

one

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#DoingMyBit

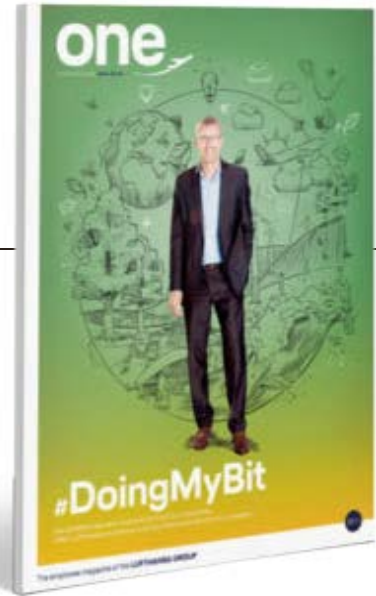
Sustainability has never mattered as much as it does today.
What Lufthansesats are doing to protect the environment and our company



One is itself saving CO₂

This issue of One is climate-neutral. In collaboration with ClimatePartner, we are supporting a native mountain forest project in Rostock and thus offsetting 32,401 kilograms of CO₂. The next issue of One will appear solely in digital form and in order to ensure more sustainability in the future.

oneStory



Dear colleagues,

Sustainability – the word sounds very abstract, so this issue of One has a completely different title: #DoingMyBit. This is because we want to show that sustainability can be made very concrete – and that each of us can do something to help. This year, the Lufthansa Group is presenting its 25th sustainability report. For years now, we have been working on alternative fuels and doing more and more to reduce our use of plastic – and, of course, our biggest adjustments come from our billions of euros invested in increasingly economical and quiet aircraft. However, each of us can also change things through our everyday actions. This might be by avoiding the use of paper cups or plastic bags or by carbon-offsetting your flights by giving money to climate-friendly projects – on private flights, of course.

Sadly, there are still not enough passengers choosing this option, so in this issue we tell you how it works and how your money helps not only the climate but also people and nature in Madagascar. We also bring you stories of many colleagues who show their commitment to greater sustainability, whether at work or after hours. As this is the only way our planet will survive, they are all saying: “I am doing my bit.” Come and join them!



Steffen Milchsack
Head of Corporate
Responsibility Communications

#DoingMyBit

Responsibility has many facets. We look at concepts that the **Lufthansa Group** is pursuing with kerosene, and the ideas for CO₂ offsetting that it is putting out through myclimate:

→ **Time to get real on kerosene replacement**

from page 34

→ **Cooking for the climate**

from page 44

Recommended by
Sabine Atrott
Manager Communications
Lufthansa Group



Employees at **Lufthansa Technik** have a great many good ideas. #DoingMyBit also means taking a new direction, turning what you have learned upside down, or just thinking differently:

→ **Disposable, not reusable!**

from page 26

→ **Keep the change!**

from page 50

Recommended by
Silke Zühr
Manager Communications
Lufthansa Technik



Where, as a company, do you start making your processes more sustainable and efficient and thus more environmentally friendly? In this issue, we present two approaches at **Lufthansa Cargo**:

→ **What else are we doing? Sustainable alternatives**

from page 14

→ **Upcycling turns waste into something fine**

from page 24

Recommended by
Julia Lehmann
Senior Manager Communications
Lufthansa Cargo



Everyone is talking about sustainability. The **LSG Group**, too, is preoccupied and driven by the issue. Get to know some committed employees and find out what sustainability tastes like:

→ **Crane for Future**

from page 22 and 30

→ **Eating for the climate**

from page 58

Recommended by
Christian Daumann
Director Global Communications
LSG Group



Contents



18

Lufthanseseats care about the environment

In an age of climate protest and environmental crisis, aviation is under fire – and Lufthansa under pressure. But solutions do exist, and they are coming from our employees

“We are at a crossroads”

Mira Kapfinger interviewed about the risks of increasing air traffic and possible solutions from a climate activist's perspective

40



06

What else are we doing?

