lignite-fired power plant, and one half compared to coal-fired power plants. As part of sustainable consumption, the company also introduced waste separation measures in both administrative and operational premises. In 2020, 83% of operational waste was recovered, of the total volume of 25,000 tonnes. ZSE is also involved in bird protection programmes and endeavours to decrease plastic waste.

Activities regarding SDG13: Take urgent action to combat climate change and its impacts

Electricity generation in Malženice, which is fully compensated by purchasing emission allowances, thorough monitoring and maintenance of SF₆-containing equipment. The company also expanded its car fleet with electric vehicles. Digitisation of the customer portfolio and own processes is taken for granted.

The E.ON Group created [new sustainability strategy](#) in which it identified key areas of interest and goals:

- climate protection,
- health and safety,
- diversity,
- inclusion and good company management.

In addition to these areas, exact targets were defined which are to be achieved with regards to the greenhouse gases production in the upcoming decades (see Chapter 3).

This strategy became the basis for ZSE sustainability strategy.

Sustainability activities in the last 5 years:

Innovation activities of the company:

The organisation applies the following innovation activities in line with the circular economy principles:

Customer Solutions products: Green electricity, photovoltaic panels, green roofs, virtual battery, ZSE Green Ideas, electromobility (public network, B2B, B2M, soon to be B2C), customer portfolio digitisation (e-Invoice, bank transfers – end of cheques), etc.

Distribution networks: In Západoslovenská distribučná, the following digitisation solutions have been implemented until 2020 (incl.):

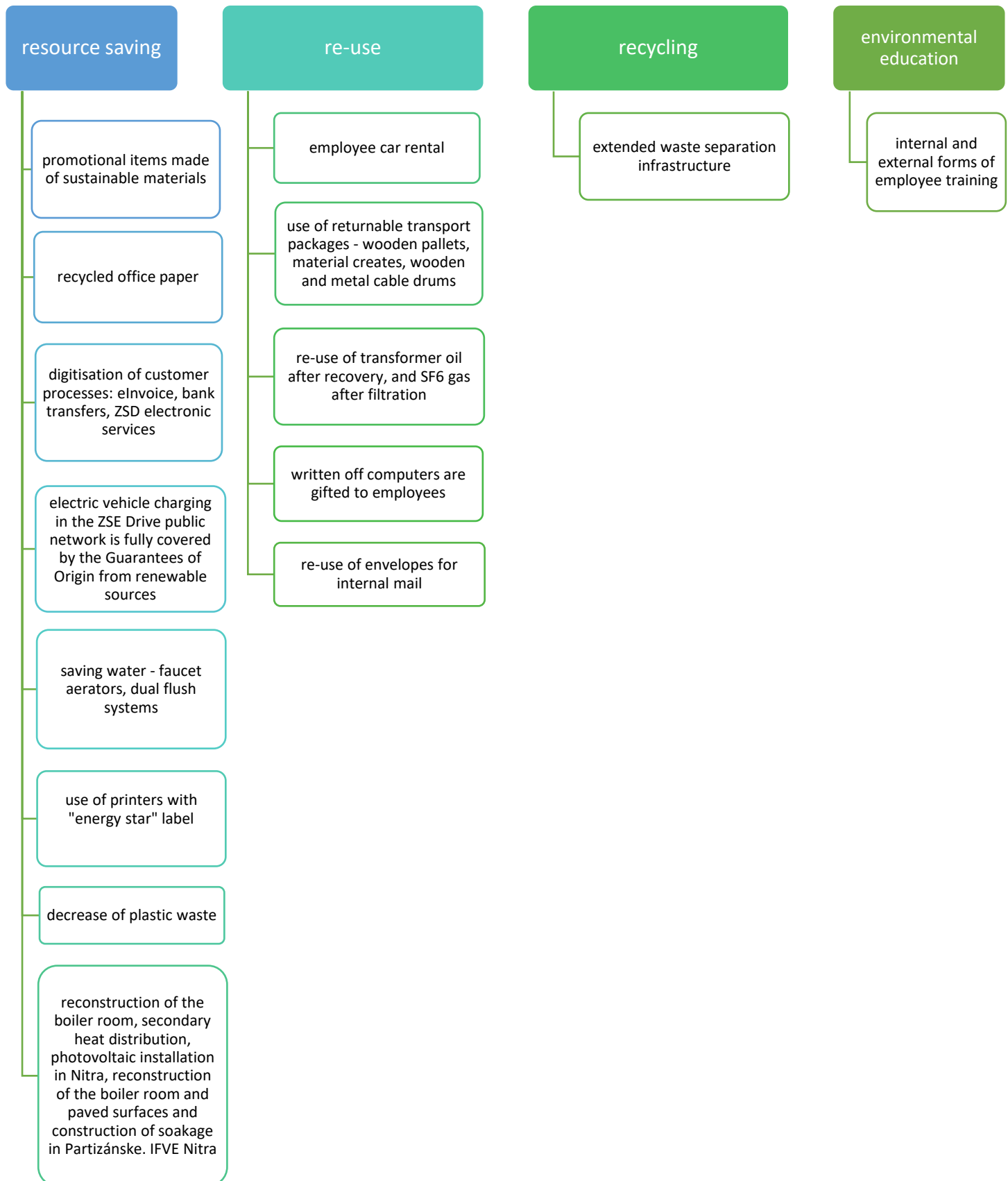
- Application for connection
- Application for connection of a small source
- Distribution portal
- ZSD mobile app
- CORVUS mobile app
- Text message/email notifications about failures
- Recommended electricians
- Geoportal

Internal innovations (Operational Excellence) – separate organisational unit for facilitating and increasing the efficiency of processes, printers replaced with more ecological models and reduced in number, de-plastification campaign, waste separation, moving the internal newsletter Impluz fully online)

Other external activities

- Developing cross-border cooperation (e.g. the ACON project – Czech Republic; Danube InGrid project – Hungary).
- Cooperation with the City Council of Bratislava – plating of greenery next to a concrete fence by the Karlova Ves substation;
- Cooperation with ZSD municipalities and State Nature Conservancy – relocation of stork nests.
- Raptor Protection of Slovakia – long-time technical cooperation in LIFE projects, making power lines more eco-friendly and installing birdhouses;
- BROZ – assistance and cooperation in construction of the tower for swifts,
- Daphne – Institute for Applied Ecology, APPA – helping people with disabilities – We Remove Barriers project).
- Active participation in GLOBSEC and AHK Partners for Sustainability platforms.
- In 2021 – Climathon partner.

