

Swapfiets



What a ride: leading the movement to liveable cities.

Sustainability Report.

2021

A note from our CEO.

"I like riding a bike. You can find me on a bike for my commute in Amsterdam or the countryside on weekends. Strava tells me that I rode over 5.000 kilometers on my road bike this year. Of course, with a blue front tire! But it's not just the product that appeals to me at Swapfiets, it's the way we disrupt the cycling market and the bicycle industry as a whole that really excites me.

The mission of Swapfiets, leading the movement to more liveable cities, is so strongly in line with what we do. It's much more than just providing bicycles, we make it easy for people to use a bike. Taking all the hassle away of owning a bike influenced over 60% of our members to change their way of moving through the city. Many of our members are using fewer cars and public transport. Besides the mode shift, providing a bicycle membership allows us to take responsibility for the product. This circular way of doing business is in today's world an obvious and logical way forward: a better user experience while lowering our climate impact.

To show that we are serious about this model, we have an ambitious goal to become a climate-neutral company and to realize a 100% circular product line by 2025. Something that seems very far away, but at the same time very close by, as we know the current challenges in the bicycle supply chain.

Still, it is amazing to see that in many cases we are leading the pack in the bicycle industry by measuring how our parts & products perform on the streets with our members. In other areas, we want to join forces and learn from other companies. For example in our collaboration with Vittoria, where our aligned missions lead to an industry-first of providing Tires as a Service!

We need more of these visionary companies to join our movement in order to drive change together.

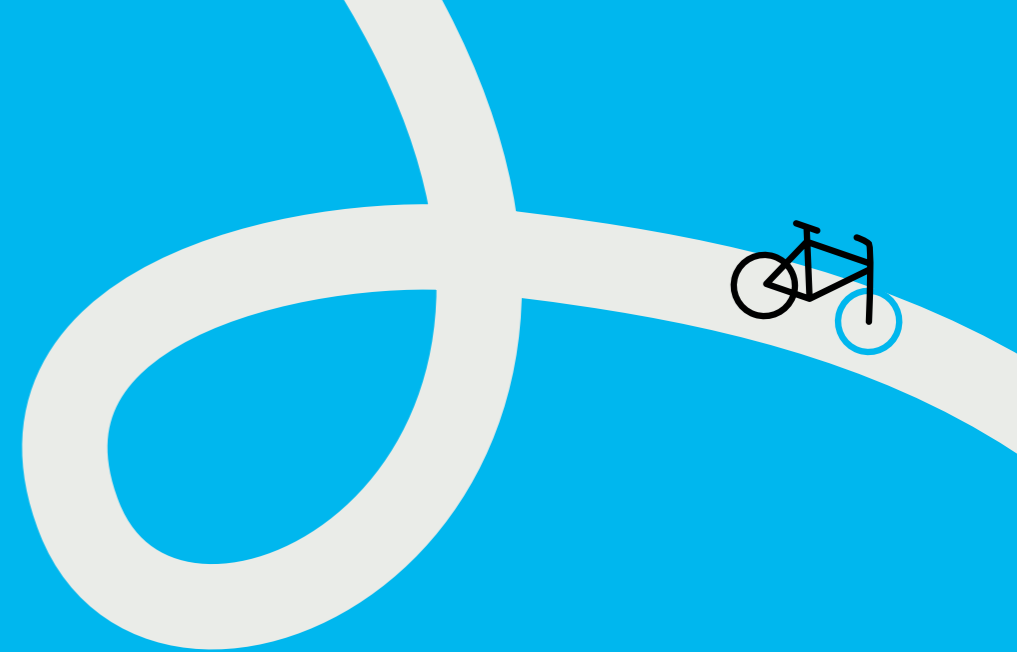
It requires effort of not just the Sustainability team, but from everyone in the company. Nine out of ten recruits mention sustainability in their application as a reason to work at Swapfiets. Our members increasingly value our sustainability efforts. Improving our

product is central in our ambition and most importantly our Swapdesk, Swappers and Mechanics make decisions on a daily basis that influence how sustainable we are.

All of this is included in the upcoming B Corp certification. Currently, we are tracking to become the first mobility provider that will become B Corp certified. We hope to receive the certification in 2022, after which we continue our efforts to create a more sustainable world."

Lead the movement to more liveable cities!

Marc de Vries
CEO Swapfiets



A Note from our Founder & Director of Sustainability.



“We started Swapfiets in 2014, the early days of the ‘from possession to use’ movement. At that time, the circular economy community was still in its infancy. Our main focus was to serve Swapfiets members with a smart bicycle membership and build our company around that. We took a different approach to the old-fashioned ‘take-make-waste’ model of producing, selling, and consuming products because that was the only way for members to only experience the benefits of cycling.

Looking into our Product as a Service business model and the industry transformation we push, it felt like we were already doing lots of stuff right. Swapfiets made it convenient and easy to cycle in cities, we design smart products that last and repair products as long as possible. But to create more impact in leading the movement to more liveable cities, we felt the need to step up our game. We have a responsibility to use business as a force for good and give more to the world than we take. In 2019 I decided to fully focus on the sustainability part of our business and dedicate all my time to this.

To see where and how we can improve ourselves, we started by conducting a Life Cycle Analysis and impact measurement for our company emissions. The analysis made clear that we are already at 88% circularity for our Deluxe 7 model and that it is technically possible to reach 100% circularity. Ambitious as we are, we decided to set a big hairy audacious goal. Our dot on the horizon. We are determined to take bigger and bolder steps, achieve a circular product line, and become a climate-neutral company by 2025.

Nobody said it was easy and the road to circularity is not fully paved yet, but it makes me very proud to see where we are on this (bumpy) road. From innovative side projects and pilots that were initiated by the Swapfiets team, to seeing sustainability become a part of our daily decision making. It is almost impossible to keep track of all the results as part of this more sustainable focus; recycled materials in our parts & products, sustainable & organic company clothing, innovative partnerships, smart data usage, and continuous improvements in our warehouse. The list goes on and on.

In this very first publicly available sustainability report we’ll share where we are and share our most important achievements so far. It is my goal to share our insights and learnings along the way. I hope it inspires, triggers, and offers tools to accelerate more sustainable decision-making. Both in your daily business and at home.

A major thanks to Yutika Gawdi and Freya Wood for their dedication in realizing this report and a big hurrray to the entire Swapfiets team for their dedication and taking responsibility.”

Let’s keep on moving towards greener, healthier, safer and more social cities together!

Richard Burger
Founder Swapfiets
& Director of Sustainability



What a ride!

Because we set ambitious targets and change doesn't happen overnight, **we are dedicated to keep up the hard work.** We are pushing to meet our goals and our collective mindset is positive and up for the challenge.

In this very first sustainability report we focus on the impact we made in 2021.

Our mission is to lead the movement to more liveable cities, and to achieve this we focus on 3 goals:

- Launching a circular product line by 2025
- Becoming a climate neutral company by 2025
- And providing access to sustainable mobility

2021 in numbers



We saved approximately 800,000 kg CO₂ because of our circular business model.

That is as much as driving around the Earth 170 times, in a petrol car!



Our Deluxe 7 model is already 88% circular – we still have 12% to go for a full circular product line!



We reached 100% green electricity in our shops and offices.



60% of the total kilometres travelled by our employees is done by bike.



We teamed up with the foundation Bicletas Sin Fronteras in Senegal and repaired and donated a first batch of Swapfiets bikes.



We made the first steps (18%) towards a 100% zero emission vehicle fleet for transporting our bikes.



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About Swapfiets.



How it started...

In 2014, three students from the Technical University of Delft started the world's first 'bicycle as a service' company. The idea: Swapfiets members are granted their own always-working (e-)bike for a fixed monthly fee. If the bike has an unexpected issue it will be repaired or replaced within 48 hours for free.

We're not a student start-up anymore.

Throughout the years Swapfiets transformed from a start-up founded by students into one of the leading suppliers of micro-mobility in Europe. By December 2021 we had more than 250.000 members across the Netherlands, Germany, Belgium, Denmark, Austria, Spain, Italy, the United Kingdom, and France. It's fair to say we're conquering the world one blue wheel at a time.



1100
Employees.

250,000
Members.

65 cities.

9 countries.

7 years young.



... And how it's going.



Founded on Delft University campus with second hand bikes.



1000th customer.



We launched our first bike designed for subscription.



We stopped using batteries in our lights.



Launch Power 7.



100% circular rubber waste.



200k customers.



Achieved 88% circularity for our Deluxe 7.



Partnership with Bicicletas Sin Fronteras.



Nominated for the Circular Award 2021.



Launch Power 1.



Switched all stores to green electricity.



Partnership with Vittoria.

2014 **2015** **2016** **2017** **2018** **2019** **2020** **2021**

Markets

Scaled to 10 cities in the Netherlands.

Launched in Belgium, Germany & Denmark.

Launched in France & Italy.

Launched in the UK, Spain & Austria.

Number of subscriptions

<1K

21K

85K

170K

220K

250K

Number of active cities

17

33

46

52

60+



Our mission.

We do not sell bikes. We believe the planet has enough stuff already. Instead of owning more, we firmly believe in using more. We design our products to be reused over and over again. We keep our members on the move by crafting a high-quality bike that survives the test of time.

It's our mission to lead the movement to more liveable cities.

This belief is the heart of everything we do. We do know though that having a noble mission alone doesn't cut it. We're not here to bombard you with hollow phrases that don't prove anything.

That's why we'd like to present you with this report. As a company, we want to be transparent about the things we do to have a positive impact. At the same time, we see this report as an opportunity to reflect. Sustainability is a journey. We examine our footprint while facing the hard questions. How and where can we do better socially and environmentally?

Let us take you on the ride.





The reason we get out of bed every morning.

Leading the movement to more liveable cities doesn't happen overnight. We've crafted three objectives to make our mission a reality.



2025



2025



2021



100% Circular product line:

We make products that are made to last. It's our ambition to build, maintain and recycle zero-waste products using renewable resources that are free of emissions.

Climate neutral business:

We aim to operate a business that has - at least - no negative climate impact. This means we have to shift to sustainable travel, transport, and energy resources.

Sustainable mobility:

We enable the most sustainable way of moving through the city by offering high-quality products and worry-free service for a fixed monthly fee.



We don't do it for the hell of it.

We can share a happy-clappy message over here, but we'd prefer some real talk. Truth is that the world we ride in is changing - fast. We need to highlight the key transitions and important shifts towards environmental and social responsibility to explain why we're very serious about this. It might get sticky, so please bear with us.

