



Annual Emissions Report 2023

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Pedalling forward

With 2023 confirmed as the hottest year on record, the need for climate action has never been greater. At Frog Bikes, we believe getting more kids on lightweight bikes is a powerful part of the solution. Inspiring a love of cycling from a young age helps bikes become a natural choice for everyday transportation, potentially saving a lifetime of car emissions!

We recognise our responsibility to cut emissions from our bikes and operations while promoting cycling's positive impact. This year, we made significant strides towards our commitment to halve emissions by 2030 (vs our 2019 baseline). We're excited to announce a major milestone: the arrival of our first batch of bicycle frames and forks manufactured with 25% post-consumer recycled aluminium! This material is estimated to reduce our total emissions by up to 15% compared to virgin aluminium (assuming all aluminium parts are switched). We are already exploring 50% post-consumer recycled aluminium. While our emissions data may not yet reflect this progress, this year's report highlights the work we're doing to create big long-term improvements.

This report details our ongoing efforts to minimise our environmental impact, from maintaining existing emissions reduction strategies to embracing more sustainable materials like post-consumer recycled aluminium. This year has been a challenging one for the cycling industry and we've had to reduce the number of bikes we produce in response. While some emissions, like those from materials used, decrease as production decreases (similar to variable costs), others, like employee commuting, remain stable (like fixed costs). This means despite reducing total emissions, our emissions per bike have increased ever so slightly.

We're committed to transparency and accountability, and we invite you to join us on this journey.

Thank you for joining us in making cycling a sustainable choice for generations to come!



Our company values

People



We collaborate to find solutions, communicating respectfully with honesty, humility and integrity looking forward with positivity to the future.

Product



Innovation inspired by our customers, using our specialist knowledge, skilled manufacturing, and attention to detail to create market leading bikes.

Planet



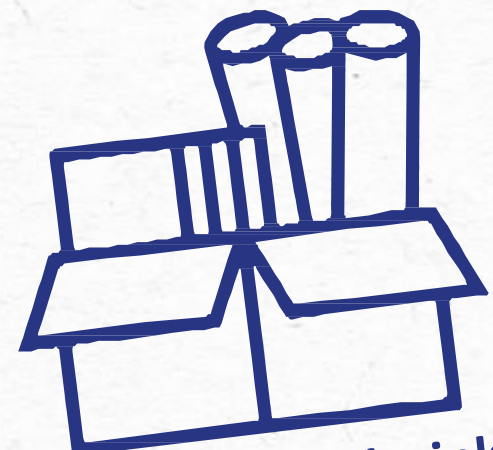
We protect our natural resources by integrating sustainability into all aspects of our lives, sharing best practice both at home and at work.

Profit



We build positive, long-term relationships with our colleagues, customers, and suppliers, sourcing responsibly and spending thoughtfully.

Our 2023 highlights



Introduced the cardboard crinkle machine which enables us to re-use up to 70% of the cardboard we receive from suppliers



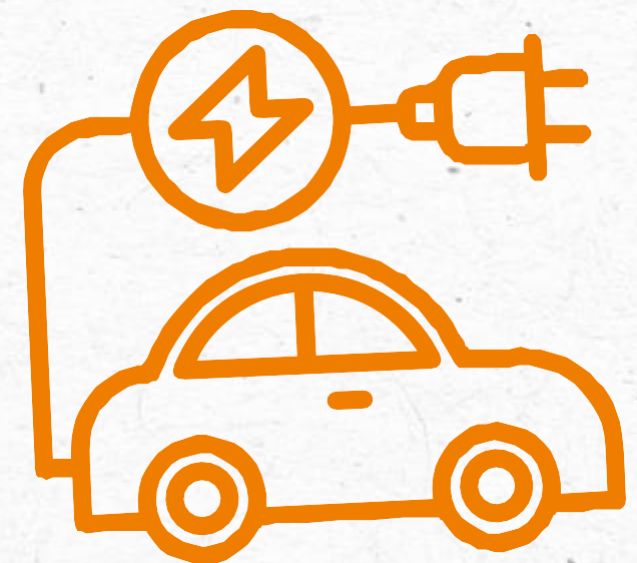
reduction in emissions per bike since 2019



85% of our staff feel they can make a positive impact on our sustainability in their roles



<1% of our components were air freighted and <3% of our bikes travelled to customers by air



15% of staff are now commuting in EV cars



25% recycled aluminium frames & forks are here



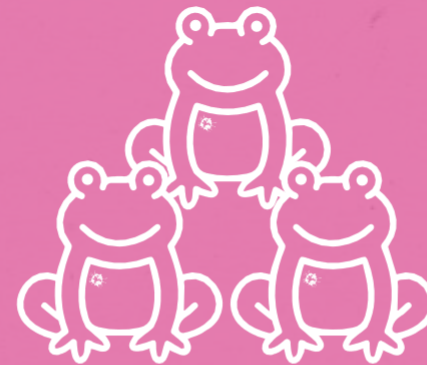
Shared our sustainability journey with over 650 entrepreneurs and SMEs in 2023

Experts in kids bike since 2013



Experts in kids' bikes

Our passion for cycling and commitment to quality ensures that every bike is designed with a child's needs in mind, making biking a fun and safe experience for all ages.



Strong Frog family

With over a decade in the cycling industry, our dedicated and skilled team is committed to creating and building innovative, high-quality bikes at our cutting-edge facilities.



Adventure for all ages

With 23 different models to choose from, we offer a bike for every stage of a child's growth and development. Whether it's their first balance bike or a mountain bike for more adventurous trails, we have something to suit every young cyclist.



Designed and built in Great Britain

Proudly designed and built in Great Britain*, our bikes represent the pinnacle of British engineering and craftsmanship. Each bike undergoes rigorous testing and quality control to ensure it meets our exacting standards and surpasses safety standards.



Half a million smiles (& counting)

Since our inception, we have put smiles on the faces of over 500,000 children around the world. Our commitment to quality and fun ensures that every Frog bike brings joy to its rider.



Sustainable vision

We are committed to sustainability and responsible manufacturing, read on to find out more...



Global reach

Frog Bikes are available in over 30 countries, making us a truly global brand. Our international presence allows children from all corners of the globe to experience the joy and freedom that comes with riding a Frog bike.