In the area of circular economy, the following principles were used in 2020:



3. QUANTITATIVE EVALUATION – CARBON FOOTPRINT

CARBON FOOTPRINT GOALS

As part of measurable goals, every year the company determines the SIM (System of Integrated Management) targets. These include economic use of resources, protection of the environment, reconstruction of own facilities, waste recovery, etc. The targets are monitored and evaluated annually.

ZSE goals in decreasing the greenhouse gases production by 2030, 2040 and 2050 match those of its shareholder E.ON. Targets for individual years are currently being determined by E.ON, who will manage the measures to achieve carbon neutrality by 2050.

In 2020, the E.ON Group agreed to [achieve the following targets](#):

Scope 1 and 2

- decrease emissions by [approximately 75% by 2030](#),
- achieve climate [neutrality by 2040](#).

Scope 3

- decrease emissions by [50% by 2030](#),
- decrease emissions by [100% by 2050](#).

[Since 2018](#), E.ON's ambition has been to [promote sustainability in own properties](#) and especially to [achieve their carbon neutrality by 2030](#). One of the things that are necessary to do this is the decrease of emissions from sourcing energy for these facilities. While the activity is part of Scope 2 – where carbon neutrality is to be achieved by 2040, – to reach this goal, facility-related emissions need to be eliminated already 10 years earlier.

In connection with these goals, in 2021, ZSE decided to calculate greenhouse gases produced by its selected activities in 2020. The calculation is available in ZSE 2020 Sustainability Report.

[INCIEN focused on the calculation of the carbon footprint of ZSE headquarters \(Čulenova 6, Bratislava\) from the available data, calculation of selected activities of the entire company which were not included in the ZSE Sustainability Report, and calculation of greenhouse gases produced by transportation and small machinery.](#)

WHY MEASURE THE CARBON FOOTPRINT?

Carbon footprint is the measure of impact of the company activities on the environment, and especially on climate change. Carbon footprint is an indirect indicator of energy consumption, use of products and services.

The final unit of the company carbon footprint is expressed as the so-called carbon dioxide equivalent CO₂e. It reflects the impact of each of the six greenhouse gases (GHG) to which the Kyoto Protocol

applies (CO₂, methane, nitrous oxide, HFC - hydrofluorocarbons (freons), SF₆, PFC - perfluorocarbons (freons) according to their contribution to global climate change.

Even though the carbon footprint calculation is voluntary for organisations, it is more than just a readout. It has an important strategic aspect and may act as a contribution to initiatives regarding the climate change, environment and economy, and also to the company reputation.

PARTIAL CALCULATION OF THE CARBON FOOTPRINT

The calculation was divided into two categories. The first one only concerned activities directly related to ZSE's headquarters building (Čulenova 6, Bratislava) for which data were provided. The second concerned selected activities of the entire ZSE which were not included in the 2020 Sustainability Report. **The indicated carbon footprint is only partial and cannot be considered the overall carbon footprint of ZSE's headquarters or the entire ZSE.**

The carbon footprint analysis included selected emission sources from Scope 1 and Scope 2 (so-called obligatory emissions from fuels and energy) and selected items from Scope 3 influencing the overall emissions in line with the GHG Protocol requirements (more information in Annex 1 – Carbon footprint calculation methodology).

Table 1 – Partial carbon footprint calculation of ZSE's headquarters on Čulenova 6, Bratislava, in 2020

Scope	Selected area	2020 (t CO ₂ e)	Indicated consumption and emission factor (EF)	Note
Scope 2 Obligatory emissions	Sourced heat consumption	180,90	Heat sourcing (from Bratislavská teplárenská, a.s.) in 2020: 521.33 MWh/year; EF for BAT, a.s. = 347 kg CO ₂ e/MWh	
	Electricity consumption – lighting only	8,67	EE sourcing – only facility lighting in 2020: 55.754 MWh/year; EF = energy mix of sources 155.48 kg CO ₂ /MWh, EF source: OKTE 2020;	Information provided on EE consumption for facility lighting may only be estimated because EE consumption is not invoiced in this building. It is necessary to start reporting data on the overall electricity consumption at Čulenova 6.

Scope	Selected area	2020 (t CO2e)	Indicated consumption and emission factor (EF)	Note
Scope 3	Sourcing of office technology and selected devices	7,55	Sourcing of white goods and other appliances (4 pcs white goods, 33 pcs other appliances); white goods EF = 271 kg CO2e/product, other appliances EF = 196 kg CO2e/product; EF source: Ministry of Environment of the Slovak Republic, Institute for Environmental Policy (2020): Methodology for the IEP calculator of personal carbon footprint	If we wanted to calculate the carbon footprint for the sourcing of these appliances more accurately, we would need to know more about them, e.g. type of the fridges, etc.
Optional emissions	Tap water consumption	0,99	Tap water consumption in 2020: 1159 m3/year; water supply/production EF = 0,0003523 kg CO2e/kg (water density 997 kg/m3), EF for sewage water treatment = 0,4991 kg CO2 eq/m3, EF source: Ecoinvent – for Europe	
	Mixed municipal waste	38,06	Volume of waste produced by the facility (Bratislava) in 2020: 73.2 tons; EF for waste incineration = 0.5199 kg CO2 e/kg, EF source: Ecoinvent – for Slovakia	
	Separated waste	-8,45	Volume of waste produced by the facility in 2020: Plastics = 3.6 tons, paper = 5.87 tons, electronics = 1.53 tons; waste recycling EF = 1.024 CO2e kg/kg, paper recycling EF = 0.495 CO2e kg/kg, EF source: Ministry of Environment of the Slovak Republic, Institute for Environmental Policy (2020): Methodology for the IEP calculator of personal carbon footprint; e-waste recycling EF = 1.44 CO2e kg/kg, EF source: CO2logic	Weight of the produced waste was estimated based on the average weight of one container collected by OLO in Bratislava. If more waste components are to be separated (e.g. glass, waste from reconstructions, batteries, etc.), it is necessary to report these data separately.