In 2015, a total of 196 countries signed the [Paris Agreement](#). This agreement was set up to limit global warming to an average temperature well below 2 degrees Celsius. In addition, the European Union aims to be climate neutral by 2050. Over the years it became painfully clear that achieving these goals is easier said than done.

It became painfully clear that achieving these goals is easier said than done.

In 2016, the United Nations adopted the [Sustainable Development Goals](#) (SDGs). This is a set of 17 global goals to end all forms of poverty, reduce inequalities, and tackle climate change. To achieve these goals global effort and collaboration are required. At Swapfiets we also work towards achieving these goals. We believe that focus is the key to success.

That's why we chose to focus on:



Sustainable cities & communities:

Sustainable growth is the biggest challenge of cities of the future. Cities can make a big difference: they contribute to approximately 60 – 80 percent of all energy consumption and about 75 percent of carbon emissions.



Responsible consumption & production:

Waste plays a big role in this SDG, therefore a way to target this impact is to reduce waste production significantly through prevention, recycling and reuse. The intention is to make the entire chain aware of the problems and to let them help with solutions.

We believe these areas are the ones we can most strongly influence. Other areas, such as climate action and clean energy, will be indirectly affected positively¹.

The Green Deal is slowly but surely reshaping the business landscape.

The growing awareness of global climate challenges and their consequences is a call for action. As a result, European decision-makers introduced the [Green Deal](#) in December 2019². This is an international agreement that sets targets for the EU. Firstly to move to a net-zero economy by 2050, to decouple economic growth from resource use, and to leave no person or place behind. Meeting these goals requires collective action.

Part of the EU Green Deal is the [EU Taxonomy](#)³. This set of rules and guidelines is here to make sure financial resources flow to the right businesses supporting a sustainable future. The EU Green Deal is slowly but surely reshaping the business landscape for the better. Our Sustainability Director provided feedback on the draft report because we believe it's important to be engaged wherever we can.

Scientific research on climate change is more alarming than ever.

Meanwhile, the scientific research on climate change shows numbers that are more alarming than ever. [The Intergovernmental Panel on Climate Change](#) (IPCC) scientists have warned that in order to keep the rise in global temperatures under 1.5 degrees Celsius this century, emissions from greenhouse gases need to decrease by 50% by the end of this decade. The United Nations IPCC reports summarise the latest science and are published every six or seven years⁴. Governments use the reports in their negotiations on climate change, for instance during the [UN Climate Change Conference in Glasgow](#) (COP26) in November 2021.

Cities are key players in the fight against global warming.

The most recent IPCC report shows that cities are key players in the fight against global warming. "Active travel modes, such as walking and cycling, represent strategies not only for boosting energy efficiency but also, potentially, for improving health and well-being"⁴. More specifically, the report shows that shifting to sustainable transport is part of the solution to reduce emissions by 40-70% by 2050. In Glasgow an amendment was made to the declaration on accelerating the transition to 100% zero-emission cars and vans, to include "active travel". This acknowledges the importance of cycling and walking in the transition toward sustainable cities and communities⁵.



Circularity at Swapfiets.

Circularity at Swapfiets.

What closing the loop means to us.

You've probably heard of circularity and the circular economy before. Here we like to dive into what these terms mean to us as a company and what it takes to create a circular product.

In contrast to a linear economy - where resources are taken from nature, made into products, and eventually disposed of - the circular economy aims to shift this process into a closed-loop system. The circular economy is "an economy that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times"⁶.

To prevent draining our Earth's finite resources and generating vast amounts of waste, circularity focuses on creating products that last. Through the use of renewable sources, repair, remanufacturing, and high-value recycling. The Circularity Gap report from 2021 shows an enormous circularity gap of 91.4%, meaning that from the 100 billion tonnes of new materials, currently only 8.6% is cycled back into the global economy. To narrow this gap and shift towards a circular economy, companies are required to drastically change their business models and production processes⁷.

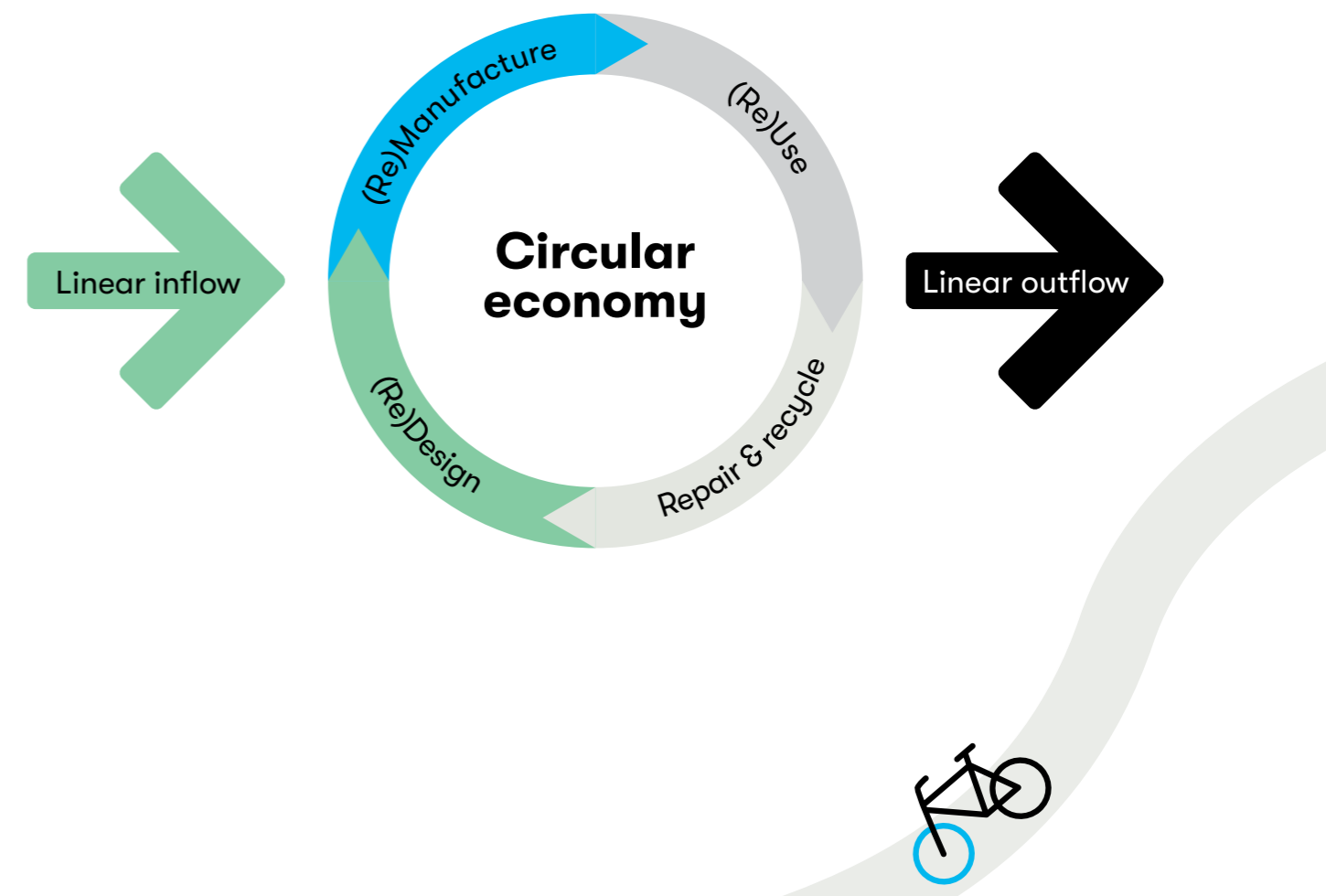
We strive to have a complete circular bike by 2025.

A change towards a circular economy requires businesses to adapt too and their business models along with it. Swapfiets has the ambitious goal to achieve a circular product line by 2025. This transition requires different, innovative ways of thinking and doing. In our view, circular innovations can only be successful if they are technically feasible, profitable for entrepreneurs, and attractive to end-users. That all this is done in a socially responsible manner and with a positive impact on the environment speaks for itself.

In the linear economy, difficulties arise once the product has left the retailers, as the responsibility for correct disposal of the product falls into the consumer's hands. In contrast, Swapfiets' business model - Product as a Service (PaaS) - means that there is extended product ownership. Therefore the retailers are liable. It's our duty to ensure that circularity can be achieved.

Circular products are designed to operate within this circular system. At Swapfiets we are striving to have a completely circular bike by 2025. This is what we need to accomplish.

- **A 100% circular inflow.** In our case, this means that our bikes need to be made from renewable resources (i.e. reused, refurbished, remanufactured, recycled, or biobased) and be produced using renewable energy.
- **The product must be designed so that it is 100% smart and adaptable.** The product has the ability to be upgradable and repairable with parts that are designed to last. The end of life of the product is taken into account, so it is designed for disassembly, remanufacturing & recycling with fewer materials. All of this means that the product lifespan can be extended and that repairs are easy.
- **The product also must have a 100% circular outflow.** This means there is zero waste. All materials must flow back into the broader system as resources. Nothing gets incinerated or goes to a landfill. At the end of the lifetime of parts, they are returned to manufacturers for optimal remanufacturing, recycling, or composting.



Our circularity strategy.

A goal without a plan is just a wish. We determined the three main focus points in our road towards a circular product range by 2025.

1. Design that last.

We use user data to develop and design products and parts that last. We track how often and which parts of the bike break down over time. This pushes us to redesign certain parts of the bike and to change their materials for better durability and recyclability. Hello, circularity! By changing the rear wheel for example we've made repairs quicker and easier. We also swapped certain parts from chrome to stainless steel. This makes parts last longer while still looking slick. The best news of all: these improvements already decreased our bike breakdowns by a whopping 66%.

2. Continuous repairs.

We reuse, repair, and remanufacture as much as possible in order to optimise the lifespan of our current fleet. To keep members happy we track how long our repairs take on average. By building our bikes as universally as possible we make them easy to fix. That's why we work with one base frame and a limited set of parts to make endless combinations. We also check the bikes on critical maintenance and safety every time we have the bikes in our hands, this helps to expand the lifetime of parts.

3. Material return flow.

Sometimes a bicycle part has reached its end. It's our job to recycle these parts with the aim to realise zero general waste. Sometimes parts that are normally destined for general waste can be send back to the manufacturer, because we have very concentrated waste streams, for example with inner tubes.

To make these goals a reality we develop long-term relationships with suppliers who just like us provide product-as-a-service parts and materials. This means specifically that our supplies retain ownership of their parts. If we can't fix it anymore, we send it back to our suppliers so they can properly recycle it. Cool huh?

