



Environmental Statement 2023

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Environmental Statement

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List of Abbreviations

| | |
|---|----------------------|
| Bundesverband für Energie- und Wasserwirtschaft | BDEW |
| Electric Vehicles | EV |
| Employees | EE |
| Extrusion | EX |
| GHG | Green House Gases |
| LEA | Landesenergieagentur |
| Nordrhein-Westfalen | NRW |
| Polyamide | PA |
| Polyurethane | PUR |
| tkm | Ton kilometers |
| United States Environmental Protection Agency | EPA |

1. Purpose of the Environmental Statement

The PAPUREX W. Büchner GmbH is, since its foundation in 1981, closely connected to the Odenwald, the home of choice of its founder Werner Büchner. Hence, it was part of the company's self-understanding to take on responsibility for humanity and nature in the direct environment of our production right from the beginning. Naturally, the measures to protect nature and life don't end with the borders of the Odenwald. Instead, they are designed to contribute to the global challenge of fighting climate change and maintaining flora and fauna.

The purpose of this document is to present the current situation as well as relevant developments of PAPUREX that influence the environment and make them comprehensible for all stakeholders. Hence, it equally is the foundation for our customers to enable the comprehension of supply chains and for our colleagues to gauge the impact of their work.

All numbers, data, and calculations in this work are based on determined actual values from the business year 2022 and therefore allow a realistic assessment of PAPUREX's influence on the Environment. It is explicitly not the goal of this document to only present positive or in direct comparison positive seeming values. Numbers and data of other companies do not have any influence on the data collected in this work. The approach for the creation of all statistics that have been created for this environmental statement will be explained in the course of the work. With this, it is ensured that all readers can comprehend the collection of mentioned data.

Not less importantly, this environmental statement is a vehicle for the responsible persons of PAPUREX to assess the status quo and thus, identify trends and possibilities for improvement.

To be able to classify the impact of the work at PAPUREX on the environment, the following chapter summarizes the history, structure, and products of the company beforehand.

2. This is PAPUREX

2.1 History

The company's beginning can be dated back to 1977 when Werner Büchner founded a private partnership with extrusion (EX) of polyurethane (PUR) and polyamide (PA) as a key competence. The initial letters of these three elements build the company name that endures today. However, it took until 1981 for the business to receive its full company name PAPUREX W. Büchner GmbH. During the same year, the first product reached serial production: A PUR tube based on polyester polyurethane, suitable for plug-in-connectors. A complete novelty back then – a true classic in our product program today.

Five years later in 1986, PAPUREX already moved its production facilities to Mörlenbach, where they still are today. At that time, it was possible to count the whole team on two hands. Today, around 50 colleagues are going about their daily work at PAPUREX. The company reached the plant's capacity maximum several times, but solutions to stay were found each time.

In 1994, the first tube based on polyether polyurethane which is suitable for plug-in-connectors was introduced to the product program. This whole new material division showed a complementary strengths profile to the previous products and thus, enlarged the possible applications of polyurethane tubing significantly. Today, there are several variants of this material type in our product program.

Since 1996 our quality management is compliant with the DIN EN ISO 9001 norm. Because of that, all customers are ensured that their products fulfill the agreed quality standards by external

validation. It is not a coincidence that the company slogan was “Every inch a quality product” for many years.

In 2000, Rudolf Biebl took over the management of the company. Since then, PAPUREX did not only grow in terms of turnover but in regards to team size as well. The reason for that was for example many product innovations, some of which were patented. For instance, several further developments since 1999 produced **flamex**[®], the anti-static **A:S:S**[®] or the kink-proof **KSS** got introduced.

In 2021 already, PAPUREX celebrated the company's 40th anniversary. However, the values that the founder Werner Büchner worked into the foundation of the firm in 1997 already, are still noticeable today. Hence, absolute peak quality, the focus on individual problem solutions for the customers combined with the connectedness with the region, and a sense of responsibility for all stakeholders are still the mixture today, that defines PAPUREX.

2.2 The Company

PAPUREX is specialized in the manufacturing of high-quality polyurethane tubing. Despite the meanwhile very international customer base, these get exclusively produced in Germany. The share of exports was well over two-thirds in recent years and is distributed among more than 45 countries all over the globe.

More than 45 employees are responsible for the processing of around 450 tons of polyurethane per year. The production takes place on five lines in three shifts to meet the demand of international customers. PAPUREX educates trainees in-house since 2014 and thus, gives young people in the Odenwald region a perspective – without them having to leave their homes for surrounding big cities. At the same time, the education of professionals in-house secures the quality for the future.

Besides responsibility for colleagues and customers, regionality plays a big role in supplier selection as well. Hence, our IT-Service, the system house of our enterprise resource planning system, our tool mechanic, and many other partners are located within less than 20 kilometers distance. The raw material polyurethane comes to the largest part from Germany as well and thus, does not have to be transported around the globe before it can be processed in Mörlenbach.

2.3 The Products

As described in the previous sections of this document, PAPUREX is specialized in the extrusion of polyurethane tubing individually on customer demand. The extrusion of polyamide, which is still part of the company name (“PA” in PAPUREX), has since been discontinued. The reason for the specialization in polyurethane is the overwhelming material advantage during the production process in terms of flexibility and longevity.

In general, two sorts of polyurethane get processed at PAPUREX: At first, polyester polyurethanes have to be mentioned. These excel especially through their mechanical robustness, flexibility, and pressure resistance. On the other hand, there are polyether-based polyurethanes, which have their advantages mostly in the field of chemical resistance. Due to the individual customization of our tubing to customer demands, more than 6.000 article variations were created over time.