Innovation & safety

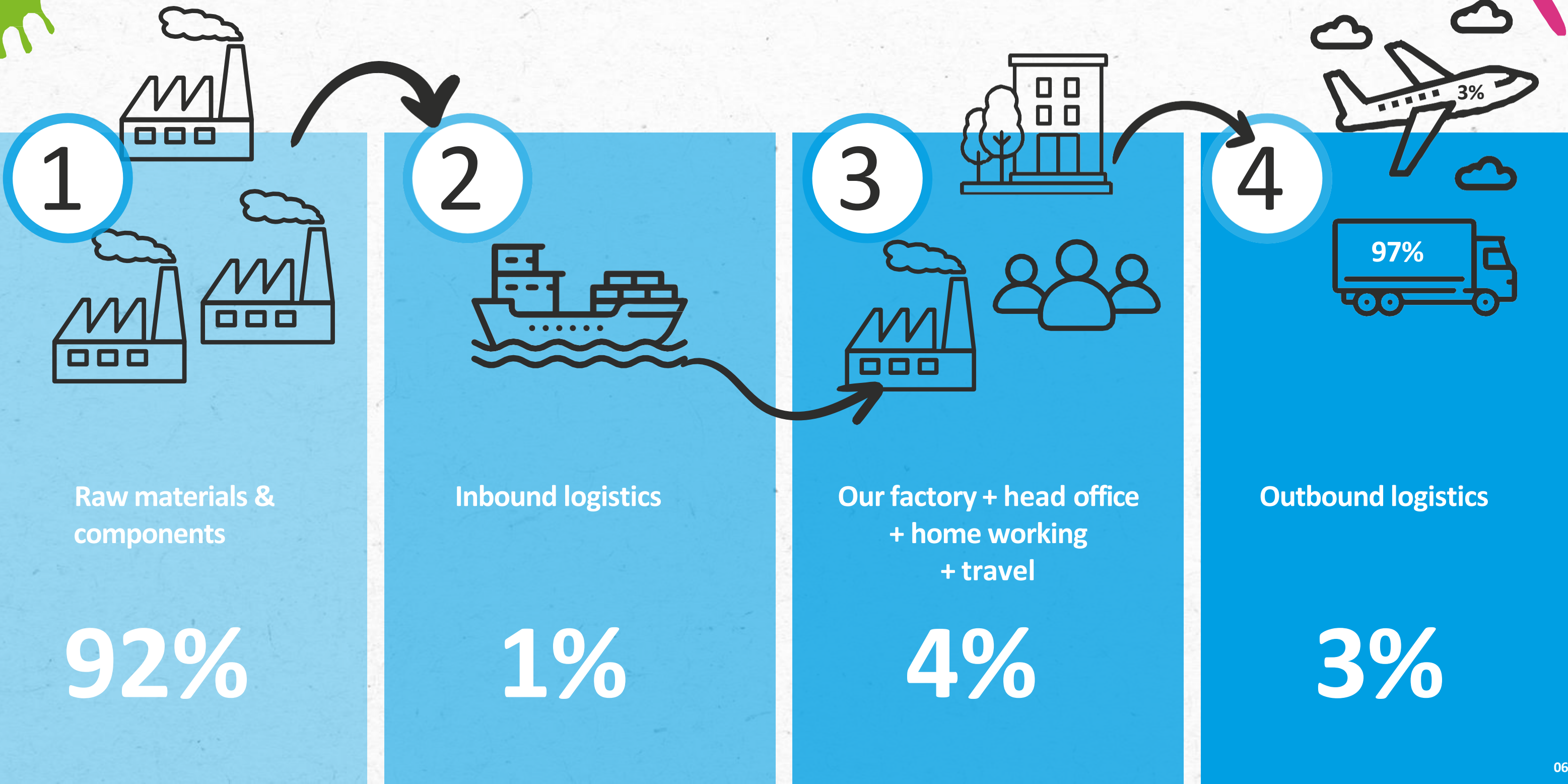
Safety is our top priority. We continually innovate, combining leading technology with ergonomic design to create bikes that are not only fun to ride but also exceptionally safe. Our commitment to research and development ensures our products consistently surpass industry safety standards.

*(except for our balance bikes)

Headline results







Children can offset this carbon footprint by cycling to school twice a week for a year instead of travelling by car