Table 2 – Partial carbon footprint calculation of the entire ZSE in 2020

Scope	Selected item	2020 (t CO ₂ e)	Indicated consumption and emission factor (EF)	Note
Scope 1 Obligatory emissions	Fuel consumption – own small machinery	82,41	Gasoline consumption in 2020: 6,026.68 l, gasoline EF = 2.39 kg CO ₂ e/litre; diesel consumption in 2020: 25,758.22 l, EF = 2.64 kg CO ₂ e/litre; EF source: Ministry of Environment, Institute for Environmental Policy (2020): Methodology for the IEP calculator of personal carbon footprint.	
Scope 3 Optional emissions	Fuel consumption – leased small machinery	17,83	Diesel consumption in 2020: 6,751.94 l, EF = 2.64 kg CO ₂ e/litre; EF source: Ministry of Environment, Institute for Environmental Policy (2020): Methodology for the IEP calculator of personal carbon footprint.	
	Fuel consumption – leased vehicles	3526,61	Gasoline consumption in 2020: 199,661.44 l, gasoline EF = 2.39 kg CO ₂ e/litre; diesel consumption in 2020: 1,155,083.27 l, EF = 2.64 kg CO ₂ e/litre; EF source: Ministry of Environment, Institute for Environmental Policy (2020): Methodology for the IEP calculator of personal carbon footprint.	We use the EF source from ZSE 2020 Sustainability Report. For a more exact result, the calculation should consider not only the total consumption of individual fuels for all vehicles but also vehicle type, displacement, weight, emission category and odometer data. All these data influence emission factors and overall carbon footprint.
	Bottled water consumption	12,15	Water consumption: 75,951.12 litres, bottled water EF: 0.16 (kg CO ₂ e/litre); EF source: Fantin et al. (2014)	For a more exact emission factor for individual water types, producers would have to be asked.
	Paper consumption	19,01	New paper consumption: 20,358.5 kg, recycled paper consumption: 397.5 kg; new paper EF: 0.9194 kg CO ₂ /kg, recycled paper EF: 0.7394 kg CO ₂ /kg; EF source: UK Government GHG Conversion Factors for Company Reporting 2020, Material use – Paper	For a more exact emission factor for individual paper types, producers would have to be asked.

4. CONCLUSION

To prevent global warming by 1.5 – 2 °C, it is necessary to stop the production of greenhouse gas emissions worldwide no later than by 2050. The whole society should strive to achieve zero or even negative greenhouse gas emissions.

ZSE (but also other companies') voluntary decrease of emissions in the extent of Scope 1 and 2 will not suffice. It is also necessary to decrease the impact of greenhouse gas emissions in the non-obligatory Scope 3 and thus take the responsibility for own supplier chain and encourage the suppliers to decrease their emissions, creating an economic snowball effect.

The priority is to decrease the overall emissions as much as possible using internal measures such as electrification of the company fleet, transition to net-zero buildings, transition to CO₂-neutral transportation, etc. These should be clearly defined and planned in the company's carbon footprint reduction strategy that will align with goals and strategy of the shareholder E.ON. When no further decrease is technically possible, the remaining emissions must be offset via certified compensation schemes.

However, in order to correctly calculate and objectively compare the carbon footprint in individual years and the impact of the measures, it is necessary to correctly set the data collection system from the beginning. As part of the initial process of calculating the carbon footprint, INCIEN found out that ZSE has some room for improvement in this respect. This is related to the fact that it was not possible to calculate the total carbon footprint of ZSE's headquarters but only a partial one, with a lower informative value. That is why we recommend to also focus on the setup of data collection and reporting when creating the measure implementation strategy.

An efficient data collection system should provide a transparent and quick filtration by period, area or facility and its employees, which will then allow to compare the consumption. In every monitored area it is necessary to verify whether the data are reported in sufficient detail and in a correct form and units. It is also important to determine the organisational unit and persons responsible for verification and regular reporting of said data. This process, along with using the most accurate emission factors possible, will contribute to a more exact calculation of the company's overall carbon footprint.

To conclude, it is necessary to repeat that in addition to missing data, the carbon footprint calculation was also influenced by the fact that 2020 was significantly marked by the global pandemic. This resulted in changes and limitations, for example in using the premises and transportation by the employees. A large part of the company's activities moved to employee households. All these and other changes are reflected in the final result. When comparing the carbon footprint for the given period, it is necessary to keep this in mind in case of 2020.

5. PROPOSED CARBON FOOTPRINT DECREASING MEASURES

It is necessary to go through all the proposed measures, choose the relevant and feasible ones, and prioritise their implementation. The plan should also include short-term and long-term goals.

More specific recommendations for facilities, waste, energy activity, product sourcing, planning tools and travelling can be found in the submitted document “Checklists for carbon footprint decreasing measures”.