These originate from different specialty areas, for example:

- Antistatic tubing
- Flame resistant tubing
- Anti-kink tubing
- Tubing for maximum flow rates
- Tubing for agriculture

- Special forms

The following illustration creates a visual overview of the product spectrum of PAPUREX:



Figure 1: Product Spectrum of PAPUREX

Further information is available online on papurex.de and as a download.

3. Environmental influences of PAPUREX

The following chapter depicts the influences of the work at PAPUREX on the environment. As mentioned at the beginning of this work, all calculations are based on actual values of the business year 2022. However, this data does not claim to be absolutely accurate. The reason for that is several factors that cannot be calculated exactly. For instance, the commuting of employees differs: If the weather is nice, large parts of the staff walk to their workplace. In contrast, if the weather is bad, most of them come by car. Moreover, for some of our raw materials, there are no exact calculations of environmental influences available. Thus, in the case of some materials, estimations had to be used. Consequently, the classification of environmental influences must be understood as a scale rather than exact values. Nevertheless, it is our ambition to improve the accuracy in this area during the upcoming years to identify improvement potential even more precisely.

3.1 Greenhouse gases

3.1.1 Classification of greenhouse gases in so-called scopes

If capturing the GHG emissions of a company is the task, a classification in so-called scopes is usual.¹ The term describes in which area of the value chain GHG is emitted.

Scope 1: direct emissions

Includes all actions that can be directly linked to the value generation of a company. For example, energy sources that get consumed at the plant for fueling the production process or heating the company rooms count into this category. Moreover, company-owned vehicles used for the distribution at the plant site, are part of scope 1 as well.

Scope 2: indirect emissions caused by purchased energy

Includes the purchasing of external energy. An example of this category is electricity from fossil energy sources. Defined more precisely, the energy has to get produced outside of the capturing system but consumed inside of the latter, to count as part of Scope 2.

Scope 3: indirect emissions inside of the value chain.

Includes all actions, that are part of the value chain but are out of the direct control of the capturing organization. For further delineating Scope 3 emissions from Scope 1 and 2, the United States Environmental Protection Agency (EPA) describes Scope 3 Emissions as *Not owned or under the control of the capturing organization but occurring with influence on the value chain.*²

The following figure depicts all three scopes for a better overview. The approximate percentages are taken from an investigation of 405 bigger companies (>250 EE), based in Europe.

¹ Comp. (Klein & Kämmler-Burak, 2021), p 154 ff.

² Comp. (United States Environmental Protection Agency, 2023)

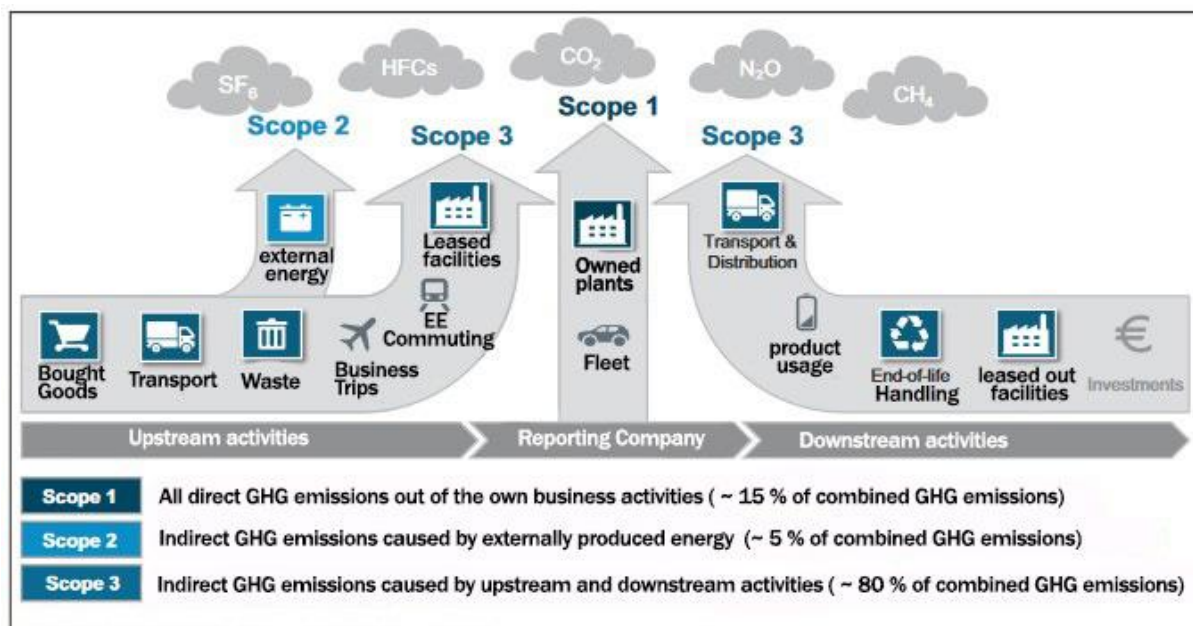


Figure 2: Overview of GHG Emissions along the value chain³

3.1.2 Consideration of Scope 1 emissions of PAPUREX

Compared to the other two Scopes, the consideration of Scope 1 emissions of PAPUREX is fairly simple. This is because only two factors influence calculations in this category. The first and main factor that must be mentioned is heating oil consumption. In 2022, the company's facilities were heated with 6.495 liters of heating oil. That equals, calculated with the Eco Cockpit of the LEA Hessen⁴, CO₂ emissions of about 20 tons. The full CO₂ report that was made via the Eco Cockpit of the LEA Hessen, is in the appendix of this document.

The only further emitter that is part of Scope 1 is propane gas. It is needed to heat machine parts that are contaminated with plastics because that makes the cleaning faster and more effective. PAPUREX consumes about 33 kilograms of propane gas per year. This is the equivalent of around 28 kilograms of CO₂.