A part of material outflow that is harder for us to control is the theft of bikes. Here's where data saves the day once again. We have been working on a GPS security system for the e-Bikes that we will launch in early 2022. No worries: we would never check your personal whereabouts. This data enables us to track the e-Bike in case it goes missing.

In short, we need solutions in bicycle parts to reach our ambitious goal of a 100% circular product line in 2025. To help us realize this goal and to also share the knowledge we have, we joined the Ellen MacArthur Foundation (a leading circular economic network).



The circularity progress.


To find out where we stand and how we can improve ourselves, we had the circularity score of our bikes calculated. This score was focused on our Deluxe 7 Swapfiets while examining the inflows and outflows across the average lifetime of a member. The outcome of this is what we call the 'circularity score'. We also calculated the same score for a more traditional business model to allow for a comparison of our bikes.

You'll only score a 100% on the circularity ladder if no single resource leaves the system and is kept cycling in the closed loop and no unused material enters the system. It's good to know that this indicator only focuses on the resources in the system, during the time an average customer is using the bike and everything that is needed to keep that Swapfiets riding

We can proudly share that our deluxe 7 is far more circular than the regular linear model.

To illustrate this we like to show you the Swapfiets Deluxe 7. This bike has an overall circularity score of 88%. This high score was reached through the high return rate of Swapfiets bikes, extensive repairs to maintain quality, and re-using or remanufacturing components. This ensures that materials are kept within the product-service system and avoids the loss of materials to waste.

In comparison, our Deluxe 7 membership scores 52 percent points higher on overall resource circularity than the reference retail model.

Circular business model  88% circularity vs  Linear business model ~36% circularity



The circularity progress.

The road to circularity isn't a paved one. Still, we think it's important to share details about where we stand at this stage. In the figure on this page, you see the Value Hill. Based on this graph we present the circular flows of material through our Swapfiets Deluxe 7 in different circular loops.

Some highlights:

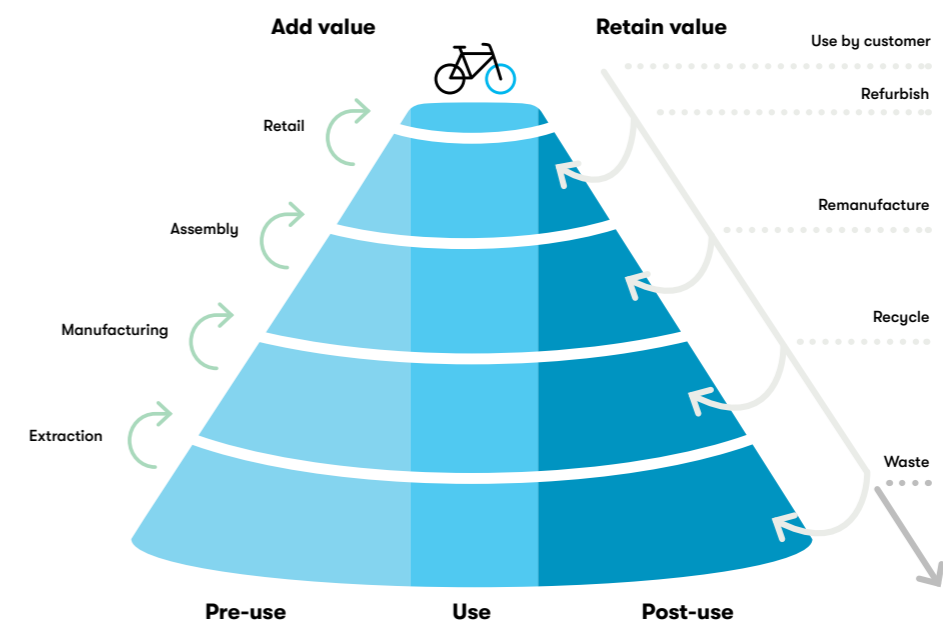
- 48% of bikes returning to Swapfiets stay within the re-use loop (based on the 1,25 years' average membership period);
- 35% of bikes require the replacement of one or more components but can be repaired;
- 3% of bikes are remanufactured;
- 10% of all bikes are being recycled.
- The remaining 4% is lost as waste.

These percentages represent the breakdown of recovery value on the retention side of the Value hill diagram⁸.

To achieve a 100% circular bike we still have a challenging way to go. The circularity score enables us to understand where we need to do better. The battery cover of the Power 7 e-Bike for example uses regrind plastic material. This is produced from old plastic. If it breaks down, we're now able to return it to our manufacturer to have it recycled. We're going to make more components of this material in the future. That will help us to reach our 100% circularity goal.

Percentages of mass-flows during lifecycle per average swap:

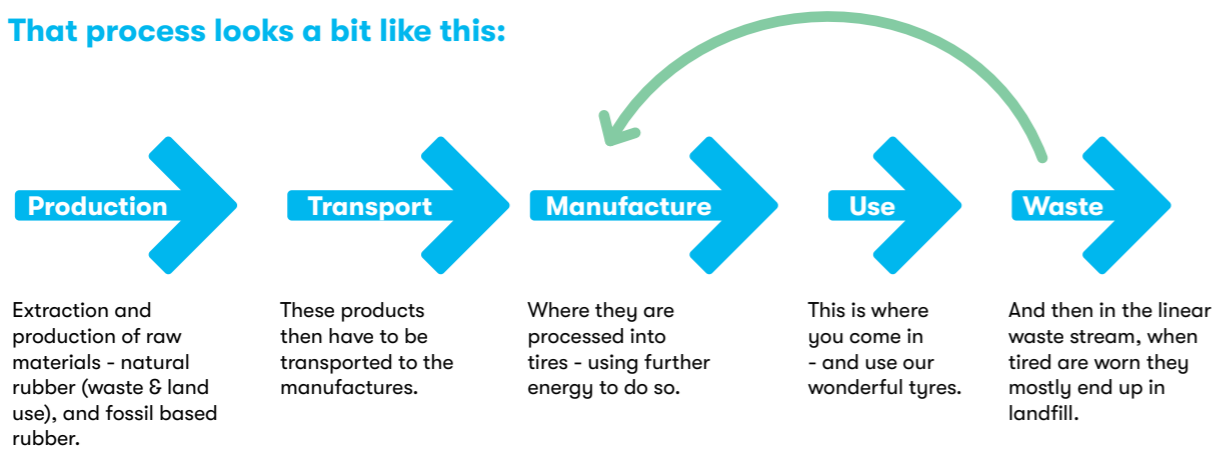
*Based on 1.25 years of renting a Swapfiets.



Tyres as a service.

In 2021 we accomplished a project we're quite proud of. We created a circular waste stream for our tyres.

That process looks a bit like this:



This is revolutionary for the bicycle industry.

We set up a 'zero rubber waste' system. All rubber that used to be wasted is now being sent back to the factory. In the summer of 2021, we partnered up with Italian tire company Vittoria to improve the performance and extend the lifespan of our popular e-Bikes. We are the first company to have a subscription to Vittoria2Go; tyres as a service. This partnership means lower upfront investment Swapfiets e-Bikes will be fitted with Vittoria's premium tires. Vittoria will be responsible for the ownership, maintenance, and recycling of the tires. This means longer-lasting tires, less waste, and lower and more predictable costs for Swapfiets.

Increasing their lifespan and puncture resistance, combined with continuing to look for ways to refurbish and reuse tires, is revolutionary for the bicycle industry and will significantly reduce the environmental impact.



**Our
impact.**



Together we make an impact.

We're very aware of the fact that as a company that manufactures, repairs, and transports bikes we have an environmental footprint. By measuring our climate impact more precisely every year, we aim to reduce as many avoidable emissions as possible. In this light, we currently measure and manage our gas and electricity consumption, our vehicle fleet, travel habits, and waste. We measure our climate impact using the Greenhouse Gas (GHG) corporate protocol⁹. This is an accounting and reporting standard that we use for guidance. The GHG protocol focuses on a company's impact by looking at 7 different GHGs, these are gases that are responsible for the greenhouse effect, therefore contributing to climate change - so these are things we want to reduce. To simplify and to make all of these different gases comparable, a unit called kg CO₂ equivalent is used. However, kg of CO₂eq can be quite an abstract amount to visualize. For example, 100 kg CO₂eq, is the same amount emitted by a car driving over 800 km¹⁰. That's approximately the distance between our Amsterdam and Munich stores.

We want to take up less space.

Our impact is not necessarily negative. We also see the positive social impact Swapfiets has next to the positive environmental gains that we accomplish by using a circular business model. Our members play a big role in this. They own less while using more. They shy away from motorized transport and celebrate the fact that regular cycling has a positive impact on their health as well.

Together we make an impact. We provide economic, environmental, and social value by reducing our emissions. We're going for active transport and taking up less space. That's the route to more liveable cities.





Climate impact of Swapfiets.

We have been calculating our climate impact since 2019. Measuring our impact gives an understanding of where our biggest sources of emissions come from so that we can target these with improvement projects. This year we chose to communicate our impact publicly. Next year, we aim to see our impact per member and impact per unit revenue decrease.

We calculated our company impact in-house. Therefore we used the methodology set out in the GHG Corporate Protocol. We focused on the following areas:

- Consumption of electricity and gas
- Waste
- Vehicle fleet
- Business travel

Where possible we calculated the impact by using the actual data. However, sometimes we were forced to use estimates.

The impact is measured in CO₂-equivalent. This is the standard unit used to measure global warming potential. It enables us to compare different areas of our business to better understand our impact.

The GHG protocol requires impact reporting on scopes 1 and 2, with optional reporting on scope 3. For our analysis, we included all 3 of the scopes.



Scope 1:

Covers direct emissions from owned or controlled sources.

Company facilities - gas usage
Vehicle Fleet

Scope 2:

Covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company.

Purchased electricity

Scope 3:

Includes all other indirect emissions that occur in a company's value chain.

Waste
Business travel

In the following pages we will explain these scopes in more detail.