Proposed generic measures by Scope categories based on the E.ON strategy

Scope 1 and 2 emission target: By 2030 – decrease by 75%

Scope 1 (direct emission) – vehicle fuels, refrigerants

- Decrease of mileage of combustion motor vehicles
- Further expansion of the car fleet with electric vehicles, hybrid vehicles
- Change of refrigerant type to one with lower CO₂ production

Scope 2 (indirect emissions from consumed energy) – electricity in offices, heating

- Sourcing certified renewable energy, efficient use of electricity
- Increase of the building efficiency when it comes to using and consuming heat

Scope 3 emission target: By 2030 – decrease by 50%

Scope 3 (other indirect emissions) – electricity from external data centres, waste, water consumption, paper consumption, procurement of electronics

- Minimisation of waste creation and waste separation
- Digitisation of processes and decrease of paper consumption
- Buying recycled paper and paper products

Other necessary steps:

- Create a so-called global Code of Conduct for supplier relationships.

Procedure

- Common practice in the starting year 2020 – other measures in the future will be based on it.
- Continue measuring the carbon footprint in 2021 – implemented measures will have actively decreased the 2020 carbon footprint.
- Determine carbon footprint reduction steps to take in 2021.

Example to follow:

Activity	2021 saving compared to 2020	Note
Reduction of paper volume Scope 3	10%	Decrease of carbon footprint <ul style="list-style-type: none"> - by continuing the digitisation of the company - by decreasing paper towel consumption, see proposals in the section dedicated to paper
Recycled paper Scope 3	40- 50%	Decrease of carbon footprint by sourcing recycled paper
Mileage – road Scope 1	30%	Decrease of mileage (road)
Electric vehicles – company cars Scope 1	2% - 5%	Decrease of carbon footprint by using electric vehicles
Business trips: Mileage – air Scope 3	20%	Decrease of mileage (air)
Sourcing green energy and electricity consumption Scope 2	10% - 50%	Decrease of carbon footprint created by electricity consumption
Waste management Scope 3	10%	Decrease of waste volume, separation and recycling
Saving energy, heat, gas	5%	Decrease of overall consumption within the building
LED replacement	5%	Regarding the old building, if not all of them have been replaced

ENERGY

Only some renewable energy sources truly help decrease emissions.

Companies must indicate in detail which type of renewable energy they use (e.g. biofuels, solar, wind, water energy) and what portion of their renewable energy comes from energy directly produced in the given company, what portion is covered by power purchase agreements (PPA) and by supply contracts with renewable energy guarantees of origin (REGO).

To be able to claim that the company energy comes 100% from renewable sources, it should obtain 100% of its energy from renewable energy sources on site and from investments in projects outside the production site, but not from unbound REGO, as these cannot require complementarity.

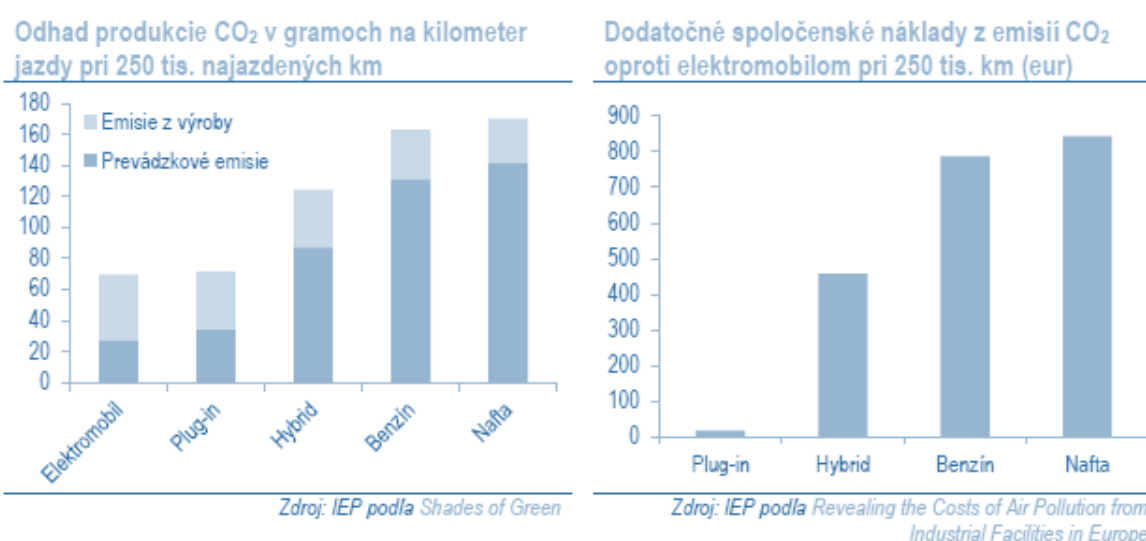
Renewable energy projects should not be considered an elimination but rather a decrease of the Scope 2 extent.

ELECTROMOBILITY

Vehicle fleet

Fuels comprise the largest part of the carbon footprint. It is therefore necessary to review possibilities of investing in the car fleet renewal and replacing the conventional combustion motors with electric vehicles.

In general, electric vehicles in Slovakia produce 50% less emissions. Although the operation of electric vehicles and plug-in hybrids itself is emission-free, their manufacture does result in the production of CO₂ especially due to mining and processing of production materials. An electric vehicle is thus more eco-friendly in a country with low-emission energy mix compared to a country with predominant coal-fired thermal plants. Thanks to hydropower plants, Slovakia's energy production has a low-emission portion of CO₂.



Charging stations

Electric vehicle charging requires major electricity consumption compared to other commonly used devices in a facility, which is reflected in a disproportionately higher requirement with regard to reserve capacity. When it comes to electromobility development and deployment of charging stations, it is necessary to consider the type and manner of connection. When using charging stations without power output management and reserve capacity monitoring, an extensive construction of new transformer stations and the entire distribution system is necessary, which costs a lot of money and creates environmental burden due to the inevitable increase of power plants' generation capacity. We propose to look into the possibilities of smart power output management of charging stations with a centralised system within a building, or maybe at the level of distribution system nodes which do not require the increase of reserve capacity, so that the system would only distribute free energy available at the time to electric vehicles.