The bottom line is that 20,45 tons of CO₂ are attributable to Scope 1 emissions at PAPUREX. This is about 1,17 % of the whole emissions.

3.1.3 Consideration of Scope 2 emissions of PAPUREX

The consideration of Scope 2 emissions at PAPUREX is easily explained as well: This category consists exclusively of emissions that occur during the external generation of energy that gets consumed in-house. The only energy source that falls into this category for PAPUREX is electricity. As further elaborated in chapter 4.1, the company exclusively purchases green electricity since 2003⁵. The latter is set with 0 CO₂ emissions in the calculations of LEA Hessen. Hence, there are no emissions at all that fall into Scope 2 at PAPUREX.

3.1.4 Consideration of Scope 3 emissions of PAPUREX

The analysis of Scope 3 emissions for PAPUREX is way more complex than in the case of Scope 1 and 2. Hence, it must be mentioned at this point that not all purchased goods can be regarded during the calculations because many of them are not obtained regularly. Thus, for some goods,

³ Based on (World Resources Institute, 2001)

⁴ (Landesenergieagentur Hessen, 2023)

⁵ See the green electricity certificate in the appendix

there is no data foundation within the reporting period. Furthermore, it has to be said that none of these irregularly obtained goods is a decisive factor in the calculation of GHG emissions. To be safe that the GHG emissions are not understated in the calculations made as a part of this document, we have countered the excluded goods with a flat 5 % surcharge on the CO₂ balance sheet of PAPUREX.

The first point, that falls into the Scope 3 category at PAPUREX is the arrival of our employees. They commute around 145.000 kilometers per year altogether to their workplaces. That equals to an average one-way to work of roughly 7,2 kilometers. The largest part of the whole commuting distance gets traveled via petrol cars. The latter contributed 92.480 kilometers or 64 % to the covered distance of our staff. The second most important form of mobility within our team in 2022 was electric vehicles (EVs). 22 % or 32.380 kilometers of the commuting distance to PAPUREX were driven electrified. Another 11.470 kilometers are attributable to diesel cars. This equals 8 % of the whole commuting distance. The remaining share of 6 % or 8.250 kilometers was covered by walking or bike rides. The following figure illustrates the shares of the different mobility forms in the total commuting distance of PAPUREX employees. Moreover, you can find a figure that visualizes the staff distribution around our production plan in Klein-Breitenbach to improve the traceability of the commuting distances.⁶

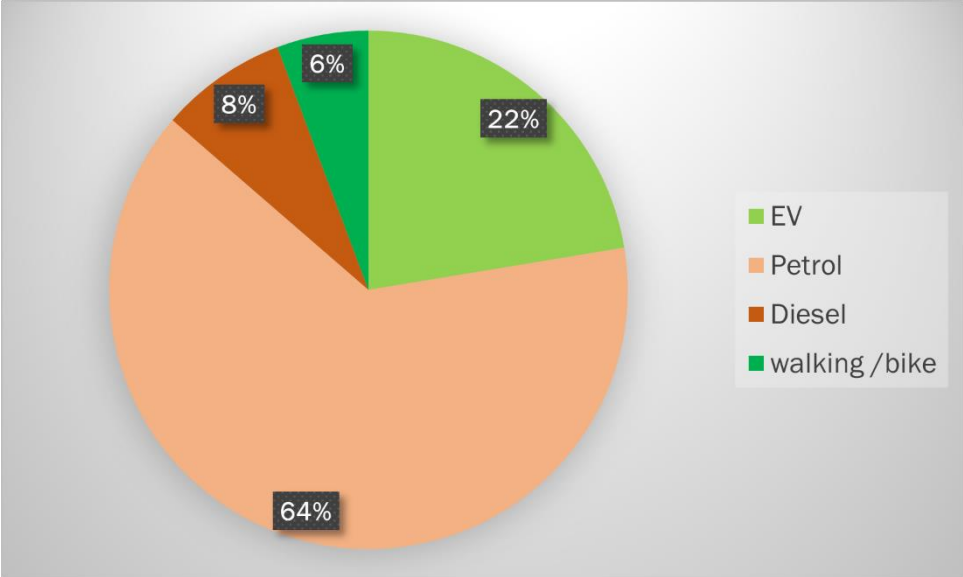


Figure 3: Shares of mobility forms in the total commuting distance of PAPUREX EE

Taking the individual vehicle data into account, for commuting to the PAPUREX facilities around 5.600 liters of petrol and 1.110 liters of diesel were consumed. That leads to a CO₂ emission of 19,3 tons, calculated with the Eco Cockpit of the LEA Hessen. This is equivalent to a share of 1,1 % of the total company emissions. It has to be mentioned that electrified vehicles are contributing to this calculation with a zero value because they charge significantly more with solar energy generated by PAPUREX than they consume due to the distance to work.

A further point that must be considered as part of Scope 3 is the transport of raw materials. In 2022, PAPUREX processed around 430 tons of polyurethane. These were transported over a distance of 52.216 kilometers in total. Divided into the number of deliveries, this is equivalent to 184.040 tkm. Using the Eco Cockpit of the LEA Hessen, this sums up to a CO₂ emission of around 9,25 tons, which is equivalent to a 0,53 % share in the total GHG emissions of PAPUREX.

⁶ See figure 6

By far the most important factor of the emissions that fall into the Scope 3 category; as well as in the total emissions of the company, is the purchase of polyurethane. By using the data of our raw material suppliers for the occurring emissions per kilogram of polyurethane, the consumed 430 tons for PAPUREX manufacturing of raw material sum up to 1.691 tons of CO₂ or a share of 97,2 % in the total emissions of our company.