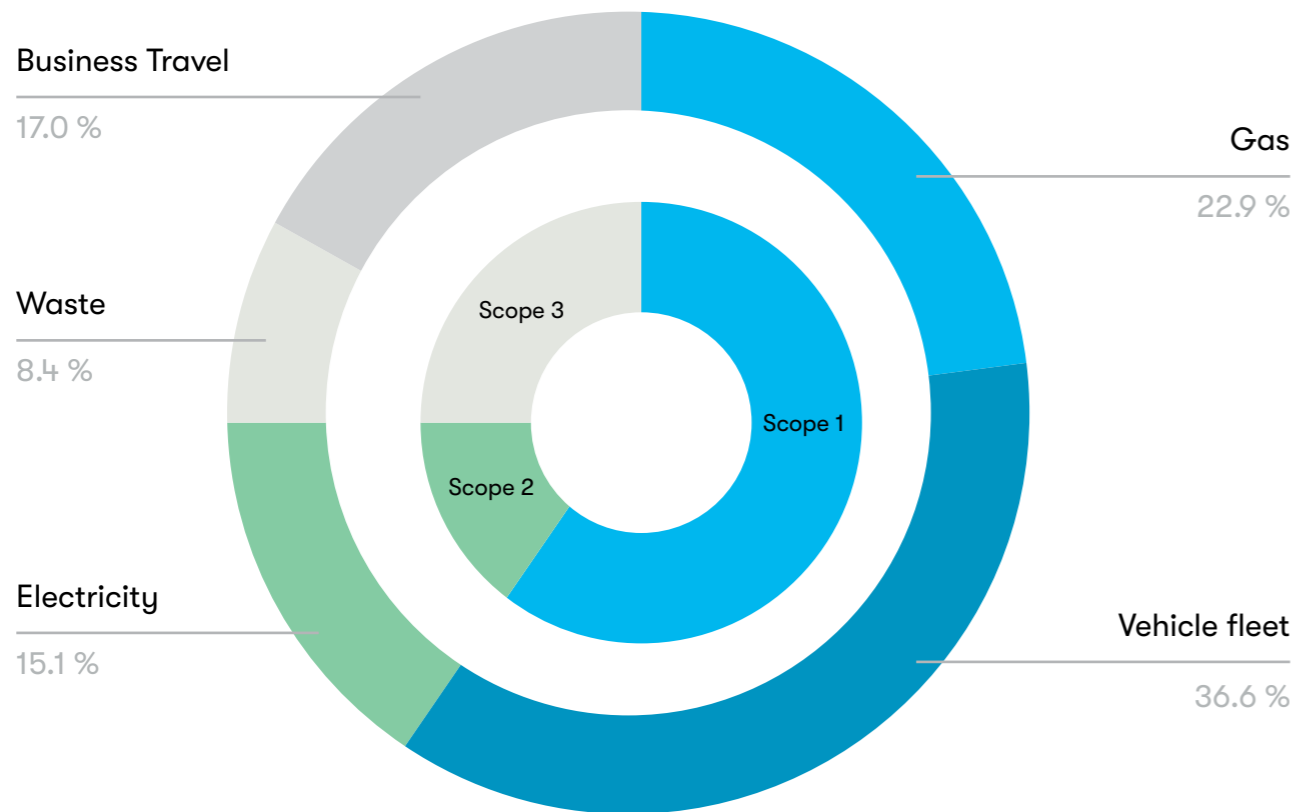
Climate impact of Swapfiets.

Impact 1,344,000 kg CO₂eq

which is equal to driving around the Earth 275 times¹¹.

5.69 kg CO₂eq per member

24,971 kg CO₂eq per €1 million revenue



While Swapfiets continues to grow, we aim to reduce our impact per member and per €1 million of revenue but also our absolute impact.



Climate impact of Swapfiets.

Scope 1: Things we have a direct influence on.

This scope covers our direct emissions from our controlled sources. So, for us this is about our cars and the gas that we use in our buildings.

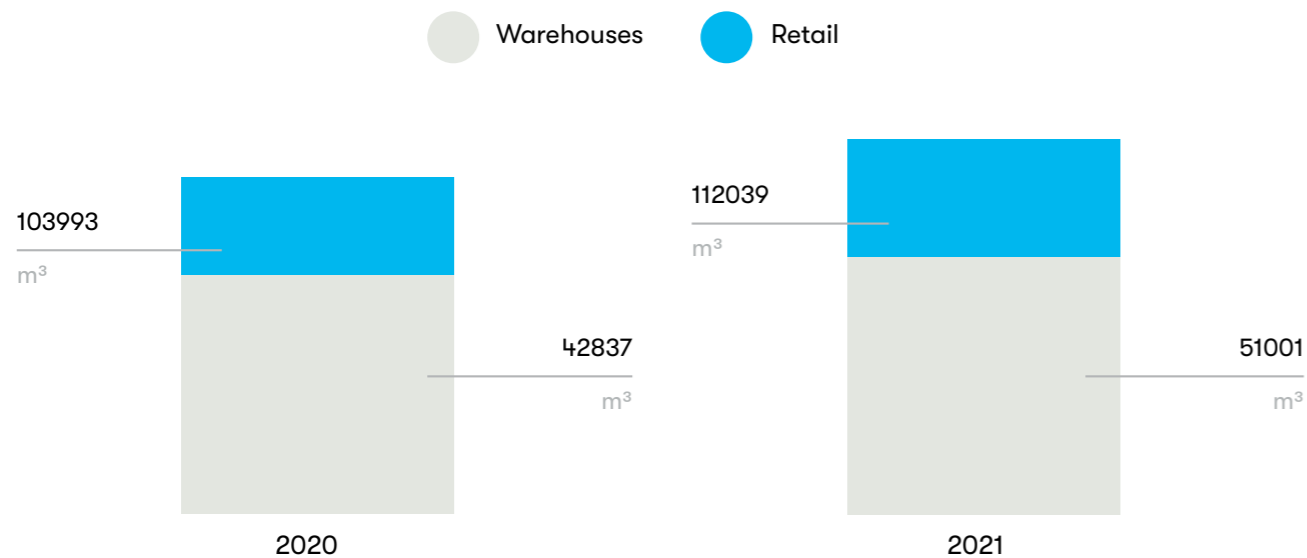
Gas.

As it can be seen our gas consumption slightly went up. This is a result of new locations we opened compared to 2020. However, in 2022, to be more efficient with our gas consumption we are going to create a gas consumption dashboard where our consumption patterns become more clear. Also, in 2022, we are going to create a strategy to reduce the impact of gas.

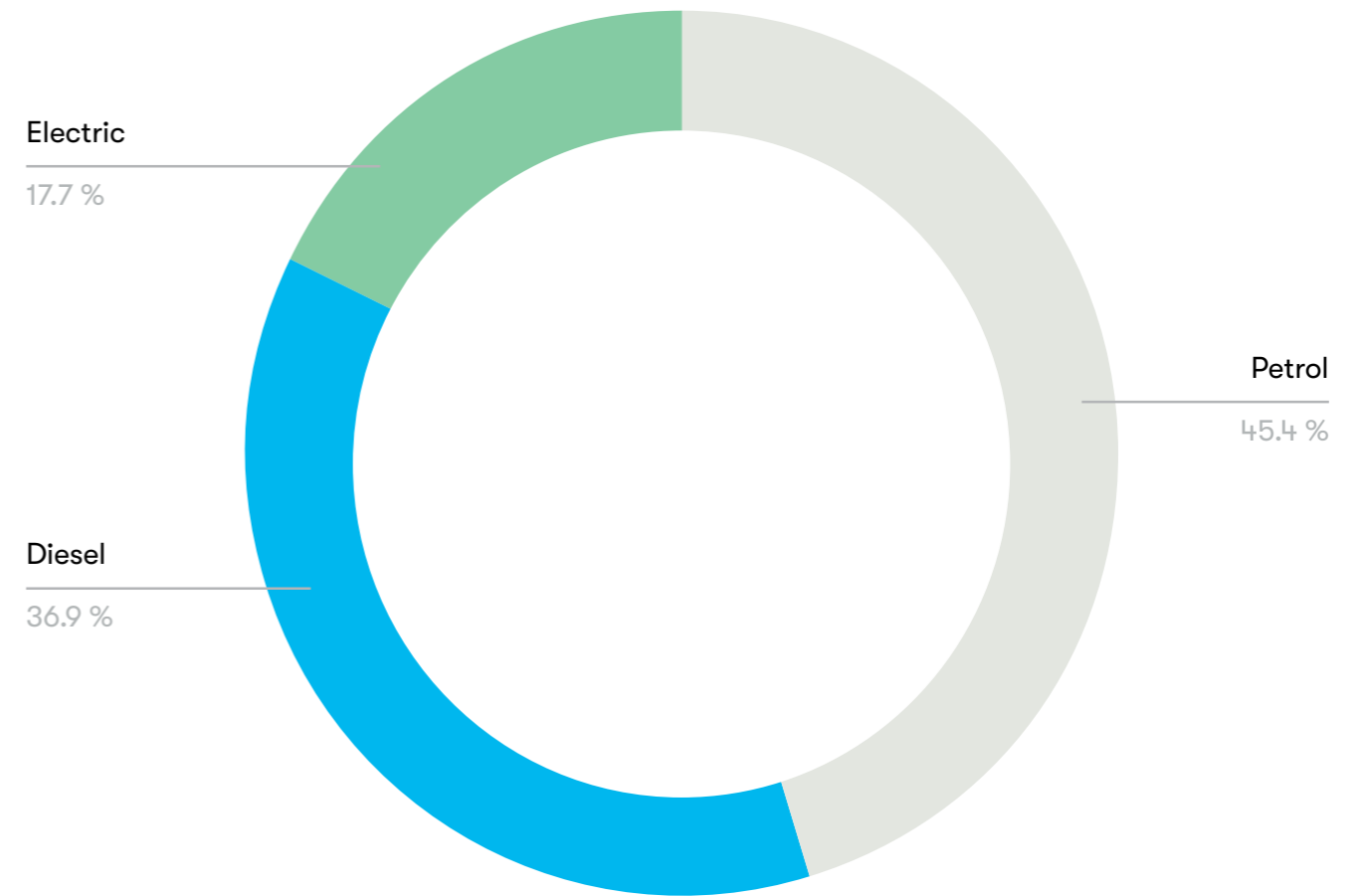
Vehicle fleet.

We are aware that our scope 1 emissions have a proportionally large impact. That is something that we have direct control over. So, we are working on targets to reduce the impact. For example, In 2022, we will be working towards a **100% zero-emission vehicle fleet**.

Our gas consumption



Our vehicle fleet in numbers



Composition of business vehicle fleet 2021



Climate impact of Swapfiets.