Links and contacts:

Ag Volt offers an electric vehicle charging system with the ambition to make the shift from combustion motors to electric ones easier and more effective, increasing its quality.

<https://www.agevolt.com/>

REFRIGERANTS

R410A refrigerant must be replaced by a better alternative. This type of refrigerant has too much GWP=2090 (accumulation of this substance contributes to the global warming).

There are currently manufacturers on the market who offer new refrigerants with lower GWP (ammonia, CO₂, hydrocarbon such as butane, propane and propene).

WASTE

It is necessary to analyse the composition of mixed municipal waste.

Before making any changes, its approximate composition must be known. Based on the results, we can suggest individual measures. It is necessary to determine which waste components take the biggest portion in creating municipal waste, and to introduce measures to prevent its creation. Waste prevention should be the company's main priority.

We also recommend looking into the contracts of the waste collection company, to correctly report also the volumes of separated and subsequently recycled waste. We can decrease the carbon footprint with this by an interesting percentage.

Links and contacts:

- You can download detailed handbooks on correct waste separation “Alchemy of waste separation” here: <https://www.incienc.sk/publikacie/> Every regional administration has a different system of waste separation and collection. Choose the correct version of the handbook.

PAPER

- Continue limiting the use of paper to a necessary minimum.
- Use Sticky Notes apps instead of post-it notes.
- Put papers with only one side used aside and re-use them, or give them to children for drawing.
- Buy paper products in bulk and prefer manufacturers closest to your office.
 - Give preference to paper that is:
 - recycled, at least 30% of recycled material
 - chlorine-free (e.g. TCF, ECF...)
 - certified (e.g. FSC, EU Ecolable)
 - unbleached and undyed (if a coloured paper must be used, choose pastel colours)
 - Avoid using glossy, waxed paper with a plastic layer.
- Buy office paper with lowest possible grammage.
- Choose digital business cards. Examples of free apps for digital business cards: Salut (Apple), Haystack Digital Business Card (Android) and others.

In case of paper purchased for hygiene, consider textile dispensers as an alternative.

Companies like HAGLEITNER HYGIENE SLOVENSKO S.R.O. or CWS-boco Slovensko, s.r.o. offer similar services; ask for eco variants in their portfolio. Cotton towels are made from 100% cotton and are high-absorption and re-usable.

Links and contacts:

- Paper products in Slovakia are made for example in Ružomberok (Mondi SCP), Harmanec or Slavošovce (SHP), in Žilina (Metsä Tissue – Tento, etc.)
- Slovak office paper is currently (2020) made only in Mondi SCP – models Maestro standard+ and IQ economy+
- The closest place that manufactures recycled office paper is in Neusiedler, Austria, model Nautilus <https://www.mymondi.net/ufp/en/brand-group/nautilus>

PRINTING

- Continue digitisation and computerisation. **Keep only the necessary data. The more data you keep in the data storage, the higher the carbon footprint.**
- Print documents in a paper-saving format. Eliminate “white spaces” as much as possible – print more words per page (e.g. using the thinnest spacing, narrower margins).
- Choose a thinner font, for example:
- Calibri Light, Century Gothic
- Corbel Light, Candara Light
These can save up to 30% of ink when printing compared to thicker or bold fonts.
- Monitor and report also the amount of used ink cartridges / ink volume.
- You can find another solution how to decrease the use of ink cartridges at ecofont.com.
- We recommend a “follow-me” printing system where users can print documents in the same printing front/device, and the tasks will be automatically deleted unless released within 8 hours.
- Send used ink cartridges for recycling and remanufacture.
- Buy quality remanufactured cartridges, ideally made from recycled materials.

ENERGY AND HEAT

Here we recommend setting the heat consumption and facility heating based on occupancy and introducing energy-saving measures in buildings.

Setup:

- Active lighting management systems;
- Management and optimisation of heating, ventilation and air conditionings systems
- Support of real-time consumption adjustment with the aim to satisfy a fluctuating demand

LIGHTS

Use energy-saving lighting sources, such as LED sources and compact fluorescent lamps, or eco halogen sources if necessary.

- When buying new lights, choose a design with a replaceable light source, as opposed a built-in one.
- Always turn off the light before leaving the room.
- Always turn off any unnecessary lights.

- Use motion sensors and daylight sensors.
- Use desk lamp instead of ceiling lights whenever possible.
- If possible, work during daylight.

HEATING AND VENTILATION

- Regulate the heating, lower the temperature after leaving work.
- Turn the heating off during weekends and longer absences.
- Install a programmable thermostat that will automatically lower the temperature or air conditioning during the night.
- Use ventilators instead of air conditioning units.
- If it is hot outside, leave the windows and doors closed, to avoid hot air flowing in and heating the room up.
- Air conditioning should be on only when the room temperature is higher than 26 °C.
- When the temperature allows it, turn off ventilators and open windows.
- When heating or air conditioning is on, keep windows and doors closed.
- If possible, do not use ventilator heaters or external heaters. If you cannot avoid them, don't forget to turn them off before leaving.

KITCHEN

- Prefer buying regional foodstuff, ideally in bio-quality, and seasonal fruit and vegetables.
- Buy Fair Trade/UTZ/Rainforest Alliance certified products. For example coffee, tea, chocolate, nuts or bananas. More information on individual certificates can be found in the “Certificates” sub-chapter.
- Buy in bulk to reduce packaging rubbish but only so much that you do not waste food.
- Choose re-useable tableware and cutlery.
- If necessary, use certified compostable or recyclable tableware and cutlery. Avoid also composite materials, as these cannot be recycled efficiently – or at all. When it comes to plastic, choose materials like PET, HDPE or PP.
- Choose re-usable shopping bags instead of disposable ones.
- Drink tap water instead of bottled.
- When making tea, use loose leaf tea, ideally from local sources. Use re-usable sieves and containers for filtering.
- If you do have a coffee machine, choose a French press or a mocha coffeemaker (moka pot).
- When buying a coffee machine, avoid those using disposable capsules. If you already have one, try to find compatible re-usable or compostable capsules on the market.
- When the coffee machine is not in use, unplug it.
- Defrost the refrigerator and the freezer regularly, and check the inner temperature.
- Inner temperature of a fridge should not be higher than 5 °C and in case of the freezer, higher than -18 °C.