93kg Co2e per bike



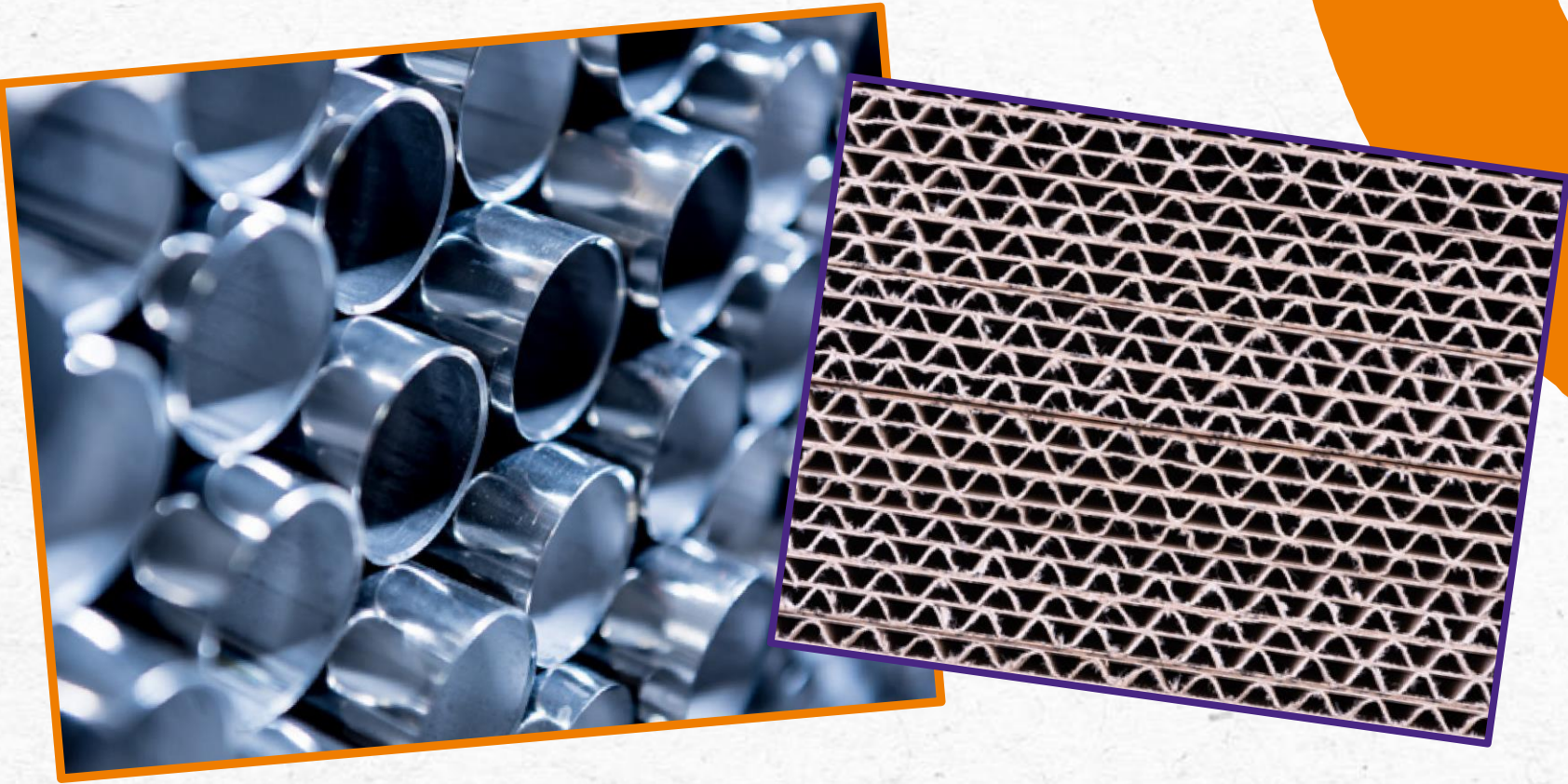
Materials breakdown



	Aluminium	81%
	Steel	5%
	Plastic	5%
	Rubber	4%
	Cardboard & paper	5%
	Other	1%

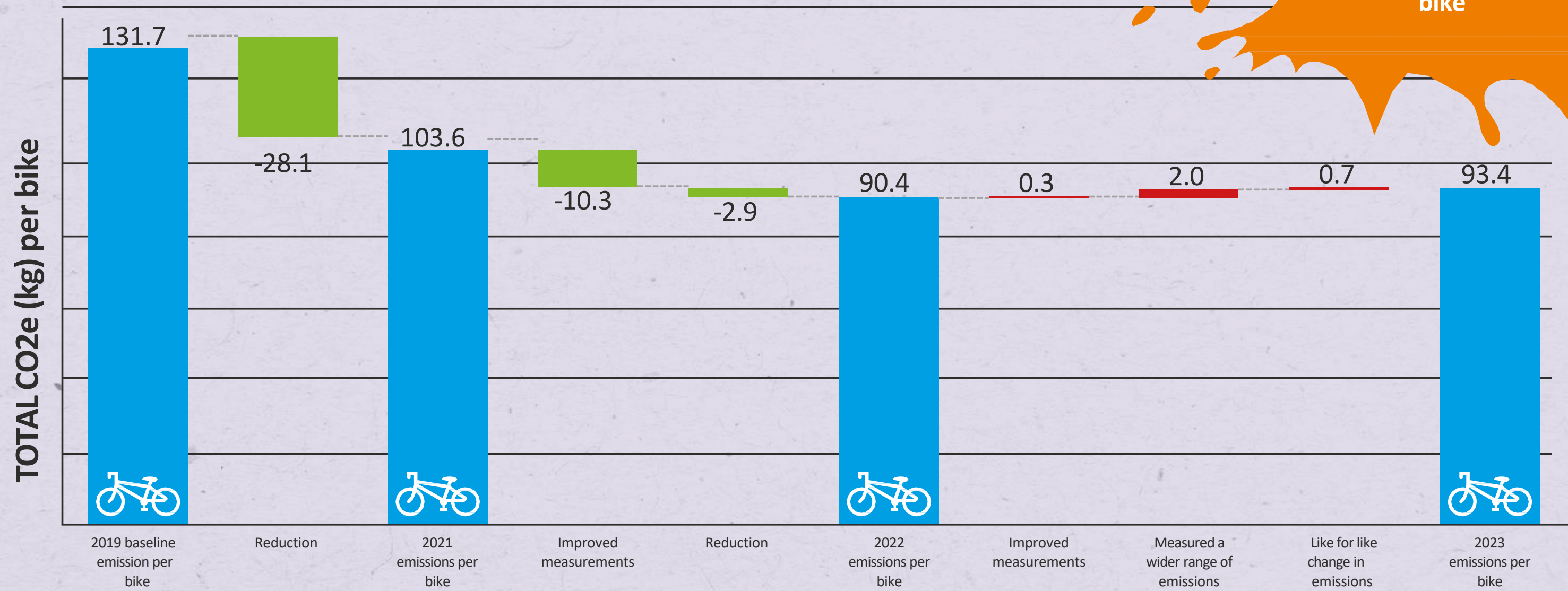


Aluminium is
our largest
source of
emissions



Our Progress

23% reduction in emissions per bike since 2019. Including a 53% reduction in our internal (Scope 2) emissions per bike



This year, we reduced our production in response to a drop in sales. While emissions from materials used decreased with production, some emissions, like those from employee commuting, stayed relatively stable. As a result, our emissions per bike produced increased slightly by 0.8%, even though our total emissions went down.

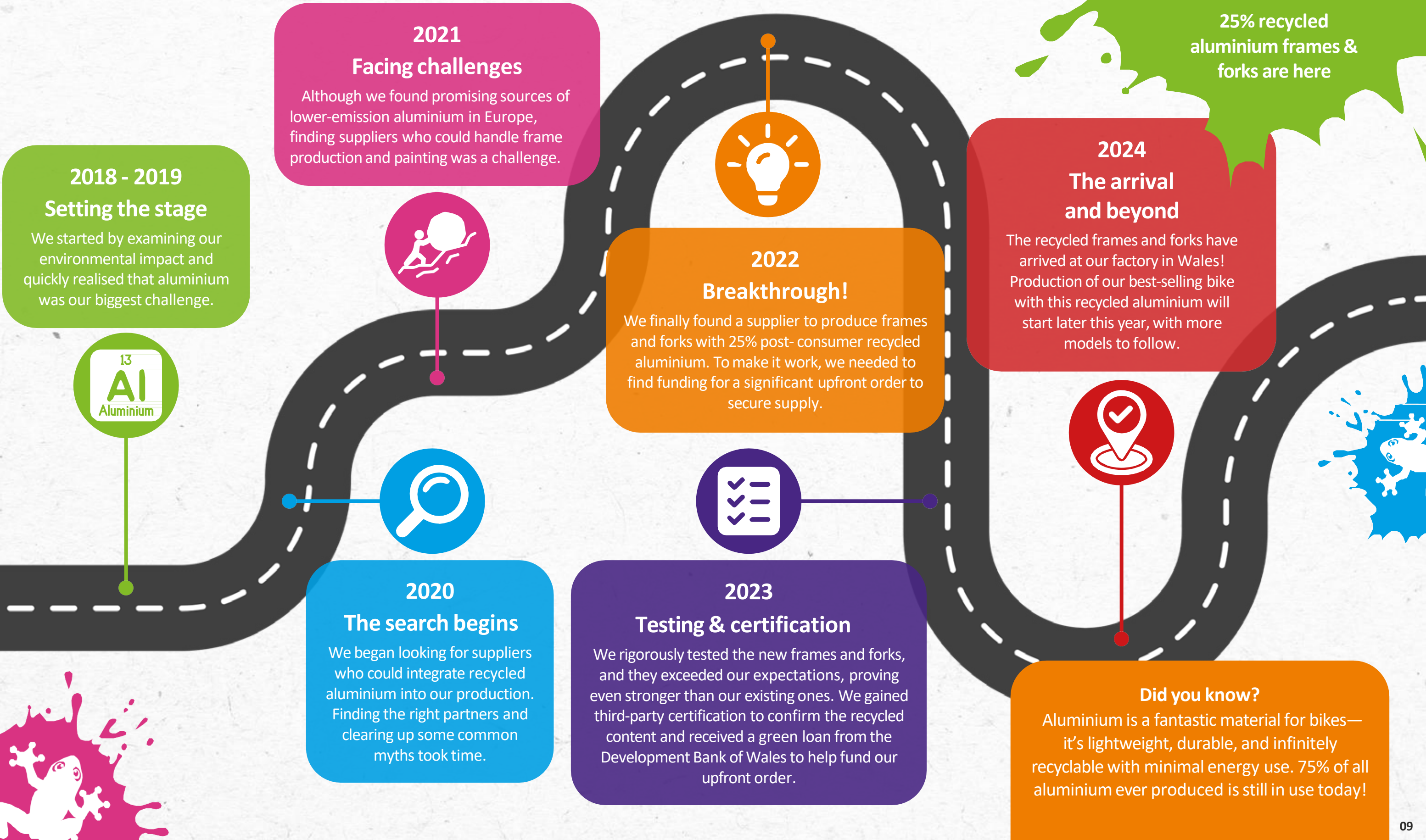
We also improved how we measure our impact. By using more accurate weight data for our balance bikes and including emissions from spare parts, accessories, and factory waste, we now have a clearer picture of our environmental footprint. These improvements led to a 2.5% increase in reported emissions per bike compared to 2022, but this more precise data helps us better plan future emission reduction strategies.