The entire report created with the LEA Hessen Eco Cockpit can be found in the appendix of this work for better traceability of every scope. ⁷

3.1.5 Consideration of GHG emissions of PAPUREX

When looking at the Scope 1 to 3 GHG emissions, it is noteworthy that only a vanishingly small part of the emissions can be attributed to the direct business operations at PAPUREX (1,17 %) At the same time, the company has the biggest influence in this field. The small share of direct emissions can be attributed to past decisions to avoid GHG. A more precise elaboration of the decisions made follows in chapter 4.1. The same applies to Scope 2, the purchasing of externally generated energy. Due to the decision to purchase exclusively green electricity, the Scope 2 emissions of PAPUREX were reduced to zero already 20 years ago. However, the situation is different with Scope 3. This area is by far the largest with 98,87 % of the total emissions. In contrast, the company's influence is by far the smallest here. Nevertheless, it is part of our self-understanding to take responsibility for the entire value chain of our products. Hence, we will continue to motivate our colleagues to reduce GHG in business as well as in the private context. Moreover, we will work closely with our suppliers to reduce Scope 3 emissions due to the purchasing of raw materials. An overview of the measures already taken to reduce GHG follows in chapter 4.1.

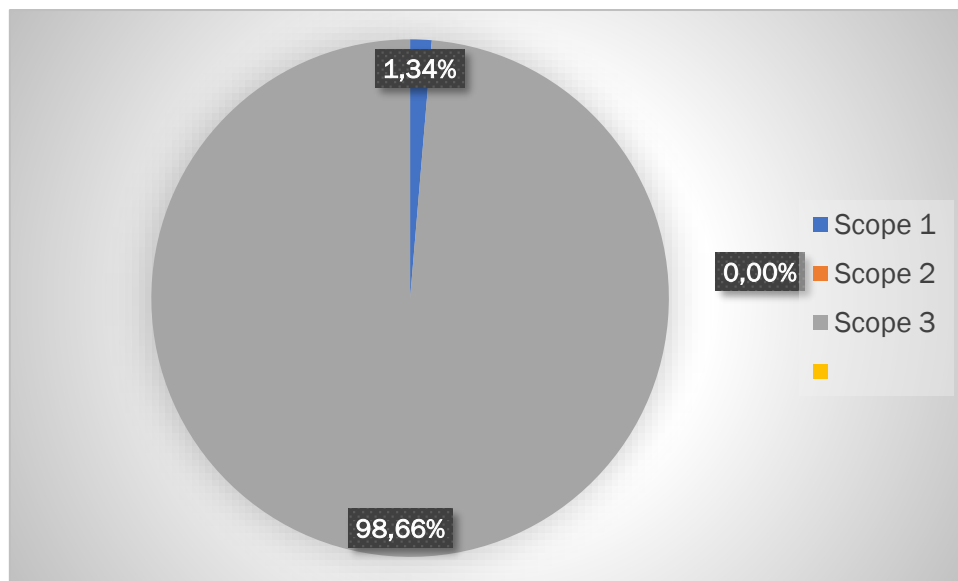


Figure 4: Shares of the scopes in total GHG emissions

3.2 Water

Extreme weather Events, which include long-lasting droughts, occur more frequently because of climate change, even in regions classified as humid the whole year, as many parts of Germany are.⁸ Hence, avoiding unnecessary or unproportional freshwater consumption is already part of the discussions about laws for due diligence in supply chains.⁹

⁷ See figure 7

⁸ See (Bundesministerium für Bildung und Forschung, 2023)

⁹ See (Würz & Birker, 2022, S. 54)

For the extrusion of polyurethane tubing, as it is done at PAPUREX, it is necessary to heat the raw material significantly. However, when the tubing received its desired form, it has to get cooled down as soon as possible so that the material can harden and the tubing stays in its form. For this process, water cooling is required. This is why up to 95 % of the annual water consumption of PAPUREX arises in production. The other 5 % can be assigned to everyday usage like sanitary facilities. In 2022, the whole company consumed around 707 cubic meters of water this way. According to data from the BDEW, this equals the water consumption of 3,8 four-person households in Germany.¹⁰ For Comparison: PAPUREX employs 45 people, and the production runs all day long. The needed effort to keep water consumption at this relatively low level gets described in chapter 4.2 of this document.

3.3 Waste

As a plastic processing company, the main part of waste at PAPUREX consists of the used raw material: Polyurethane. This is because of a lack of diligence of our staff, but rather due to unavoidable waste that arises during the extrusion. For instance, when a production line is started up, it takes some time until all parameters of the tubing are within the desired range. The material extruded up to this point does not fulfill the requirements of the customer and hence, can not be sold. Chapter 4.3 explains what PAPUREX does to minimize these amounts and to use the arising waste as well as possible. In 2022, 17,024 tons of plastic waste arose during the production process. This waste gets collected and handed to a recycling company annually.

4. Measures to reduce environmental impacts

4.1 Reduction of greenhouse gases

Since 2003, PAPUREX exclusively purchases green electricity. Per definition, green electricity is generated exclusively from renewable energy sources. Proof for the PAPUREX green electricity purchasing is in the appendix.¹¹ Electricity won by renewable energies is, however, not 100 % CO₂-neutral due to the current power mix in Germany because for the creation of their infrastructure energy generated by fossil energy sources is used. Nevertheless, power generation by wind, solar, or water energy happens completely without GHG emissions. Hence, their calculation in the CO₂ balance sheet by the Eco Cockpit of the efficiency agency NRW with net zero is allowed.¹² For the current power mix in Germany, 428g of CO₂ was emitted for one kilowatt-hour, according to the federal environmental agency of Germany.¹³ If you put this in relation to the energy consumption of PAPUREX in 2022 which was 477.303 kilowatt-hours, around 204 tons of CO₂ were saved because of the exclusive usage of green electricity (Scope 2)¹⁴.