Sypané čaje

CLEANING

- If you procure cleaning services, procure ecologically. Meaning, always ask the provider to fulfil various environmental criteria, e.g. education of own employees, use of certified and concentrated detergents or suitable cleaning tools.

What to request from the provider:

- Request key capabilities of the service provider and the application of key measures and processes of environment management, EMAS
 - Request adequate and frequent professional training of the service provider's employees
 - Request the use detergents with lower environmental impact
 - Encourage the purchase of concentrated detergents
 - Request the use of cleaning tools with lower environmental impact (including microfiber products)
 - Request the use of energy-efficient electronic cleaning tools (including vacuum cleaners)
 - Request supply of consumer goods with lower environmental impact
- Communicate your goals and priorities to the contracted cleaning service.
 - Perform regular checks whether the provider fulfils your contracted requirements. If not, they may pay a penalty or you can terminate the contract.

When cleaning something without a cleaning service, observe the following measures:

- Try mechanical cleaning first, rather than a detergent.
- Replace conventional cleaning products with those containing a high portion of natural biodegradable materials, ideally certified (e.g. EU Ecolable and ESV – eco-friendly product, etc.).
- Administer the detergent dose judiciously.

- Buy in bulk to reduce packaging waste.
- Use re-usable brushes and sponges, washable rags and kitchen towels, or paper towels made from recycled paper.
- Prefer concentrated products in refillable containers to reduce waste.
- Use products with environmental labels

These companies have received the ESV label or EU Ecolabel for some of their products:

- QALT Rakovník, spol. s r. o. (washing powders and gels, dishwashing detergents, universal cleaners) <https://www.qalt.cz/>
- FOSFA a. s. (FEEL ECO products) <https://www.feeleco.sk/>
- ZENIT s.r.o. (REAL Green Clean cleaning and washing products) <http://www.zenitshop.cz/zeleny-uklid-c-16/>
- Frosch brand products <https://www.frosch-eko.cz/>

Cleaning sponges

- Natural 100% compostable loofah: <http://www.prijemneveci.sk/lufa-cela#.WYmdzdPyi9Y>
- Kitchen towels: <http://www.greenstore.cz/kuchynske-uterky-z-cukrove-trtiny-2-role-green-cane>
- Eco alternatives (compostable vetex towels are also available in dm drogerie markt)
- Ecological kitchen towels from leftover sugar cane and bamboo. Absorbent and firm paper towels are easily degradable: <http://www.prijemneveci.sk/mala-sada-utierok#.WYmdNtPyi9Y>

Terra Verde (<https://eshop.tierraverde.sk/>) and Chistee (<https://chistee.sk/>) offer detergents in bulk.

Links and contacts:

- You can get inspiration from the European Commission document for green procurement https://ec.europa.eu/environment/gpp/pdf/toolkit/cleaning_product/sk.pdf. There are also companies specialising in eco-friendly cleaning on the Slovak market.

GREEN/CIRCULAR PROCUREMENT

Green public procurement is a voluntary tool which, apart from other criteria (such as price), considers also the environmental criteria. Effective green procurement system can significantly contribute to nature protection and fight against the climate change. Best practices from around the world show how green procurement can help mitigate the climate change issues, air pollution, but also deforestation or waste production. Better environment will have a positive impact on health of the population, resulting in lower healthcare costs. Benefits of green procurement can also be seen in promoting innovations and supporting the development of competitive environmental goods and services, as well as market expansion with such products. The Slovak market is already prepared for the expansion of green procurement – private as well as public – which will become more and more profitable with technological advancement. Procuring green goods and services does not have to mean additional costs.

Green procurement works also as part of public procurement. The main legal document for green public procurement is 343/2015 Z.z. Public Procurement Act. With the Government Resolution of the Slovak Republic No. 92 of 21 February 2020, the ministers and chairpersons of central state administration bodies in Slovakia are obliged to apply suitable environmental characteristics when

procuring goods and services concerning “traffic”, “copier and graphic paper” and “computers and monitors” as from 1 July 2020.

Each public Contracting entity (state administration, public administration) or entity purchasing through a tender within internal regulations (private companies) shall include environmental criteria in the tender/purchase conditions. They shall allocate a point value to each criterion, these will be evaluated, and when the selecting the supplier, the one with most points will be chosen.

Links and contacts:












Guidelines to certain product

groups: https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

https://ec.europa.eu/environment/gpp/pdf/toolkit/paper_GPP_product_sheet_sk.pdf

When it comes to other product groups, this is left to the Contracting entity's tools, or as the case may be, to the entity purchasing goods and services. Everyone can propose any criteria within the possibilities defined by the law of the market. It is therefore important to do a market survey of prices and availability of services/goods, and have a preliminary consultation with the suppliers prior to the procurement where the suppliers can discuss the possibilities of providing more environmentally suitable products.