Despite these challenges, we’ve made significant progress this year towards ensuring lower emissions in the future.



The road to recycled aluminium

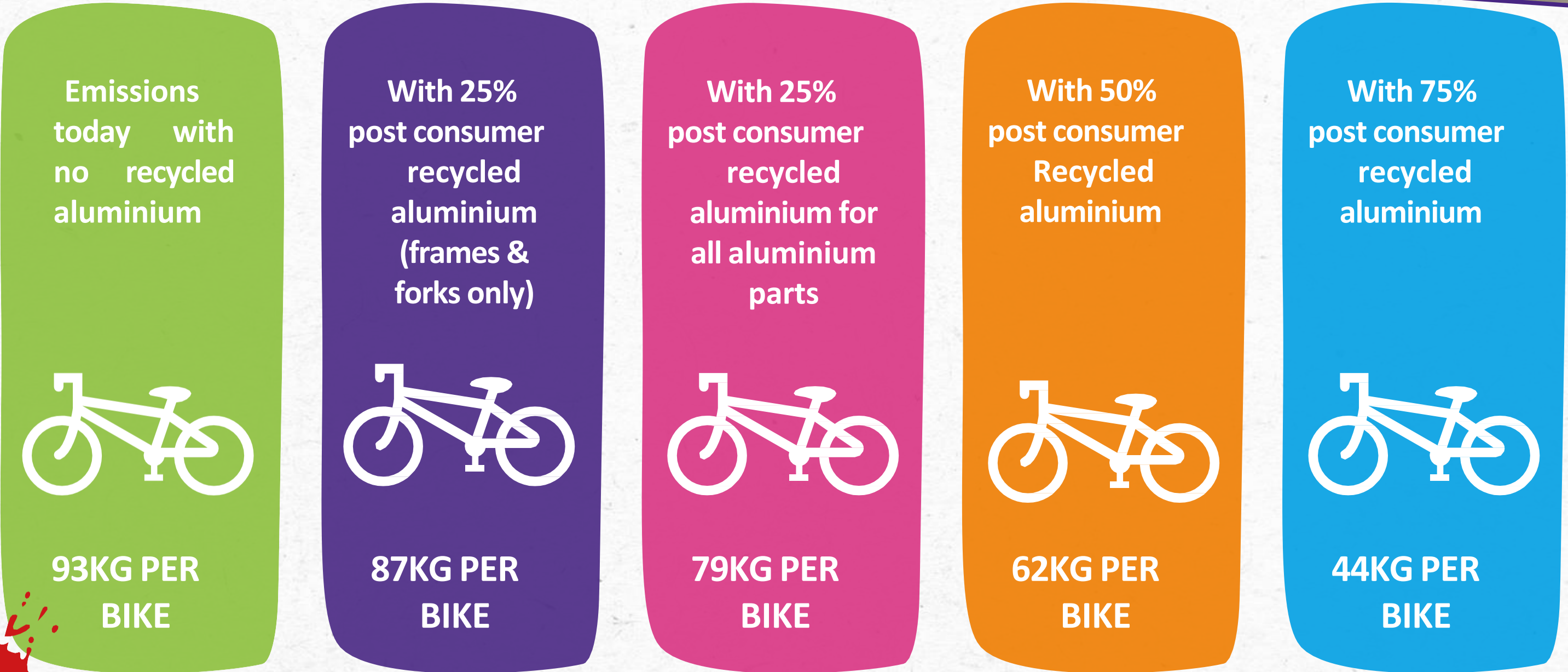
We're thrilled to share a major milestone: our first batch of bicycle frames and forks made with 25% post-consumer recycled aluminium is here! Here's how we got to this exciting point:



Our commitment to a greener future

We're gradually rolling out bikes made with **25% post consumer recycled aluminium for our frames and forks**. This means that over the next couple of years, every ride on a Frog bike will contribute to saving more emissions.

But we're not stopping there. We've set an ambitious goal to halve all our emissions by 2030. To achieve this, we're aiming to use at least 50% recycled aluminium in our bikes within the next few years. This big change means we'll be working closely with our suppliers and conducting rigorous in-house testing to ensure every bike meets the high standards you expect from Frog Bikes.



Recycling the ride

Spotlight on our factory outlet

We believe in giving every bike a chance to shine, even those with minor imperfections like paint defects and scratches. Through our factory outlet, we offer these perfectly functional bikes at a discount of up to 40% off the original price. This makes our premium bikes more affordable, and more accessible and helps reduce waste by saving these bikes from being scrapped.

Frog Bikes are built with robust, quality componentry, which means that the bikes can be enjoyed by several owners, over many years.



Did you know?

On a bicycle, you can travel three times faster than you can walk, for the same amount of energy? The world record for the fastest human being on a bike is a staggering 183.9mph!