Moreover, PAPUREX produces electricity out of solar power via photovoltaic systems. 32 panels on the roof of the bureau building were supplemented by 186 on top of the production building in 2022. In February 2023 another 26 panels on another company-owned building were added. Resultingly, PAPUREX not only contributes to the reduction of GHG emissions by purchasing green electricity but also improves the power mix in Germany by generating solar energy.

A further measure to reduce GHG emissions at PAPUREX is to reuse polyurethane waste in production. These are, as described in chapter 3.2 partly unavoidable during the starting process of the machines and while changing between different raw materials. To avoid making the effort to

¹⁰ See (Bundesverband für Energie- und Wasserwirtschaft, 2023)

¹¹ See appendix

¹² (Effizienz-Agentur NRW, 2023)

¹³ (Umwelt Bundesamt, 2023)

¹⁴ See chapter 3.1.1

produce the raw material polyurethane useless, we developed an in-house method that enables reusing the polyurethane waste. PAPUREX recycled more than 24 tons of polyurethane in 2022 in this way. If we used freshly produced material instead of these 24 recycled tons, a further 94,8 tons of CO₂ would have been emitted (Scope3)¹⁵.

One of the most important contributions of a company to environmental protection is the sensibilization of its staff to the topic. Only with a positive attitude of the whole team, impactful measures to avoid impacts on the environment in work life and ideally in private as well, can be implemented long-term.¹⁶ Hence, there are regular pieces of training on the topic of saving energy and reducing impacts on the environment at PAPUREX. Moreover, there is a permanent option for all employees to make suggestions for improvement that lead to energy savings or avoidance of waste. These suggestions get rated individually and awarded in case of implementation. Moreover, the whole company fleet will be electrified. This includes all lift trucks that reduce emissions in Scope 1¹⁷ on the one hand, and the other hand, cars that get used by our staff for commuting and thus, are part of Scope 3.¹⁸ Currently, there are four fully electric vehicles in the company fleet of PAPUREX that complete a commuting distance of 32.980 kilometers annually. That is, scaled to the emissions of the non-electric vehicles of the PAPUREX staff, a further saving of 4,54 tons of CO₂. The calculations are based on values of the EPA for emissions per consumed liter of petrol or diesel.¹⁹ Besides, it is an important part of staff sensitization to keep them up to date. Hence, there are regular pieces of training on how everyone can contribute to energy saving and waste reduction with their habits and thus, reduce GHG emissions. Starting with turning off screens when they are not in use, avoiding unnecessary lighting in unused work facilities to correcting heating and ventilation, everyday life can be created more efficiently and environmentally friendly.

4.2 Water saving

As explained in chapter 3.2, the water consumption of the whole company in 2022 was around 707 cubic meters. The vast majority of that can be assigned to the cooling of produced tubing. The comparison with 2002 shows that this number means a significant reduction in water consumption for PAPUREX. Back then, 596 cubic meters of water were consumed. However, in 2002 the production ran only 11.410 machine hours. In comparison, in 2022 PAPUREX produced tubing with 21.814 machine hours and thus significantly more than 20 years earlier. These values put into relation show, that the consumption of water per machine hour has reduced from 52,5 to 32,4. This is a reduction of 38 % in water consumption.

This efficiency increase can be traced back to improvements in the water circulation of PAPUREX. On the one hand, the production meanwhile gets cooled with a closed cooling circle. This almost exclusively gets fed with service water, which leads to significant savings in fresh water. On the other hand, the usage of the company-owned cistern gets maximized. A cistern collects rainwater that can be used for applications that do not require drinking water quality.

4.3 Waste avoidance

As described in chapter 4.2, some waste amounts are simply unavoidable during the production process. The enable optimal recycling of these, all waste types get strictly separated from each other and disposed compliant with the valid norms.

¹⁵ See chapter 3.1.1

¹⁶ Comp. (Klein & Kämmler-Burrak, 2021, S. 116)

¹⁷ See chapter 3.1.1

¹⁸ See chapter 3.1.1

¹⁹ (United States Environmental Protection Agency, 2023)

The most important item at PAPUREX is plastic waste due to production. This is not only true because of the amount that has to get disposed, but especially because of the GHG emissions that arise during the production process of the raw material (see chapter 4.1). This is the reason why the in-house recycling of production waste is of the highest priority at PAPUREX. In 2022, around 24 tons of polyurethane got reused in this way. This equals 59 % of the total waste volume. In contrast, 17 tons were handed to a recycling company to make the best out of the plastic waste that could not be reused in-house. The externally recycled amount equals 41 % of the total plastic waste volume at PAPUREX. The goal in this area is set: The waste ratio, which decreased anyway over the last few years (from 10,78 % in 2010 to 3,37 % of the total processed raw material in 2022) is to be reduced further. Additionally, PAPUREX increases the share of the in-house recycled materials from year to year, so that even less polyurethane must be externally recycled in the future.

The sales of our polyurethane tubing hold the additional potential to reduce waste. For instance, we wrap products that are sold in great lengths on reusable wooden reels for many years. To give our customers enough incentives to send the reels back and instead of scrapping them, we introduced a deposit system. This way, hundreds of reels can be reused, and all participants profit monetarily from that. However, most importantly the impact on the environment can be reduced by the deposit system.

In 2022, PAPUREX introduced a further measure to reduce waste: The reprocessing of used solvents. These are for example necessary, to run the printers which sign our tubing. In the past, used solvents were handed to a professional hazardous materials recycler. Meanwhile, we are able to reprocess them and thus, use them several times before their deposit.

Besides the reduction of waste due to production, the behavior of each colleague plays at PAPUREX plays a role. Through consistent training, we ensure that all of our employees support the clear course to avoid waste. Because small things like using the in-house water dispenser instead of PET bottles, the usage of reusable containers for food storage, or labeling food and beverages in the fridge, avoid waste. In the sum of 45 coworkers, these savings are even more important.