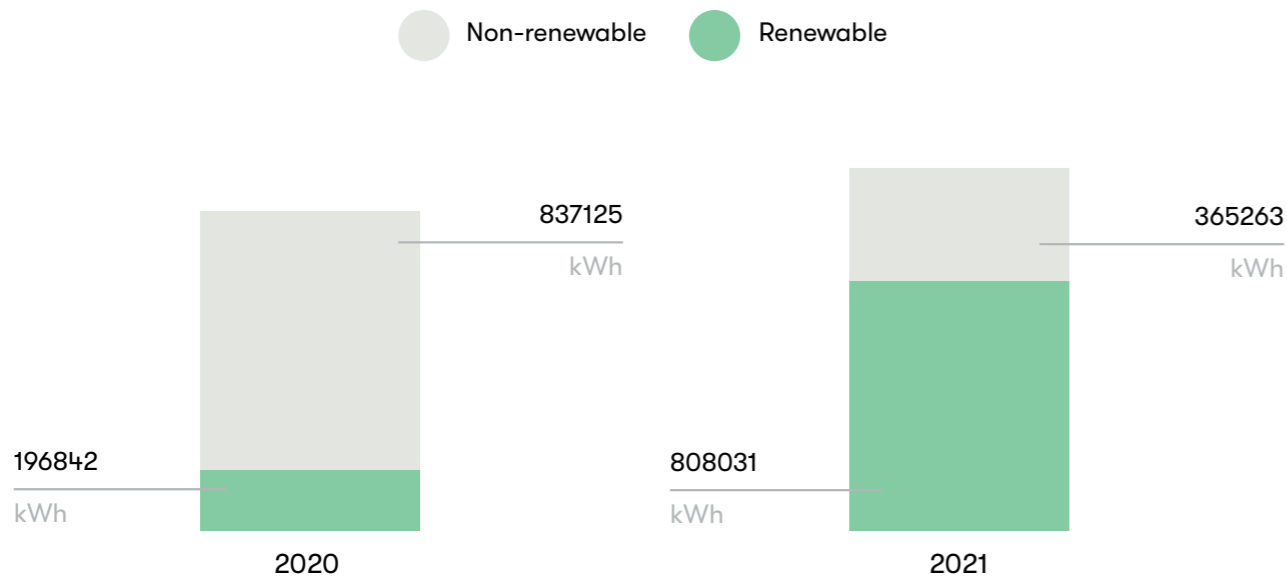
Scope 2: Our indirect emissions from electricity.

This scope covers our indirect emissions from the generation of purchased electricity that we use in our buildings.

Electricity.

In 2021, we managed to get **100% of our shops and offices running on renewable electricity**. By the end of 2021, about 60% of our warehouses were running on renewable electricity. However, we also want to have 100% of our warehouses running on renewable electricity. Therefore, we are closely working with the owners of our warehouse buildings persuading them of the importance of renewable electricity.

Our Electricity consumption

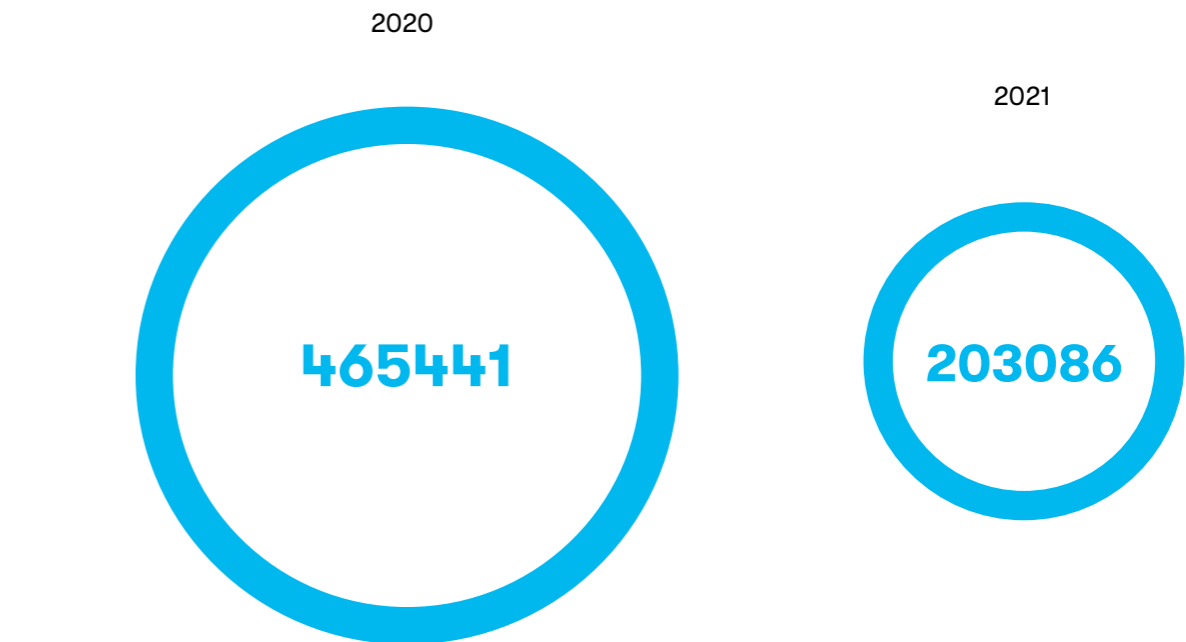


Total consumption of (non-)renewable electricity (kWh)

2020	2021	
33%	100%	% offices with green electricity
46%	100%	% shops with green electricity
33%	60%	% warehouses with green electricity

As it can be seen our electricity consumption went up from 2020 to 2021. This can be explained by the fact that in 2021 we simply had more locations. However, the impact has more than halved because of the transition to renewable electricity. Moreover, at Swapfiets we always want to improve. Therefore, in 2022, we are going to create an energy consumption dashboard where our consumption patterns become more clear.

Climate impact of electricity consumption



CO₂eq of (non-)renewable electricity consumption



Climate impact of Swapfiets.

Scope 3: Our indirect impact.

This scope covers our other indirect emissions that occur in a company's value chain. This includes waste and (non-)structural business travel. Structural business travel includes the daily commuting between work and home by car, bike, or public transport, while non-structural business travel includes infrequent business travel by plane and train and hotel stays.

Travel.

In autumn 2021, we implemented an all-in-one travel platform for business travel. This makes our travel emissions not only easier to track but the platform provides us with a carbon footprint overview and compensates for our travel. As it can be seen approximately 48% of the business travel emissions are from non-structural business travel, and approximately 60% of our non-structural business travel is compensated. We try to reduce travel for meeting by stimulating our employees to hold meetings virtually rather than commuting long distances. In addition to our travel impact, we have an impact of 30,790 kg CO₂eq for hotel stays.

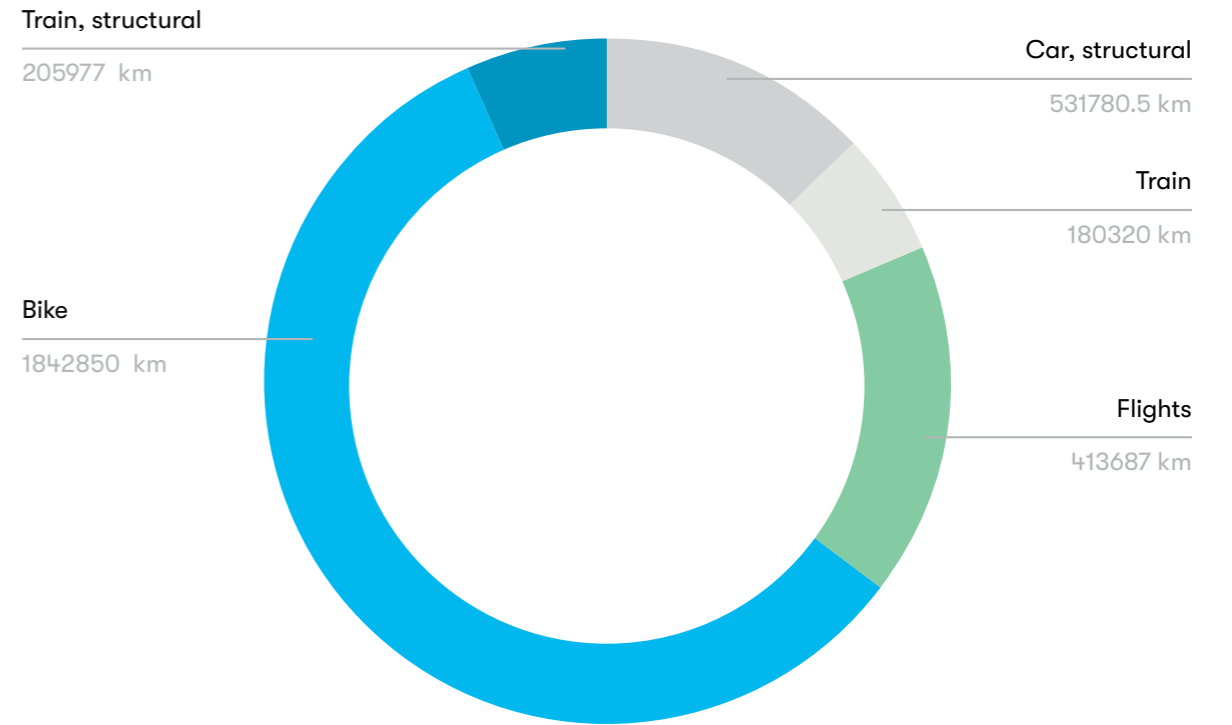
In 2022, we will set up and restructure our travel program and policy in line with our sustainability goals.

*Train, structural: only includes the Netherlands

Looking at the total kilometres traveled, we see that almost 60% is by bike. This again shows the power of Swapfiets.