- Source: Action Aid

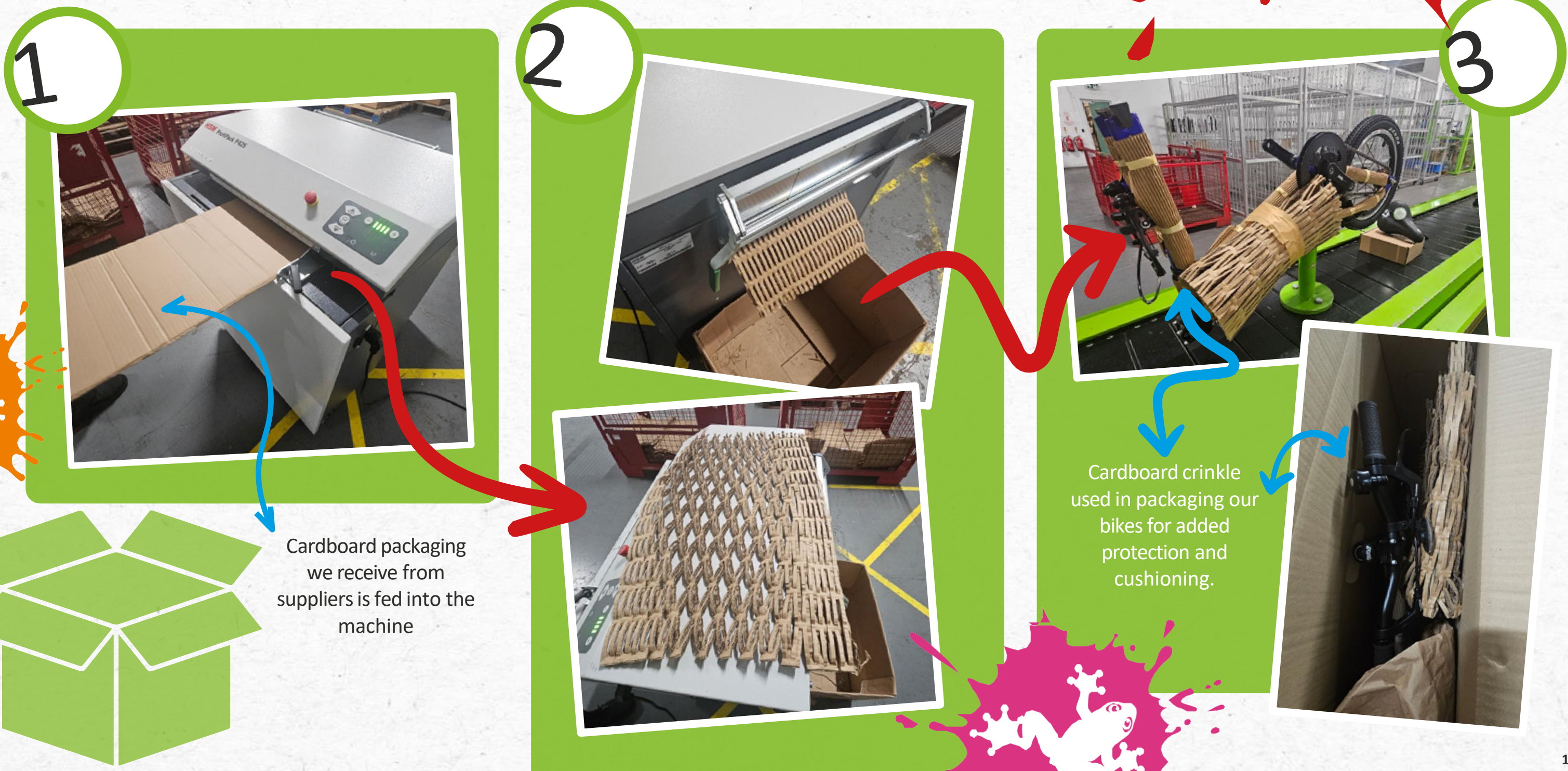


Crunching down waste

Introducing the Cardboard crinkler!

We're excited to share our latest eco-friendly investment: a cardboard crinkling machine! This innovative piece of equipment turns cardboard packaging we receive from suppliers into protective cushioning material to protect our bikes on their journey to our customers. By reusing cardboard, we cut down on waste and reduce our need for new materials. This not only helps the environment but also ensures your bike arrives safe and sound.

We can now re-use up to 70% of the cardboard boxes we receive from suppliers



Empowering a sustainable workforce

At Frog Bikes, we believe that a passionate and engaged workforce is key to achieving our sustainability goals. Here's what our recent employee survey revealed:

88%

of our team feels proud to work at Frog Bikes

85%

feel empowered to make a positive environmental impact through their roles

71%

agree that we stick to our values

90%

of employees enjoy their job

97%

see sustainability as crucial to our future success



Our sustainability efforts help us attract great people to join our team

Exciting initiatives to support our employees

E-waste amnesty

Providing a responsible way to dispose of old electronics



Upgrading factory EV power points

Installed additional EV charging points and upgraded existing ones at our factory for staff to use



Frog swap shop

A platform for staff to pass on unwanted items, rehoming everything from cosmetics to cookie cutters



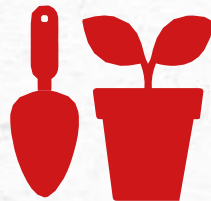
From idea to oasis: our factory garden is blooming

Thanks to a great idea from our team, our factory garden is coming to life! This year, we've turned a previously neglected area into a lush, green space with beautiful grass and creative planters made from repurposed pallets. This garden not only brightens up our work environment but also promotes biodiversity and gives us a relaxing spot to unwind and bond.



Feb 2023

Getting the ground ready to lay down the foundations



Laying the foundations

All of the planters have been made out of broken pallets from the warehouse.



Spring 2024



Planted wild flowers for bees!



Sowing the Seeds of our New Garden

We have used old rims to make hanging baskets and old bike chains to attach them



Kicking Off the Garden Project

Sep 2023



Wheels of change

Circular economy:

The durability of our bikes make them perfect for handing down or reselling again and again - there are even Facebook groups dedicated to preloved Frogs.



**Over 4,000
secondhand Frogs
found new homes
via eBay in the last
12 months!**

We work with bike leasing partners in a number of our markets helping ensure our bikes have maximum use and supporting the emerging circular economy.

We are actively exploring how we can further increase the lifespan of our bikes via a refurbishment programme.

Logistics:



**< 3% OF BIKES SOLD WERE
DELIVERED BY AIR (A SLIGHT
REDUCTION VS LAST YEAR DRIVEN BY
CHANGING REGIONAL SALES MIX)**



**<1% OF COMPONENTS
WERE TRANSPORTED BY AIR
(CONSISTENT WITH LAST
YEAR)**

Packaging:

We've successfully eliminated our last two plastic cable ties! The only plastic in our outbound packaging is the fork/wheel protector, which we reuse from our suppliers. We're actively seeking better alternatives.



**96% Of our packaging is
easy to recycle (technically
100% is recyclable, but our
fork protector falls into
the harder to recycle
plastics category...)**

Sharing our sustainability journey

We're committed to continuous improvement and believe in collaboration. Here's how we're sharing our learnings and inspiring others:

Industry collaboration:

We actively participate in industry bodies like Shift Cycling Culture and the Bicycle Association, sharing knowledge and best practices.

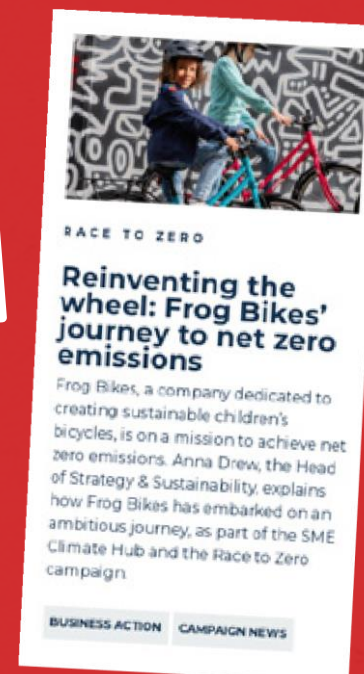


Empowering others:

We recently updated our case study for the SME Climate Hub, a global initiative supporting climate action by small and medium businesses.