5. Outlook

We already set the goal to produce CO₂ neutral until 2025 in our environmental statement of 2021.²⁰ With this second, revised edition of the environmental statement, this goal can be further concretized: PAPUREX strives to bring all GHG emissions that can be influenced by internally made decisions to zero. This includes all CO₂ emissions and all CO₂ equivalents of other GHGs, which fall under Scope 1 and Scope 2. The measures to realize this are already in planning: The main emitter of Scope 1 emissions is the heating system of the production plant in Mörlenbach. The replacement of the system is in planning for several years now, but it could not be realized yet due to construction problems. Hence, the facilities must be heated with heating oil until now. However, we are confident that the redevelopment of the heating system can be fulfilled in the remaining time frame until 2025. This will bring PAPUREX another step closer to GHG neutrality.

Scope 3 emissions are to be reduced, if influenceable, as well. The electrification of the company fleet, regarding the commuting of our employees to work, falls into this category and is already in full swing. The exchange of several vehicles with combustion engines by electrified equivalents is already sealed. Alone the currently very long delivery times are delaying this measure at the moment. Furthermore, already existing incentives as the possibility to lease bikes and e-bikes via the provider Job Rad²¹ for the usage of GHG-neutral ways for commuting, are to be intensified. The

²⁰ Comp. (PAPUREX W. Büchner GmbH, 2021, S. 10)

²¹ See (JobRad GmbH, 2023)

goal is to expand the share of GHG-neutral commuting of currently 28 % significantly. The biggest and at the same time most difficult task is the reduction of the indirect GHG emission due to purchasing polyurethane. Here, PAPUREX depends on the development of production techniques of the suppliers. The task is to influence this development by conscious decision-making and consequent representation of interests.

One of the most effective leverages to avoid GHG emissions is one of the most important points in reducing waste at the same time: The reduction of plastic waste due to production and simultaneous increase in recycling of unsellable materials. Both performance indicators are monitored closely at PAPUREX, and specially created competence teams work on their steady improvement. Consequent training and education of the staff is the key to further reducing the remaining impacts on the environment by reducing waste and water consumption and keeping their impact as small as possible. Hence, we will work persistently on improving in this area so that significant improvements can be reported in the next edition of the PAPUREX environmental declaration.

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Appendix

Klimaschutzzertifikat

Unser Beitrag zum Umweltschutz:
100% Ökostrom

Papurex W. Büchner GmbH

Seit dem 01. Januar 2003 wird dieser Betrieb von LichtBlick mit Ökostrom versorgt. Die durch LichtBlick in das Stromnetz eingespeiste elektrische Energie:

- **stammt weder aus Atom-, noch aus Kohle- oder Ölkraftwerken**
- **wird vollständig aus ökologischen Energiequellen gewonnen.**

Durch den Bezug von LichtBlick-Strom vermeidet dieser Betrieb jährlich

235,33 Tonnen

zurechenbare CO₂-Emissionen.