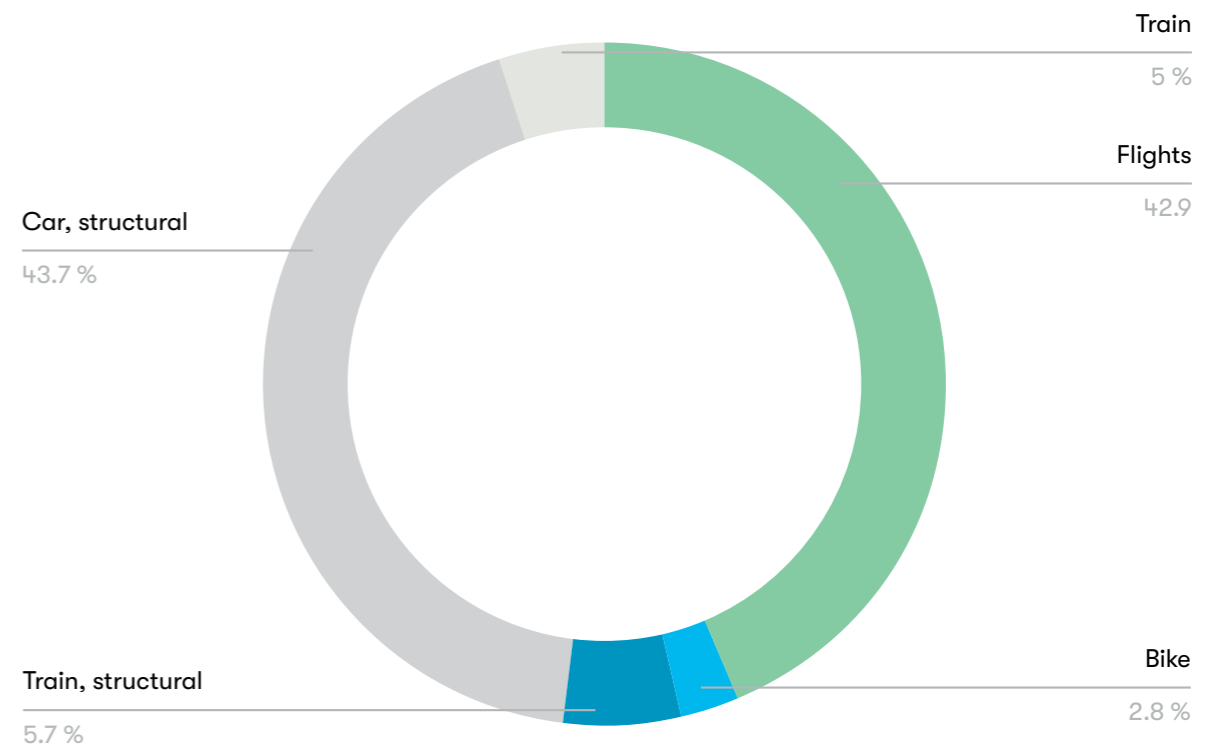


Distance travelled



Distance travelled in km's per mode of transport, for business and commuting

Impact of business travel



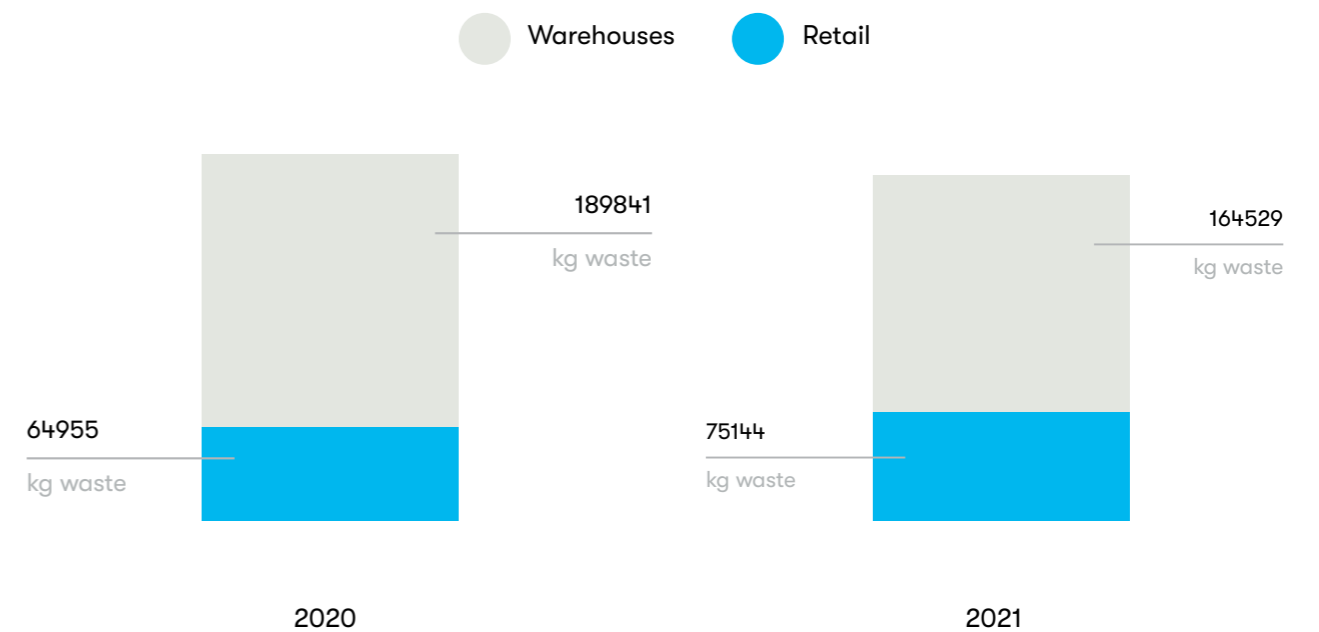
The CO₂eq impact of total kilometres travelled



We generate less waste compared to 2020.

As it can be seen in the graph below, we generated less waste in 2021 compared to 2020. This is because we had fewer warehouse locations. The warehouses generate the most waste. In 2022, we will join forces with a waste partner that will collect all our waste in the Netherlands and Belgium so that we can better monitor the amount of waste we generate as well as the waste processing. Also, we will implement metrics and measuring tools in our warehouses.

Waste generated



Total waste in kg per location group

In addition to the waste reduction initiatives associated with achieving our bike circularity goals, we undertook a number of other projects to reduce the impact of our waste.

In 2021 we purchased 100 laptops. We made sure that these were waste neutral through the 'closing the loop' scheme. This meant that the equivalent weight in e-waste was recycled. In our case 900 scrap phones were collected and recycled, which prevented them from ending up in landfills. These scrap phones were collected in emerging markets, in places that do not have the infrastructure and legislation to do so themselves, so this collaboration has a great positive impact to be seen!



Climate impact: A Swapfiets vs. a traditional bike.

Before we described in depth the results of our circularity assessment of our Deluxe 7, this focused on what happens to the materials in the system, and provided us with an understanding of the areas we need to address to achieve 100% circularity. However, that is only part of the story, we also want to reduce the climate impact of our bikes, and to do so we need to fully understand the climate impact of our product. Therefore, we also conducted a life cycle assessment (LCA) quick scan.

To fully understand the climate impact of our product, we conducted a life cycle assessment (LCA) quick scan. An LCA describes and analyses, in a quantitative way, all important environmental aspects of a product system or technology. The quick scan focused on the most important factors that determine the environmental impact of our product. By undertaking this we were able to use it as a hotspot analysis, to see the areas that have the highest impact, and target these with improvement projects.

The Swapfiets Deluxe 7 was chosen as this is the bike where the greatest impact can be achieved. The model is available in all the Swapfiets markets and in 2020 it surpassed the Original in numbers.

Our Deluxe 7 has a 35% lower global warming potential.

Over its lifecycle, the Deluxe 7 has an impact on global warming of 6.54 kg CO₂ equivalent per (averaged) year of use*. As we did before with the circularity analysis we used a linear business model as a comparison point. We found that this traditional model has an impact on global warming of 10.1 kg CO₂ equivalent per (averaged) year of use. This means that our bike has a 35% lower global warming potential.

The lower global warming potential is mainly due to the difference in the technical lifetime of the bicycles' components. The Swapfiets Deluxe 7 has been progressively optimised to last longer and have less maintenance. This reduces the impact on global warming despite making components heavier (using more material) or from different materials. This is all underpinned by the continued ownership of the bicycles by Swapfiets and its business model, allowing the bicycles or their components to be re-used or refurbished for another use cycle.

We focused our impact assessment on our Deluxe 7 bike. Since we do share parts across our different models, we can make assumptions about their impact too. The Original Swapfiets has a lower impact than the Deluxe since it has fewer parts, whereas our e-Bikes have a higher impact due to the battery and motor. Whilst we do not know the exact impact of these bikes the quick scan LCA allows us to understand the broader impact better. This helps us to determine which areas to focus on to reach the most effect.

*Further details about the calculations & assumptions can be found in appendix II



Circular business model
6.54 kg CO₂ eq./FU

VS



Linear business model
10.1 kg CO₂ eq./FU



Breakdown of the Deluxe 7 Climate Impact.



Percentage distribution of global warming impact over processes and top 10 components with the highest impact of the Swapfiets Deluxe 7.

The score of our Deluxe 7 parts.

Of the overall impact on global warming of the Deluxe 7, 87% comes from material and component production. In particular, the heavier components from (largely) aluminum such as the frame (13%), rear-wheel (13%), front-wheel (8%), and pedals (6%) have a large contribution to the overall impact.

The waste treatment and incineration of components and materials that are not recycled accounts for 6% of the overall impact. The remaining 4% and 3% are due to the transportation of the bicycle during service swaps (by the Swapfiets car) and the transportation of components from the production locations respectively. About a third of the impact of the materials is compensated by recycling of components, thus avoiding the need for new raw materials, in particular aluminum and iron. This has been accounted for in the results according to each component's material composition and weight.

Understanding impact enables us to direct our focus.

Understanding the impact of our different components has enabled us to direct our focus. For example, it is clear that our frame contributes a large proportion of the impact. Therefore a current work in progress is our closed-loop aluminum project. We are working to go from a bicycle frame to a bicycle frame. This potentially reduces an impressive 13% of the climate impact of the Deluxe while reducing purchasing costs.

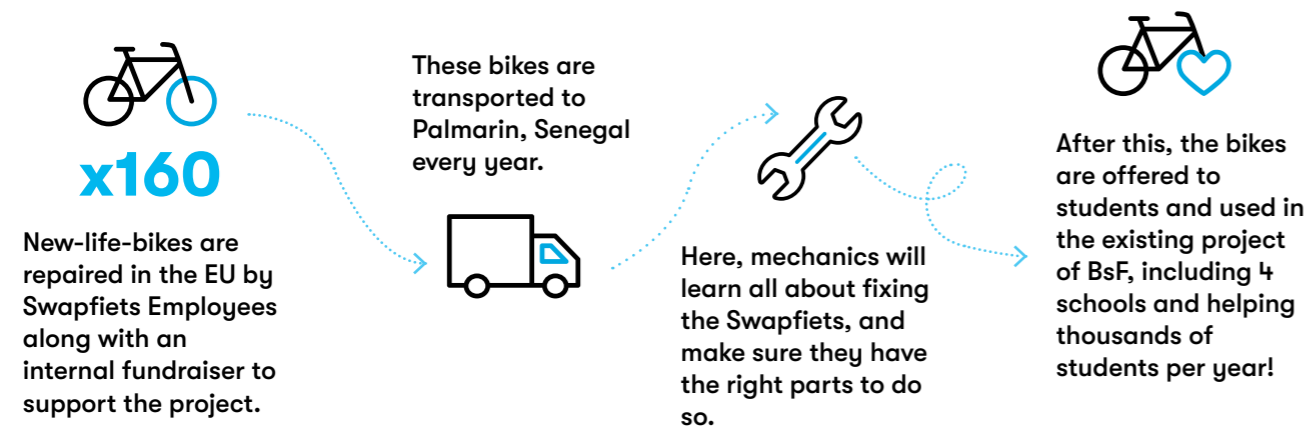


Social impact: looking outside our own bubble.