Featured on SME Climate Hub and the UN-backed Climate Champions website: <https://climatechampions.unfccc.int/reinventing-the-wheel-frog-bikes-journey-to-net-zero-emissions/>



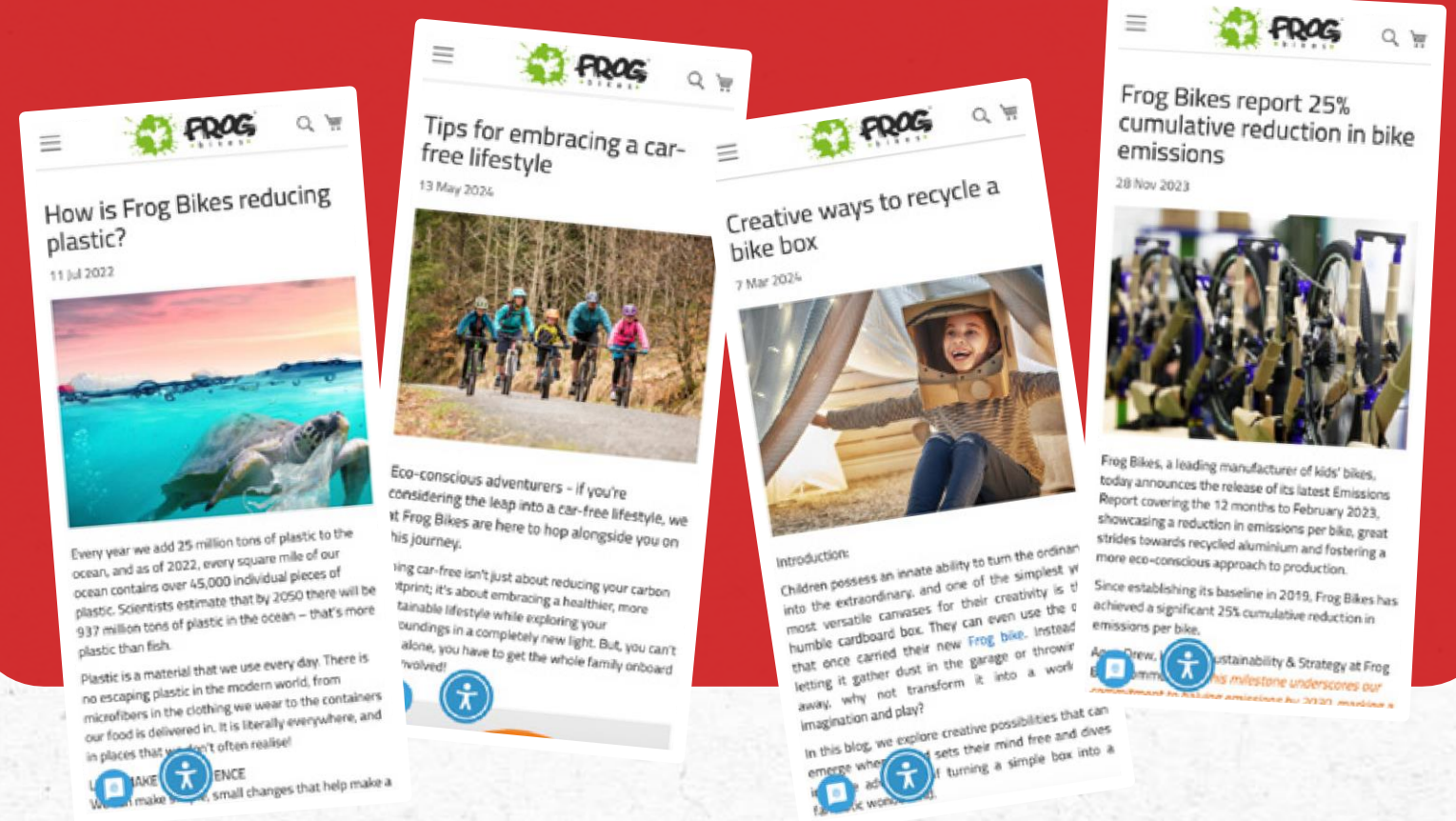
Spreading awareness:

We present our sustainability journey at various forums, reaching over 650 entrepreneurs and SMEs in 2023 (NorthEast Entrepreneurs Forum, Cranfield University, Prince's Trust, Climate Wales)



Engaging with customers:

We share insights and updates on our sustainability efforts through blogs, on our website and social media channels.



Frog in the community

We believe that cycling is more than just a mode of transport - it's a gateway to a healthier, more active lifestyle and a brighter future for our planet. That's why we partner with like-minded organisations and community groups who share our passion for getting more kids on bikes. By collaborating with these partners, we can reach deeper into communities, making cycling accessible and enjoyable for children of all backgrounds.

In a survey by PeopleForBikes, 78% of respondents said that biking helped them feel more connected to their communities.



Nielsen



Cyclists Fighting Cancer Charity



Bikeability



Herne Hill Velodrome



Brownlee foundation



Scottish Cycling



Mini bikers



Kids aufs bike

**FROG
IN THE
COMMUNITY**



Increasing accessibility with Cardiff Council

Cardiff Council's School Bike Fleet Project, in partnership with the Welsh Government, has significantly enhanced cycling accessibility for students across Cardiff, revolutionising how children and young people perceive biking. By deploying Frog Bikes to 120 schools, the initiative provides premium, child-specific bikes and essential resources like helmets, tools, and lesson plans. This support not only integrates cycling into the school curriculum but also ensures that all students, including those in deprived areas, can participate in National Standard Cycle Training regardless of whether they own a bike or not.

The program has transformed students' health, well-being, and education, with ongoing training and guidance helping schools maximise the potential of their Frog bikes. The Road Safety Team utilises the bike fleets to ensure every child has the opportunity to learn to ride, and a teacher noted that "These bikes will change their lives."