Geschäftsführung LichtBlick SE



LichtBlick SE
Zirkusweg 6 • 20359 Hamburg • www.lichtblick.de



Figure 5: green electricity certificate PAPUREX

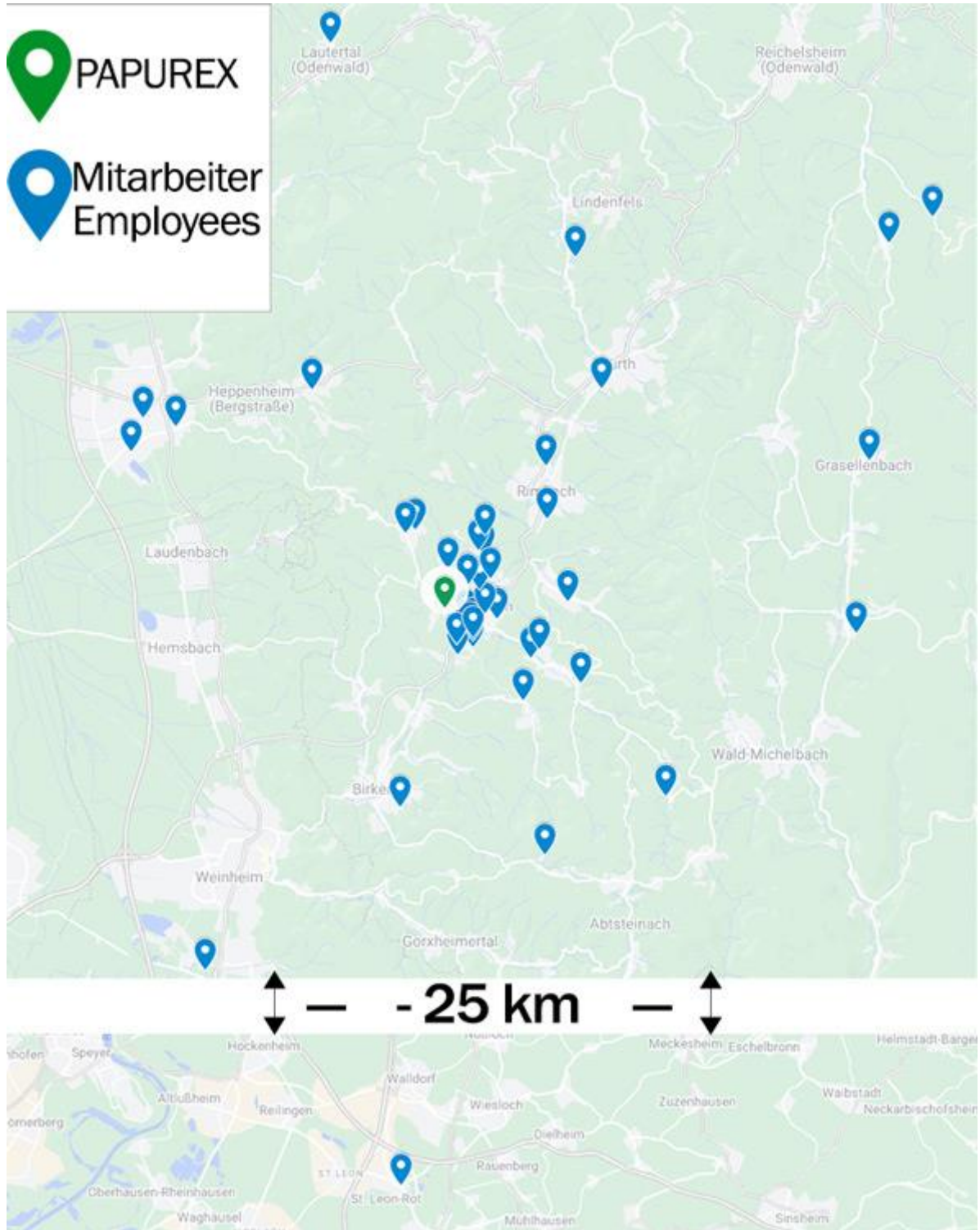


Figure 6: Geographic distribution of PAPUREX employees

Bericht

PAPUREX W. Büchner GmbH

Datum: 23.02.2023 - 14:46
Anzahl der Mitarbeiter: 45
Jahresumsatz: 8.000.000,00 €

SYSTEMGRENZEN

Zeitraum: 01.01.2022 bis 31.12.2022
Sicherheitsaufschlag: 5 %

Beschreibung des Betrachtungsgegenstandes:
Betrachtet wird das Unternehmen PAPUREX W. Büchner GmbH

Standort: Mörlenbach
Branche: Verarbeitung von Kunststoffen
Produkte: Schläuche aus Polyurethan
Produktionsmenge: 430 Tonnen / Jahr
Hauptprozesse: Extrusion
Anzahl der Mitarbeiter: 45

Beschreibung des Bilanzraumes:
Die vorliegende THG Bilanzierung wurde unter der Betrachtung cradle to gate Faktoren erstellt. Einige Emittenten wie der unregelmäßige Bezug von Industriegütern oder Maschinen wurden nicht in die Bilanzierung eingeschlossen, da hierzu keine Datengrundlage vorliegt. Aus diesem Grund wurde ein Sicherheitszuschlag von 5 % auf die errechneten Werte erhoben.

SCOPES

SCOPE 01

Einsatz von Energieträgern für die interne Verbrennung – 20.420,28 kg CO₂e (1,17 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|--------------|----------|---------|-----------------|-------------------------------|
| Heizöl (HEL) | 6.495,00 | Liter | 1,17 % | 20.420,28 kgCO ₂ e |

Technische Gase – 28,38 kg CO₂e (0,00 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|---|-------|---------|-----------------|---------------------------|
| Propan (C ₃ H ₈) (EEW) | 33,00 | kg | 0,00 % | 28,38 kgCO ₂ e |

SCOPE 02

Bereitstellung von Energie aus externen Quellen — 0,00 kg CO₂e (0,00 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|--------------------------------------|------------|---------|-----------------|--------------------------|
| Strom aus erneuerbaren Quellen (EEW) | 477.303,00 | kWh | 0,00 % | 0,00 kgCO ₂ e |

SCOPE 03

Transporte mit externen Dienstleistern / Fahrzeugen — 9.244,33 kg CO₂e (0,53 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|--|------------|---------|-----------------|------------------------------|
| LKW Lastzug/Sattelzug Diesel (40 Tonnen) | 184.040,00 | tkm | 0,53 % | 9.244,33 kgCO ₂ e |

Kunststoffe — 1.691.063,48 kg CO₂e (97,18 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|-------------|------------|-----------|-----------------|----------------------------------|
| Polyurethan | 430.307,00 | Kilogramm | 97,18 % | 1.691.063,48 kgCO ₂ e |

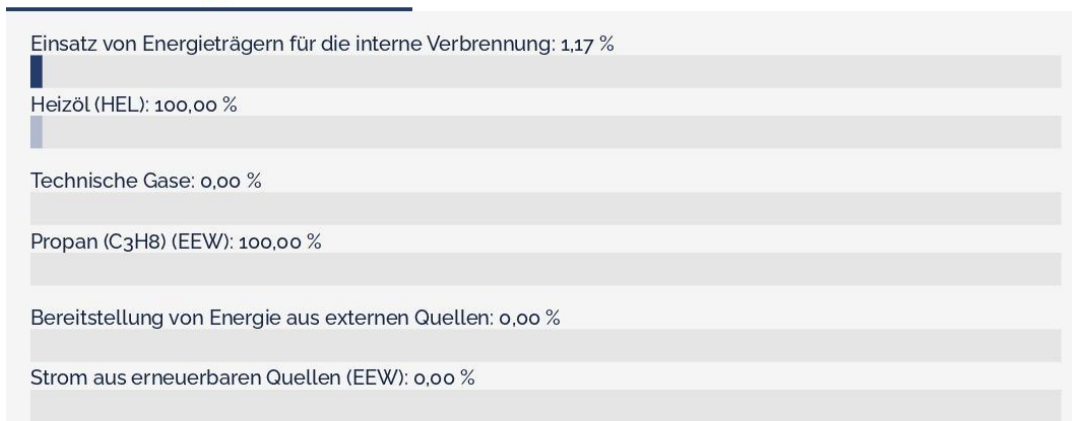
Wasser — 155,38 kg CO₂e (0,01 %)