As a company, we strive to have a positive social impact. And thankfully, we're blessed with a lot of co-workers who want to do the same.

160 bikes sent to Senegal.

For many of us in Europe, cycling comes naturally. Not everyone has the privilege of a sturdy bike as a means of transport though. We want to help change that. Therefore, in 2020 we set up a link-up with the Spanish charity Bicicletas Sin Fronteras (Bicycles without Borders). Their 'Bicycles for Education' program has been helping kids cycle to school in the West African country since 2015. Thanks to this we're able to send 160 bikes to Senegal in 2021. These bikes reduce the time that it takes the children to get to class. They arrive on time and are less tired. That helps to reduce absenteeism, thus helping to improve their school performance. This is what the project looks like:



125 hours spent volunteering.

In 2021 we introduced a scheme that means all Swapfiets employees are entitled to paid voluntary hours to give back to their community. In 2021 a total of 125 of these hours were used. In 2022 we will incentivise our team to beat this number and give back even more.



Our members make the difference.

Use instead of own.

As we found through our analysis our bikes have 35% less global warming impact compared to owning a bike. This means that by using our bikes (rather than owning one), our members are reducing their impact. In fact, in 2021 our members saved approximately a whopping 800,000 kg of CO₂eq. For comparison: that's the same amount of emissions as driving a petrol car around the Earth 170 times¹¹.

Transport mode shift.

From a customer survey, we found that on average our members travel 6.04 km on their Swapfiets a day. We've asked our members and 6,6% mentioned making less use of their car and 21% of our members are making less use of public transport. This means fewer vehicles on the road, fewer emissions, and healthier people.

A Swapfiets has 35% less global warming impact compared to owning a bike.

In fact, if you ride 53 km you would otherwise have driven by car each year, you've saved the carbon equivalent of what it takes to get and keep your Swapfiets on the road for a year¹¹. That's a pretty decent amount. The more we can encourage commuters to hop on two wheels, the happier our planet will be. So each time our members choose to use their bike instead of a car or the bus, they are helping the planet.

Fun fact: this transport mode shift also saves our members money. The transport mode shift from car to a (pedal) bike. Generally, a car costs around 40 cents per kilometer to drive. Cyclists, however, on the same route can actually make a net gain of 30 cents. That's one free coffee every week! This calculation (by the Swedish Linnaeus University) takes into account the costs incurred for the necessary infrastructure, operating costs, accidents, resource use, and climate change¹².



Hop on a bike to keep the heart & mind happy.

Personal Health.

Cycling helps to keep you fit. There are vast health benefits, which in turn help to reduce your risk of a variety of health conditions. So, by taking their bike over a car or public transport our members are reducing their chance of developing type 2 diabetes, colon cancer, breast cancer, cardiovascular diseases, Alzheimer's disease, and osteoporosis¹³. And there's more.

Reduce the chance of a heart attack by 50%¹⁴.

The "Copenhagen City Heart" study examined the influence of different sports on life expectancy over a period of 25 years. The result: regular cycling can have a positive effect on lifespan and can extend it by an average of 3.7 years.

Support brain growth¹⁵.

Several studies show that bicycling promotes the growth of the hippocampus. This is the part of the brain that acts as an interface between long-term and short-term memory. New nerve cells are also formed here. Researchers also found that cycling can increase spatial awareness and improve our ability to concentrate.

Help to achieve more sustainable weight loss through consistent cycling¹⁷.

A team from the University of Copenhagen studied the effect of cycling on weight loss. The control group, who cycled 14 kilometers a day at a leisurely pace, lost an average of 4.5 kilograms of fat mass within six months. Participants in an intensive daily fitness program lost only slightly less, at 4.2 kilograms.

Extend lifespan by 3.7 years¹⁴.

The "Copenhagen City Heart" study examined the influence of different sports on life expectancy over a period of 25 years. The result: regular cycling can have a positive effect on lifespan and can extend it by an average of 3.7 years.

Help to improve mental health¹⁷.

Numerous studies have found a correlation between physical activity and mental health. In fact, a meta-analysis found that it helps to decrease the chance of developing depression by 17%.

And we didn't even mention the fun, happiness, and sense of freedom riding your bike gives yet.



Impact on liveable cities.

The three pillars of sustainability are social, economic, and environmental. To achieve our mission of more livable cities we need progress in all three of these areas. The use of our bikes has a positive impact on the environment and society, which both in turn feedback and has economic benefits too.

Economic, environmental, and social value.

Better use of public space.

In the same space required to park one car, you can fit 10 bikes. So, if all of our members chose a car over using their bike, then **we would need an area over 5 times as big as the Amsterdam city center to accommodate this.** Think of how much space our members are saving each time they chose their bike instead of a car¹⁸.

Infrastructure savings.

The costs of constructing and maintaining roads in Europe are huge. Each year 2.9 billion is saved through cycling¹³.

Reduction of city congestion.

Bikes require far less space than cars. Therefore the congestion easing through the use of bikes is equivalent to a saving of 6.8bn each year in the EU. A team in Greece undertook a study to understand the monetary impacts that transport has in Europe. They found that the social marginal congestion costs are €0.46/km per passenger 20. These social marginal congestion costs refer to the impacts that the congestion creates. Think of delays, accidents, pollution, etc. Now let's do the math. If we use this figure, the fact that in 2021 we had 250,000 members, who on average are cycling 6.04km a day, and that 6% of them make less use of their car, then, in theory, **our members save over €40k annually through marginal congestion costs.**

If our members own a car instead of a bike, we would need an area over 5 times as big as the Amsterdam city center.



Impact on liveable cities.

Reduced air pollution.

The EEA found that in 2020, around 90% of inhabitants of cities in the EU are exposed to air pollutants of a level that is harmful to health. In fact, air pollution is responsible for 400,000 premature deaths a year in Europe alone¹³. The EEA also found that in 2019, road transport was the principal source of nitrogen oxide emissions (39%)²⁰, and this has serious negative impacts on human health and the environment.

In contrast to motorised transport, cycling has a far less impact on air pollution. The value of reduced air pollution in the EU because of cycling is equivalent to €435 million.

Reduced noise pollution.

Noise pollution is another area that has drastic impacts on cities and people's health. In Europe, each year around 8,900 premature deaths and 800.000 additional cases of hypertension have been attributed to noise pollution. Actually, the reduction of noise pollution through cycling is equivalent to 300 million euros¹³.

Accessibility & reliability.

Having a bike available for personal use increased accessibility to employment, but also to social and cultural activities. In line with this, a guarantee of a working bike ensures reliability. Therefore, increasing an individual's independence¹³.

Around 90% of inhabitants of cities in the EU are exposed to air pollutants of a level that is harmful to health.

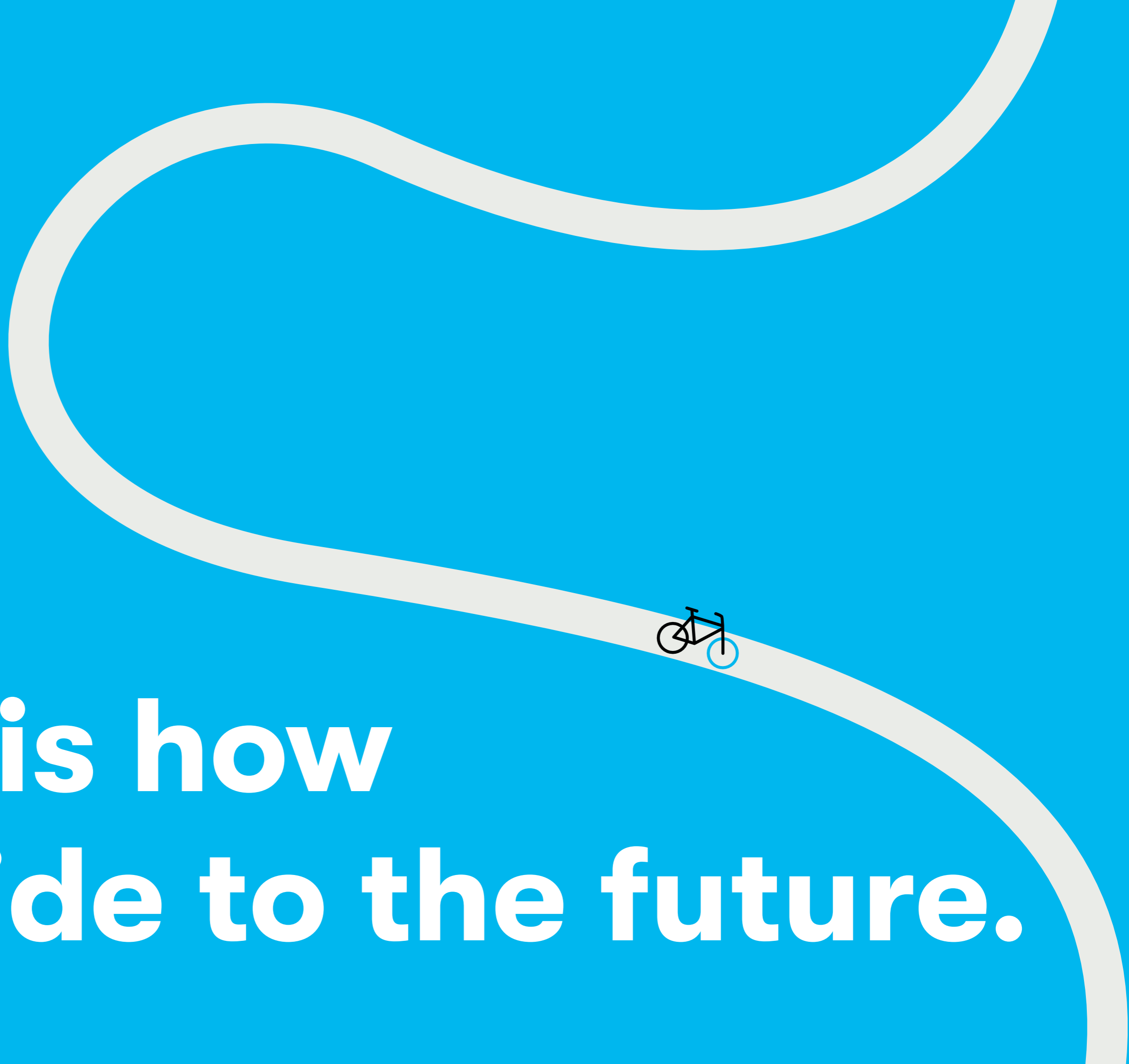
Connected neighborhoods.

Cycling provides the opportunity to connect neighborhoods and different groups of people together, thus aiding with the joining of communities¹³.