Read more here >> https://www.frogbikes.com/en_GB/blog/cardiff-council-advances-kids-cycling-with-frog-bikes-fleet-scheme/



Frog Bikes have
deployed over
2,600 bikes



120

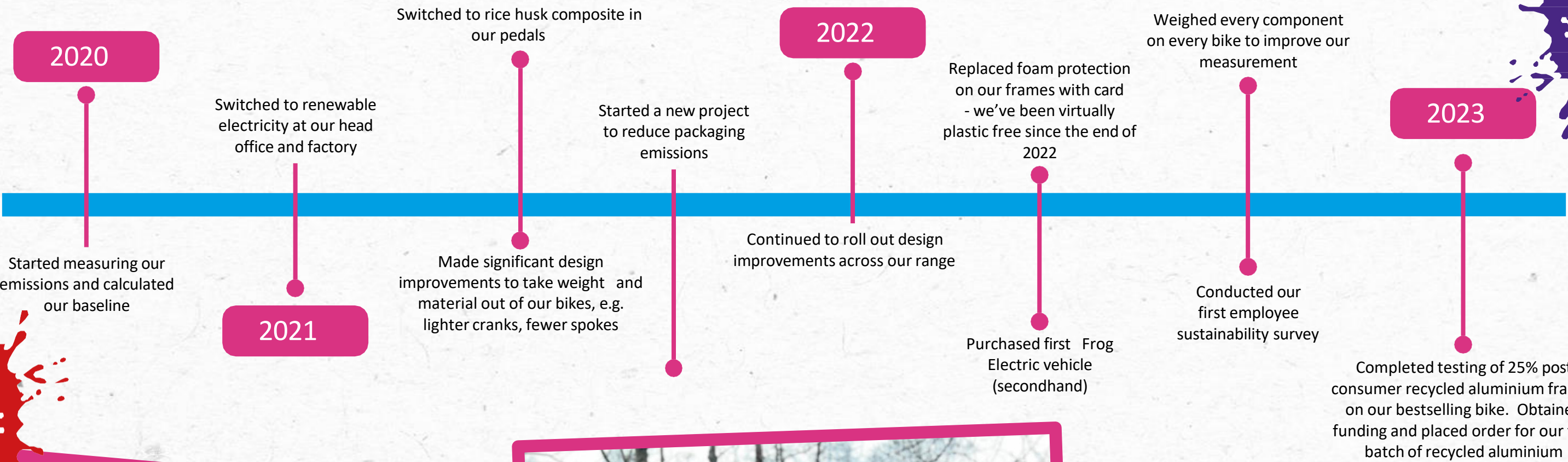
120 schools provided with
Frog Bikes by Cardiff Council

According to sustrans, up
to 2.3 Million cars are
taken off the road
every day by walking and
cycling in the 23 urban areas
surveyed



Our sustainability journey so far....

Did you know?
The first bicycle was invented 200 years ago in response to a shortage of horses? It was made of wood and riders had to push their feet on the ground to move - much like today's balance bikes - Cycling UK



Get involved - Join the ride!



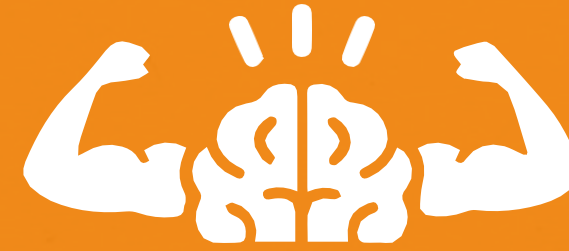
Travel faster

On a bicycle, you can travel three times faster than you can walk, for the same amount of energy.



Ditch the car

Cycle rather than drive to school twice a week for a year to offset emissions from making a Frog Bike.



Boost your brainpower

Cycling regularly can improve your memory and cognitive function, helping keep your brain sharp and boosts overall mental well-being!



Age is just a number

Cycling is a low-impact exercise that's suitable for all ages. Whether you're a young child or an older adult, biking is a fantastic way to stay active and healthy.



Pedal your way to happiness

Cycling releases endorphins, the "feel-good" hormones, which can help reduce stress and improve your mood.



Reduce air pollution

With the average school being just over 1 mile from home, a short 10-minute cycle to and from school each day is a great way to help start reducing traffic congestion and air pollution.



Better sleep

Regular cycling can improve your sleep quality and help you fall asleep faster. A night of better rest could be just a bike ride away!



Save on transport costs

Cycling is not only good for the planet but also your wallet. The cost of maintaining a bike is significantly lower than that of a car, making it a budget-friendly travel option.



Make playtime fun

Children who cycle regularly tend to develop better coordination and balance. Plus, it's a great way to encourage outdoor play and family time!



Stronger together

Family bike rides are a great way to spend quality time together. It's a fun, healthy activity that everyone can enjoy, and it helps build lasting memories!



Explore your community

Cycling allows you to discover new places in your neighbourhood and beyond. It's a fantastic way to explore parks, trails, and hidden gems you might otherwise miss.

Did you know?

If you fuel your ride with cheeseburgers the emissions per mile are similar to driving. If you're fuelled by bananas, emissions are 12 times less per mile!

- How Bad Are Bananas?: The carbon footprint of everything - by Mike Berners-Lee

Fuelling fun - not emissions

Blogs:

- ★ How a Frog bike can grow with your child:
https://www.frogbikes.com/en_GB/blog/how-a-frog-bike-can-grow-with-your-child/
- ★ Cycling as a family bonding activity:
https://www.frogbikes.com/en_GB/blog/cycling-as-a-family-bonding-activity/
- ★ Encouraging outdoor play through cycling:
https://www.frogbikes.com/en_GB/blog/encouraging-outdoor-play-through-cycling/
- ★ Trail Therapy: Getting out in the fresh air:
https://www.frogbikes.com/en_GB/blog/trail-therapy-getting-out-in-the-fresh-air/
- ★ Top 10 health benefits of cycling for kids:
https://www.frogbikes.com/en_GB/blog/top-10-health-benefits-of-cycling-for-kids/
- ★ The benefits of being part of a cycling club:
https://www.frogbikes.com/en_GB/blog/the-benefits-of-being-part-of-a-cycling-club/
- ★ Tips for embracing a car-free lifestyle:
https://www.frogbikes.com/en_GB/blog/tips-for-embracing-a-car-free-lifestyle/
- ★ Environmental benefits of cycling for kids and families:
https://www.frogbikes.com/en_GB/blog/environmental-benefits-of-cycling-for-kids-and-families/

Did you know?

The Dutch use bicycles to get around more than people in any other country, cycling about 1.6 miles a day? If that was the trend across the world, it would slash 686 million metric tons of carbon dioxide pollution a year (about 20% of global emissions from cars) - Source: The Verge

Activity sheet:

- ★ [Family day out sustainability list](#)
- ★ [Nature scavenger hunt by bike](#) [What belongs in your compost?](#) [Green heart for climate action](#) [Help save the environment](#)





METHODOLOGY



What we measured

We strive for transparency in our environmental impact reporting. Here's a breakdown of what we include and exclude from our emissions measurement.

We've included emissions from:

- Energy used at our factory and head office (using the market-based method) and for home working
- Raw materials used in our bikes, outbound packaging and spares & accessories
- Upstream and downstream logistics
- Business travel and employee commuting
- Waste from our factory

We haven't yet included emissions from:

- Supplier manufacturing processes – we've only captured the raw material inputs as we don't have accurate data from suppliers on their emissions yet
- Emissions from running our website - no reliable data source identified yet (although we have optimised our website by hosting less energy-intensive content e.g. videos on the high-traffic pages, which also improves loading times for users)
- Waste at our head office - we sort all of our waste, however, we have no way to measure it as it gets combined with the other businesses operating at our site
- End-of-life treatment of our bikes - we do not currently have any estimates for this
- Use phase - whilst we have included emissions from our spares and accessories, we have not estimated the impact of servicing over the bike's lifetime but expect this to be very low.
- We don't have any Scope 1 as we have no boilers and our company-owned vehicles are fully electric (and charged using renewables)
- Offsets - we are not offsetting any emissions, nor are we reducing our emissions to factor in future usage of our bikes which may in practice take consumers out of their cars (we view this as a bonus!).