Environmental criteria of selected product groups according to EC

	KOPÍROVACÍ A GRAFICKÝ PAPIER	Drevo z legálnych a udržateľných lesov Vyrobený bez bielenia plynným chlóróm Vyrobený zo 100% opätovne získaných vlákien
	DOPRAVA	Výška emisií CO₂ podľa stanovených noriem Výška emisií NO _x , HC+NO _x a PM Pokyny k ekologickej jazde Dymovosť Emisie hluku
	POČÍTAČE A MONITORY	Najnovšie normy Energy Star Ľahko vymeniteľná a prístupná pamäť a pevný disk Podsvietenie s nízkym obsahom ortuti Akustický výkon, Návod na eko-používanie Dostupnosť náhradných dielov min. 3 roky Recyklovaný materiál lepeniek či fólií Uvedené funkcie riadenia spotreby energie hardvéru
	ZOBRAZOVACIE ZARIADENIA	Obojstranná tlač Viacnásobné obrazy na jednom liste Energetická účinnosť v režime používania Návod na používanie na ekologické riadenie výkonu Životnosť a záruka Efektívne využívanie zdrojov (v prípade kaziet)
	VEREJNÉ OSVETLENIE	Účinnosť vysokotlakových sodíkových výbojok Svetelná účinnosť halogénových výbojok Účinnosť predradníkov pre výbojky Obal je z recyklovaného materiálu (ak je to lepenka) Ukazovateľ maximálnej energetickej účinnosti Nároky na osoby vykonávajúce inštaláciu
	STRAVOVACIE SLUŽBY A ZÁSOBOVANIE POTRAVINAMI	X % skupiny jedál musí byť vyrobených ekolog. spôsobom Ponúkané ovocné/zeleninové/morské produkty sú sezónne
	PROJEKTOVANIE, VÝSTAVBA A ÚDRŽBA CIEST	Nízkoteplotný asfalt Plán nakladania s výkopovým materiálom a pôdou Požiadavky na vlastnosti komponentov Plán environmentálnej integrácie a obnovy Emisie hluku počas výstavby a obnovy Požiadavky na projektovanie vozoviek s nižšou hlučnosťou, osvetlenie, dopravné značenie, zmierňovanie zápch, odolnosť vozovky
	ELEKTRICKÁ ENERGIA	Najmenej 50 % elektriny z obnoviteľných zdrojov a/alebo vysokoúčinnnej kogenerácie
	ČISTIACE PROSTRIEDKY A UPRATOVACIE	Zloženie výrobkov Pokyny na dávkovanie Bez použitia rozprašovačov s hncami plynmi, opätovné plnenie Recyklácia obalu
	ADMINISTRATÍVNE BUDOVY	Kompetencie projektového manažera, tímu, dodávateľov Vyššia energetická hospodárnosť Audit odpadu z demolácií Obstarávanie dreva zákonného pôvodu Energetické systémy budovy Nakladanie s odpadmi Výber materiálov vybavenia a povrchových úprav Vykurovacie systémy Kvalita dokončeného plášťa budovy, Zmluva o energetickej hospodárnosti
	TEXTILNÉ VÝROBKY A SLUŽBY	Požiadavka na vlákna (bavlna, vlna, celulóza) Obmedzenie chemikálií Dlhšia životnosť a možnosť recyklácie

CERTIFICATES

When buying new products, we recommend choosing certified ones.

An overview of the most popular global eco labels and certificates can be found here:
<http://www.ecolabelindex.com/ecolabels/>

Most common certificates used in Slovakia:

EU Ecolabel – voluntary certification scheme within the EU for environmentally responsible products (the list of mentioned certificates can be found here: <http://ec.europa.eu/ecat/>).



Environmentálne vhodný produkt – voluntary certification scheme in Slovakia for environmentally responsible products.



EVS – Eco-friendly product – this label is used in the Czech Republic in the national environmental labelling programme. The brand allows buyers to choose products which consider the environment protection and sustainable development requirements.



PEFC – Responsible forest management certification.

FSC – Responsible forest management certification.



Global organic textile standards (GOTS) – certification guaranteeing the compliance with organic textile standards.



[Oeko-Tex Standard 100 – global testing and certification scheme for textile properties. It takes into account e.g. the content of dangerous substances in clothing.](#)



Bio Siegel – certificates for products which contain (at least 95%) materials produced according to the EU organic farming standards.



EU Organic product label – this is a label awarded to those products originating from the EU which were produced in a sustainable manner and contain at least 95% organic ingredients.



Blue Angel – German government certification granted to products which are more fair to the environment than others in the same category.



BREEAM (BRE Environmental Assessment Method) – global environmental assessment scheme for buildings.

breeam

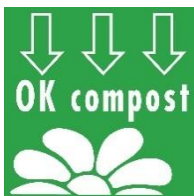
Seedling – label for a product compostable in an industrial composting plant.



OK Home Compost – label found on products which should under suitable conditions be composted in a household garden composter.



OK Compost – label found on products which should be compostable in an industrial composting plant.



EMAS – certificate awarded to companies going beyond the legal scale in protecting the environment within their operation.



Energy Star – label helping customers pick products with the highest energy efficiency in the given category.



Fairtrade – label for products which are fair to those who participated in their production or cultivation. This certificate guarantees that farmers and workers in developing countries have better working conditions. It can be found on chocolate or coffee.



Rainforest Alliance Certified – this certificate guarantees that products from a farm or a forest comply with complex standards for the protection of the environment and human rights of workers, their families and communities. Most frequently found on tea, coffee, bananas and other fruit, but also on paper products.

UTZ Certified – companies who were awarded this label guarantee sustainable farming. They grow coffee, tea, nuts or cocoa. This programme is part of the above-mentioned Rainforest Alliance scheme.



CARBON OFFSET AND SUPPORT OF GREEN INITIATIVES

Carbon offset is the decrease of carbon dioxide or other greenhouse gas emissions in order to compensate emissions produced elsewhere. If you already implemented all possible measures to reduce greenhouse gas emissions and no further reduction is technically possible, you can also focus on offsetting the emissions through various compensation schemes. However, there are no certified compensation schemes in Slovakia at the moment; they only exist abroad. You can still help the fight against the climate change and environmental destruction by supporting smaller local and regional green initiatives. However, such support cannot be included in the official decrease of the company's carbon footprint.