Inclusivity.

Whilst the demographics who use bikes vary across countries, in car-oriented cities it is noted that the majority group is comprised of young to middle-aged men. Whereas in the cities that are optimised for bikes, the demographic shifts, and the groups that use their bikes, vary more in age, gender and race. Many factors can contribute to this disparity and infrastructure is a large driver²¹. But we are proud to say at Swapfiets 46% of all our members identify as female.





**This is how
we ride to the future.**

Lessons learned.

2021 was a big year for us. While we keep focusing on that dot on the horizon we would also like to reflect on how far we have come so far. These are some things we are pretty proud of.

- All our retail stores and offices now run on 100% renewable electricity. 60% of our warehouses are now on green energy too. In 2022 we hope to see this reach 100%.
- We launched our first product as a service system with a supplier. Say hi to the Vittoria tire!
- We started our pilot project on remanufacturing batteries and e-Bike engines.
- In 2021 we completed the B corp assessment and submitted it for verification. We are on our way to getting certified.
- In 2021 we completed our first (internal) sustainability report, which created (even) more internal engagement on the topic.
- We also formed partnerships with other circular businesses like NOWOS (Batteries), Timmarije (plastic parts), Schwalbe (rubber waste), Granuband (rubber waste), and Hydro (for our aluminum waste).

It's not all rainbows & butterflies.

The road to a circular company isn't paved with rainbows and butterflies though. In full disclosure, we'd like to share some of the challenges we've faced along the way.

- When looking to switch all our locations to use green electricity, we found that it is not as simple as we first thought. If you lease the facility, you need to convince the landlord to put in the work for you (in the case where energy is included in the lease). This is time-consuming. Additionally, changing sources is only the first and easy step, but reducing consumption and being more energy-efficient requires a way more detailed plan & investment.
- Reaching our goals of 100% circular bikes is not just a focus of our product development team. It requires effort from the entire organisation.
- Setting up circular initiatives with suppliers is extremely difficult when you and your supplier's visions and willingness to change are not in sync. On the other hand, you can realize amazing results surprisingly fast when they do.



Let's peek into the future.

You get the picture: we are pretty proud of how far we have come on our sustainability journey. This is not the time to lean back though. We want and need to grow further and move forward. We're busy plotting our next steps and would love you to join us.

- We keep improving our products towards circularity.
- We are working towards a zero-emission vehicle fleet, to reduce our scope 1 impact.
- We will form partnerships to embrace more product-as-a-service parts for our bikes as we did with Vittoria.
- In 2022 we hope to achieve B Corp status and continue to use the B Impact Assessment as a tool for improvement.
- In 2022 we will conduct a stakeholder and materiality analysis to better understand the needs, values, and priorities of our different stakeholders.
- Non-structural business travel: we plan on booking all non-structural business travel through Travelperk, enabling us to understand our impact more and also compensate for the emissions in these areas.
- We will work to have 100% renewable electricity in our warehouses and create a strategy to reduce the gas impact.

In 2022, we hope to achieve B corp status.

- We plan on implementing an energy dashboard with our total gas and electricity consumption in the Netherlands and Germany.
- We want to go beyond just switching to green energy by implementing policies and measures to help reduce our total usage and improve our energy efficiency.
- Waste: We are joining forces with a central waste partner that will collect all our waste in the Netherlands and Belgium. This way we can better monitor the amount of waste we generate, the waste processing, and improve the value recovery from waste.
- We are setting up programs for battery repair e-Bike engine remanufacturing to close the loop of this waste flow.
- Also in 2022, we will introduce Circularity Training for our leadership team.

There is no time to waste.





Get in touch.

Thank you for the time you took to read our sustainability report. Leading the movement to more liveable cities is the reason we get up every morning. At this place, we want to make you a promise. We will keep on measuring how and where to improve the positive impact we have. Even more important though is that we examine our footprint and don't shy away from the hard questions. It's the only way we can continue to do better. Both socially and environmentally. And who knows: maybe this might inspire someone else to do the same.

This is our very first sustainability report. We appreciate and value all feedback. That's why we would like to invite you to share your thoughts.

Please do reach out to sustainability@swapfiets.com to exchange ideas, comments, or share some love.

We can't wait to hear from you.

Appendix I: Our Definitions.



Appendix I: Our Definitions.

B Corp - stands for Benefit Corporation; a certification that shows the business meets specific social and environmental standards, and that uses its business as a force for good.

Circular Economy (CE) - The circular economy is based upon the idea that materials and products circulate in our system, whilst waste and pollution are eliminated, whilst regenerating nature.

Closed loop recycling - closed-loop recycling involves recycling materials into similar products that they originally were.

(Resource) Circularity - a fully closed-loop system for a product and/or service requires;

- No finite resources
- No pollution, anywhere in the cycle
- No waste, anywhere in the cycle.

Climate Neutral - this means reducing emissions as much as possible and compensating the rest through investing in projects such as tree planting.

GHGs - GHG = Greenhouse gases, these are gases that are responsible for the greenhouse effect. They include carbon dioxide, methane, nitrous oxide, and water vapor, as well as synthetic fluorinated gases.

kg CO₂eq - this is the standard unit to measure greenhouse gas emissions, it means kilograms of Carbon Dioxide Equivalents.

Life Cycle Analysis - a Life Cycle Assessment (LCA) describes and analyses, in a quantitative way, all important environmental aspects of a product system or technology.

Maintenance - this is the act of inspecting or servicing the product at regular intervals to maintain a product's condition and function.

Net Zero - is the state of no emissions in the system as a whole, where the GHG emissions are equivalent to the GHGs that are being removed from the atmosphere. This is achieved through reducing emissions as close to zero as possible - much like climate neutrality, but the difference lies in that the remaining emissions are not just offset but technologies to remove capture carbon and remove it from the atmosphere are implemented.

Open Loop Recycling - in open-loop recycling, products are recycled into materials that are of similar quality to the original so that they can be used again in other manufacturing processes.

PaaS - product as a Service - this is a type of circular business model where the company retains ownership of the product, and the customer leases the product from them.

Refurbishment - refurbishment is when a used/damaged product is returned to working condition through repairing or rebuilding.

Remanufacturing - remanufacturing describes the processes in a factory environment, where the original manufacturer (or a third party), returns obsolete products back to original specifications.

Scope 1 Emissions - this covers direct emissions from owned or controlled sources e.g. gas for heating and fuel in company cars.

Scope 2 Emissions - this covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company.

Scope 3 Emissions - this includes all other indirect emissions that occur in a company's value chain.

SDGs (Sustainable Development Goals) - the SDGs are a set of 17 global goals to end all forms of poverty, reduce inequalities, and tackle climate change. They were adopted by the UN in 2017, and are set to be achieved in 2030.



Appendix II: Data in-depth.



Appendix II: Data in-depth.

Scope 1, 2 & 3 Calculations.

We have been calculating our environmental footprint since 2019. We decided to not include the data from 2019 in this report and only include the data from 2020 in this report when this was calculated in a similar way as in 2021. Even though we did not publically share our environmental footprint for 2019 and 2020, it made us understand where our biggest sources of emissions come from. Also, it allowed us to target these with improvement projects.

The data in this report is all calculated in-house and is in line with the GHG corporate reporting directive. We focus on the following areas: consumption of electricity & gas, waste, our vehicle fleet, and business travel. The scope 3 emissions focused on waste and business travel. However, in the impact of the Deluxe 7 bike, a more detailed impact of the manufacture was accounted for.

The numbers in this sustainability report, for these specific areas, are acquired in various ways. Where possible we calculated the impact by using the actual data, however, sometimes we were forced to use estimates. We also received help from our collaborative partners. For example, Travelperk calculated the impact of our non-structural business travel and also compensated us for this.

In 2022, we expect to be more precise in our calculations in the following areas:

- Non-structural business travel: We plan on booking all non-structural business travel through Travelperk.
- Energy consumption: We plan on implementing an energy dashboard with our total gas and electricity consumption in the Netherlands and Germany.
- Waste: We are joining forces with a central waste partner (Milieu Service Nederland), that will collect all our waste in the Netherlands and Belgium so that we can better monitor the amount of waste we generate and the waste processing.

LCA information

The LCA quick scan was calculated in 2020 by the third-party Partners for Innovation. The data on the materials, products, and processes in the studied scenarios were provided by Swapfiets. The Ecoinvent database was used to source complementary data. The LCA calculations were performed using the specialized software SimaPro, using the ReCiPe 2016 method. This LCA-quick scan follows the procedures of ISO 14040 and 14044 but is

not fully ISO compatible. An LCA-quick scan involves limiting the scope of the standard LCA addressed. For example, life cycle stages can be omitted if determined insignificant, generic data can be used more readily instead of system-specific data, and the study can be tailored to focus on impacts that are deemed more relevant to the audience or the product system that is being assessed. This quick scan enables us to achieve insights into 80-90% of the environmental impacts of the product's life cycle.

The units (averaged) year of use are the functional unit of our study, and represent the use of a (one-person) bicycle for a year (approximately 2500 km/year), calculated with 99% availability during the year.

Impact of the parts - as the components of the bicycles have different technical lifetimes and intervals between failure or repair, repairs are modeled as substitutions of components over the lifecycle of the bicycles. Then this data is used to calculate the yearly impact that each part has during the average lifetime of use.

Our members saving of 800,000 kg of CO₂eq, was calculated based on this data too. We used the difference between the impact of our Deluxe 7 and the linear model and multiplied it by the number of members we had. We made assumptions based on the fact that our members that own an Original would save the same amount of CO₂ or more because this bike is less complex and more circular. For the Power e-Bikes, we assumed the same impact savings as for the Deluxe 7, which is a conservative estimation as comparable e-bike LCA's show a 4-5 times higher climate impact compared to pedal bikes. This will also lead to a larger absolute difference in the climate impact of a circular e-Bike vs. a linear e-Bike.

Circularity Score Information.

The circularity score was calculated by a third party using the Circularity Calculator to process the data. The software tool was created by IDEAL&CO Explore together with manufacturers within the context of the European Commission-founded ResCoM project (i.e., Resource Conservative Manufacturing). It was validated with in-market cases and is endorsed by the Ellen MacArthur Foundation. For this circularity-quick scan, only the overall resource circularity score is thoroughly studied in this report. The overall resource circularity score concentrates on the materials entering, cycling, and leaving the studied system. And it focused on the Swapfiets data looking at the average member use period. Therefore the score represents the impact of the bike over its lifetime per member, rather than the circularity of the bike across its whole lifecycle.



Appendix III: References.



Appendix III: References.

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Swapfiets



Thank you for joining our ride towards sustainability.