Methodology

Scope 1

The company has no scope 1 emissions as we have no company owned boilers and our company owned vehicles are both EVs which are charged primarily at our sites using renewable energy.

Scope 2

Energy usage at our premises

Scope 3

Employee commuting and home working
Business travel
Materials Waste
Logistics
Capital purchases
Water (factory only)

SCOPE 2

Energy usage at our premises

We operate two sites in the UK, and in both cases the electricity and gas used for heating, lighting and powering our assembly and warehouse equipment is bought by the respective landlords and the costs passed to us.

Having successfully persuaded our landlords to switch, we have been fully operating on renewable electricity at both sites since 2021. We have obtained certificates from our landlords showing that the renewable electricity consumed is backed by UK-certified renewable certificates of origin. We hope to switch to green gas in the future.

Using the market-based method we have included zero Scope 2 emissions from electricity (and in line with GHG Protocol Scope 2 Guidance we have captured the associated transmission and distribution losses in the grid within our Scope 3 total). For gas, we applied the average kwh per square metre for UK offices*.

Using the location-based method (relying on average grid emissions factors), our Scope 2 emissions would have been 1.9kg CO2e per bike. We directly capture electricity usage at our factory. We do not have access to data on our electricity usage at our office so we took the average kwh per square metre for UK offices*.

*<https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2023>



We're committed to halving our emissions by 2030 and reaching net zero by 2050

SCOPE 3

Employee commuting and home working

We calculated emissions from employee commuting using the data captured from our staff survey - this included the average number of commuting days per week, commute distance, and the emissions rating for their vehicle. For those who did not complete the survey, we used averages from the previous year as a proxy.

We also used this survey to capture data for our emissions from home working calculation - we asked employees to estimate their hours working from home and whether they were on a renewable electricity tariff. We calculated the relevant emissions (electricity and heating) using the UK Government DESNZ emissions factors and using the market-based method we excluded electricity emissions for those on renewable tariffs.



SCOPE 3

Business travel

There are two key categories of travel: our reps (who are self employed agents, but we chose to include them in our calculations), and our head office team (buyers, marketing and sales) who travel to visit customers, suppliers and promotional events.

For rep travel, our UK reps reported how many miles they each drive for work in the year, and the emissions from their particular vehicles. We used the UK rep force as a model for other countries.

For head office travel we know how many flights were booked in the year, and the destinations, and used a standard calculator of emissions per destination for those flights. We then added all the head office mileage that was claimed as expenses in a year, and multiplied this by a standard UK car emission rate.



SCOPE 3

Materials

In 2022 we undertook the substantial exercise of weighing all the components for each bike size/model we make. We then assigned the relevant material type(s) to each component, with our R&D team providing a rough estimate of proportions of different materials where a component included multiple materials. We then applied industry-average emissions per material type based on publicly available data. See sources on page 30.

This year we also weighed all the components on our three balance bikes (these are assembled elsewhere so were not captured in our 2022 weighing exercise). We estimate that our calculations last year understated our materials emissions by c0.3kg CO₂e per bike (averaged across all bikes).

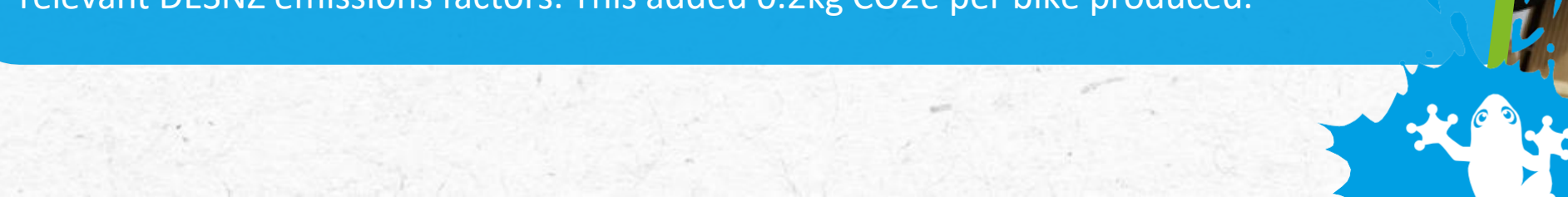
In addition, we captured the emissions from the sale of our spares and accessories for the first time this year, adding 1.8kg CO₂e per bike produced.

Our suppliers are not able to give us detailed emissions for each product; we anticipate that this will be available in future years as more companies aim to be more transparent in their environmental footprint, and as they make improvements.

SCOPE 3

Waste

This is the first year we have captured emissions from the waste generated at our factory. We separate and report on our waste by weight across the various waste streams which are recycled (88%) and general waste (12%). We then applied the relevant DESNZ emissions factors. This added 0.2kg CO₂e per bike produced.



SCOPE 3

Capital purchases

This year we purchased a new cardboard crinkling machine enabling us to reuse up to 70% of the cardboard packaging we receive from our suppliers. We have estimated the carbon footprint of this machine at 346 kg CO₂e based on its weight and main composition (steel).

SCOPE 3

Water (factory only)

We capture water usage at our factory and then apply the relevant DESNZ emissions factors for water supply and waste water. We have not captured our water usage at our head office - our facilities are shared with other tenants in the building and we expect this to have a minimal impact on our total emissions.



Emissions factors

Our emissions factors are based on publicly available data, we hope to be able to use more accurate estimates from our suppliers in the future

Aluminium (China average) 17 t CO₂e/t. Triangulating from a range of sources:

- <https://ore.exeter.ac.uk/repository/handle/10871/132248>
- <https://www.carbontrust.com/our-work-and-impact/guides-reports-and-tools/international-carbon-flows>
- <https://international-aluminium.org/statistics/greenhouse-gas-emissions-intensity-primary-aluminium/>

Steel 1.9 t CO₂e/t.

- <https://worldsteel.org/steel-topics/sustainability/sustainability-indicators/>

Rigid plastic average 3.26 t CO₂e / t

- <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

PVC 3.41 t CO₂e / t

- <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>

Rubber tyres 2.92 t CO₂e / t

- <https://iopscience.iop.org/article/10.1088/1757-899X/644/1/012001>

Paint 2.09 t CO₂e / t

- [https://communityrepaint.org.uk/wp-content/uploads/2021/03/How-to-calculate-your-schemes CO2-savings.pdf](https://communityrepaint.org.uk/wp-content/uploads/2021/03/How-to-calculate-your-schemes-CO2-savings.pdf)

Cardboard 0.69 t CO₂e / t

- [Access and download our ESG databook - DS Smith](#)

Paper 0.91 t CO₂e / t

- <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>





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