ANNEX 1 – CARBON FOOTPRINT CALCULATION METHODOLOGY

DELIMITING THE ANALYSIS

The first step to determine the organisation carbon footprint is delimiting the analysis. In other words, determining the business activity and greenhouse gas emission sources used to ensure the operation, and choosing the reporting approach, as well as categorisation of greenhouse gas emissions as direct and indirect. There are several internationally acknowledged standards for calculation the carbon footprint of an organisation. The most common ones are GHG Protocol (greenhouse gas protocol) and ISO 14064.

There are several approaches to delimiting the analysis. Equity share approach – the organisation reports emissions arising from activities related to the share of ownership. The second most common is the direct control approach – analysis limits include activities under direct control of the organisation, be it financial or operational. Direct control means that the organisation is entitled to introduce and implement operational changes of the given activity in the monitored year, which is why this approach is better for measuring and managing environmental performance (as explicitly stated in existing guidelines, e.g. ISO 14064 and GHG Protocol). Important criteria for delimiting the analysis are data availability, accuracy and consistency, as well as their transparency.

GHG PROTOCOL CORPORATE STANDARD

Carbon footprint calculation methodology was created based on the international GHG Protocol¹, which is currently the most used calculation tool for measuring the production of greenhouse gas emissions of the company or organisation.

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (“GHG Protocol Corporate Standard” for short) is one of the oldest and most acknowledged carbon emission reporting standard ever since it was first published in 2001. It was formed in 1990s when the World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD) determined the need to create an international standard to measure and report GHG emissions by companies.

The GHG Protocol defines clear requirements on the structure and content of reports, as well as collection of data included therein. An important element of the GHG Protocol is the delimitation of Scope categories which differentiate between emission types and prevent double counting. The GHG Protocol defines especially the requirements for reporting emissions in Scope 1 and Scope 2 categories. Emissions in the Scope 3 category are recommended in the standard but are neither strictly required nor specifically defined.

DIVISION OF EMISSIONS

The GHG Corporate Standard divides the company's direct and indirect emissions into three Scope categories and demands that companies consider all emission sources in Scope 1 and Scope 2 (the so-

¹ GreenHouse Gas Protocol, <http://www.ghgprotocol.org>

called obligatory emissions). Scope 3 emissions are “optional emissions”. They are further divided into direct and indirect emissions.

Direct emissions

SCOPE 1 – direct emissions released into the atmosphere from activities in own premises or activities controlled by the company (e.g. emissions from company cars, boilers or industrial processes and waste liquidated within the company).

Most Scope 1 emissions are connected with the use and consumption of fossil fuels. In addition to those, gases released during production processes also fall under this category (e.g. carbon during cement production, methane in agriculture and sulphur hexafluoride in power industry).

Indirect emissions

SCOPE 2 – indirect emissions from sourced energy which are not created directly in the company but are a result of its activities (e.g. sourcing electricity, heat, steam)

SCOPE 3 – other indirect emissions which are a result of the company’s activities but are not classified as Scope 2 (e.g. managing waste, purchase of goods and services, for example paper)

The essence of Scope 3 is to transparently present all greenhouse gas emissions **which are influenced by the company's decisions** and thus cover the entire supply and value chains of the company. In case of production or leasing companies, Scope 3 covers the entire life cycle of products.

Scope 3 emissions are so-called optional emissions, and their division into 15 different categories is based on the GHG Protocol methodology encouraging organisations to only report relevant categories. Yet Scope 3 emissions often represent the biggest emission source for companies, and therefore also opportunities to reduce greenhouse gases and achieve the targets in the area of their reduction.

Correct inclusion of emission source item in the applicable Scope category is important to reduce the risk of double counting emissions, which would lead to an incorrect result. It is closely related to the division of emission within the supplier-customer chain.

In the table below, we defined individual activities as 15 Scope 3 categories – other indirect emissions which are optional. The categorisation is based on the GHG Protocol methodology (Technical Guidance for Calculating Scope 3 Emissions, ver. 1.0, 2013).

Table: Division of Scope 3 emissions

Scope 3 emissions source	Note
Sourced goods and services	Office paper and paper products, IT and appliances, water consumption, promotional items, ink cartridge collection
Capital assets	
Other energy consumption (not	Energy consumption – external data centres

included in Scope 1 and 2)	
Upstream transportation and distribution (towards the institution)	E.g. emissions from transportation of goods or material to the institution (must be transportation provided by a third party)
Waste production	Mixed municipal waste, waste separation and recycling
Business trips	Business trips by plane, train and bus
Employees commute to work	
Upstream leased property	E.g. leased company cars or machines whose emissions are not included in Scope 1 and Scope 2
Downstream transportation and distribution (from the institution)	E.g. emissions from transporting company products to the customer (must be transportation provided by a third party)
Processing of sold goods	Relevant for production plants
Use of sold goods	
End-processing of sold goods	
Downstream leased property	Only concerns leasing companies and emissions related to the operation of property leased to other companies
Franchises	
Investments	

INFORMATION ON ISO 14064

DIN EN ISO 14064 Part 1 is another internationally acknowledged greenhouse gas emissions reporting standard for companies. It was first published in 2006 with the aim to create a standard fully compliant with the acknowledged ISO standards for energy and environmental management (ISO 14001 and 50001). ISO 14064 is based on the GHG Protocol and translates its requirements into an ISO standard structure. In 2007, ISO, WBCD and WRI jointly decided to support both tools for calculating greenhouse gas emissions of companies – the GHG Protocol and the ISO 14064 (Memorandum of Understanding). Like the GHG Protocol, ISO 14064 differentiates between direct and indirect emissions, but does not define Scope categories. While under the GHG Protocol, Scope 1 emissions correspond to direct emissions as per ISO 14064, Scope 1 and Scope 2 emissions under the GHG Protocol jointly fall under indirect emissions as per ISO 14064. Moreover, ISO 14064 does not set strict rules of categorising indirect emissions and puts other requirements on the report structure and content. However, in principle, emissions falling under both standards are practically identical.

CO₂

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