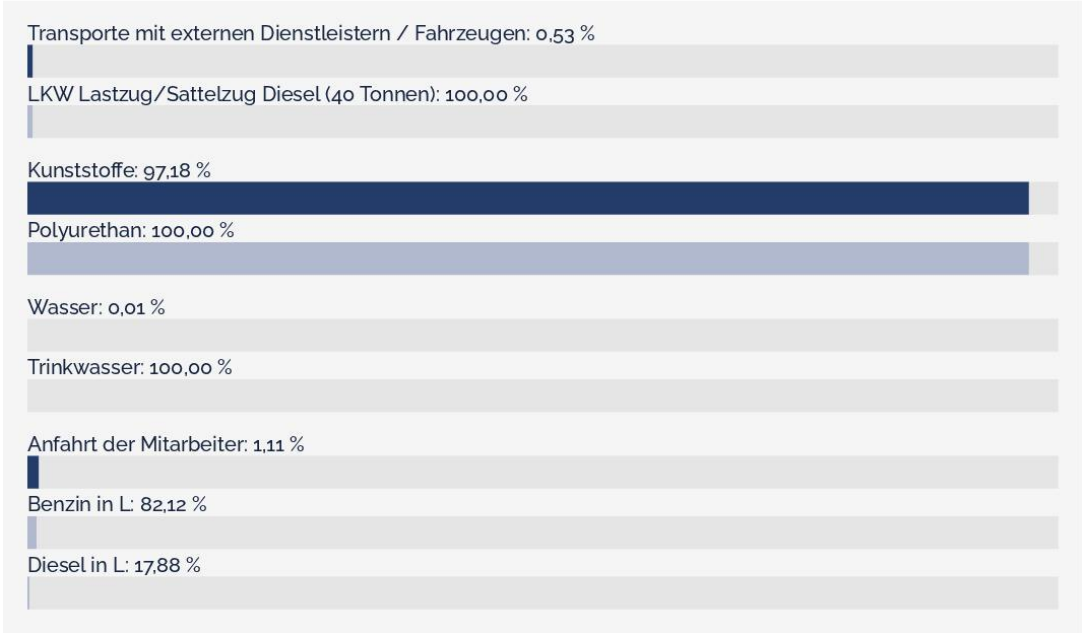
| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|-------------|--------|----------------|-----------------|----------------------------|
| Trinkwasser | 717,00 | m ³ | 0,01 % | 155,38 kgCO ₂ e |

Anfahrt der Mitarbeiter — 19.264,37 kg CO₂e (1,11 %)

| Emittent | Menge | Einheit | Anteil relative | Anteil absolute |
|-------------|----------|---------|-----------------|-------------------------------|
| Benzin in L | 5.605,00 | Liter | 0,91 % | 15.819,89 kgCO ₂ e |
| Diesel in L | 1.109,00 | Liter | 0,20 % | 3.444,48 kgCO ₂ e |

Balken-Diagramm





Donut-Diagramm



KENNZAHLEN

| Wert | Beschreibung | Erklärung |
|---|--|---|
| 38.670,58 CO ₂ e pro Mitarbeiter | Emissionen relativ zu den Mitarbeitern | Bezogen auf 45 Mitarbeiter |
| 0,217522 CO ₂ e pro € | Emissionen relativ zum Umsatz | Bezogen auf 8.000.000,00 € Umsatz |
| 182.718,9 Bäume | CO ₂ -Bindung | Mit der Annahme, dass ein Baum im globalen Durchschnitt etwa 10kg CO ₂ pro Jahr absorbiert, wären zur Bindung Ihrer berechneten Gesamtemissionen 182.718,9 Bäume erforderlich. Weiterführende Infos finden Sie hier . |
| 27.408,2 € | Kompensationskosten | Die Kosten für Kompensationsprojekte variieren stark. Bei der Annahme von durchschnittlich 15 EUR pro zu kompensierender Tonne CO ₂ e, müssten Sie für die Kompensation Ihrer Gesamtemissionen 27.408,15 EUR in Umweltschutzprojekte investieren. Weiterführende Infos finden Sie hier . |
| 1.740.176,22 kg CO ₂ e | Gesamtemissionen | Berechnet durch die eingegebenen Verbrauchsmengen und den hinterlegten CO ₂ -Äquivalenten. |

ALLE EMITTENTEN

| Emittent | Kommentar | Menge | KG CO ₂ e | Datenquelle | Bezeichnung |
|---|-----------|-----------------------|----------------------|-------------|--|
| Heizöl (HEL) | — | 6.495,00 Liter | 3.144 | Gemis 5.0 | Öl-Heizung-DE-2020 (Endenergie) |
| Propan (C ₃ H ₈) (EEW) | — | 33,00 kg | 0,86 | EEW 2022 | CO ₂ -Faktoren - EEW |
| Strom aus erneuerbaren Quellen (EEW) | — | 477.303,00 kWh | 0 | EEW 2022 | CO ₂ -Faktoren - EEW |
| LKW Lastzug/Sattelzug Diesel (40 Tonnen) | — | 184.040,00 tkm | 0,05 | Gemis 5.0 | LKW-Diesel-25m-40t-Zug-2020-Basis |
| Trinkwasser | — | 717,00 m ³ | 0,217 | Gemis 5.0 | Xtra-Trinkwasser\DE-2020 |
| Benzin in L | — | 5.605,00 Liter | 2.822 | Gemis 5.0 | Tankstelle\Benzin-DE-2020 (inkl. Bio) + direkte Emission |
| Diesel in L | — | 1.109,00 Liter | 3.106 | Gemis 5.0 | Tankstelle\Diesel-DE-2020 (inkl. Bio) + direkte Emission |
| Polyurethan | — | 430.307,00 Kilogramm | 3,93 | — | — |

Figure 7: PAPUREX GHG Report²²

²² Using (Landesenergieagentur Hessen, 2023)