Presenting stunning sustainable products



56

5 foes

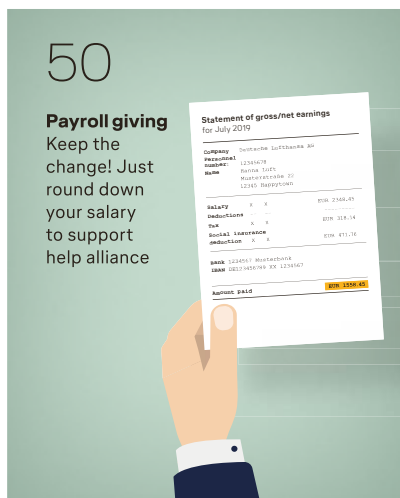
Insistent when necessary: Christian Helmschrott fights environmental enemies



44

myclimate

Carbon offsetting finances more efficient cookers in Madagascar



50

Payroll giving

Keep the change! Just round down your salary to support help alliance

Statement of gross/net earnings for July 2019			
Company	Deutsche Lufthansa AG		
Personal number	12345678		
Name	Herrn 1234 Musterstraße 50 12345 Musterstadt		
Salary	€	2000	2000,00
Reduction	€	100	100,00
Tax	€	200	200,00
Social insurance	€	100	100,00
Production	€	100	100,00
Net	€	1600	1600,00
Bank	12345678 Musterstadt 12345678 Musterstadt 12345678		
Amount paid	€	1600	1600,00



64

Should I have a greener lifestyle?

Find out how sustainable your daily routine is

58

The climate on a plate

How meals can be prepared with a low carbon footprint



- 02 **Editorial**
Why sustainability
is not an abstract
concept for Lufthansa

Check-in

- 06 **Pictures**
Fascinating photos
of alternatives
that protect the
environment
- 16 **Infographic**
A quarter-century
of sustainability
at Lufthansa

oneStory

- 18 **Climate rescuers**
The climate crisis
is increasing the
pressure. Many
Lufthansa seats say:
"I'm doing my bit"
- 20 **Eternal plastic**
Lufthansa employees
fight back with
good alternatives
- 28 **Scarce resources**
How our heroes save
raw materials so that
one Earth is enough
- 32 **The crude
oil dilemma**
Lufthansa seats
experiment with
alternatives
to kerosene
- 36 **High noise levels**
Eliminating noise
disturbance and
saving money too
- 38 **Detective work**
Kerstin Halfmann-
Kleisinger ensures
sustainability in
cabins and lounges

oneFocus

- 40 **Two opinions**
Mira Kapfinger and
Matthias von Randow
- 44 **myclimate**
Cutting greenhouse
gases and providing
aid with one click
- 48 **We are
wearing green**
Environmentally
friendly cabin uniforms
- 50 **Keep the change**
Do great things with
payroll giving
- 52 **Sweating for money**
LSY employees
support
active4helpalliance
- 54 **Absurd**
Senseless regulations
- 56 **5 foes**
Christian Helmschrott,
voice of the
environment at
LSG Sky Chefs
- 58 **Eating for
the climate**
What climate-friendly
food looks like

oneQuestion

- 62 **What do you think?**
These are
your biggest
environmental sins
- 64 **A greener lifestyle?**
We have your
personal answer
- 66 **Competition**
Join in to win
- 67 **Preview**
What's coming in
the next issue

eBase

News App and eBase

A selection of our best
online topics

#DoingMyBit



Canteen tester special

Even in the kitchen, you can protect the climate – with carbon-friendly dishes, for example. The LAC canteen also has this option. But what do these dishes taste like, and, more importantly, how can you make them yourself? The canteen tester offers tips – on eBase in the summer under the #DoingMyBit hashtag.

Environmental myths examined

Are paper bags better than plastic? Are electric automobiles really environmentally friendly? And what is the truth about apples from New Zealand? There are many good tips for protecting the environment, but which of them are actually onto something? Test your knowledge! On eBase in the summer.



help alliance in action

help alliance has been taking responsibility for 20 years. It is changing the lives of children and young people worldwide with the support of many Lufthansa seats. We tell some current success stories – on eBase in the summer.



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Check-in



What else are we doing? Sustainable alternatives

#DoingMyBit The things that make a difference aren't always the most obvious. On the following pages are good examples of sustainable practice

Text Claus Hornung



Making oil from a cup

The plastic cups given out on board Austrian Airlines flights are processed by the newly developed ReOil technology into crude oil that can be used again for new products, such as fuel. The cabin crew separate the cups from other waste and put them in a specially prepared yellow plastic bag.

Hearty larvae burger

At the 2019 World Travel Catering & Onboard Services Expo (WTCE), chefs from Evertaste introduced an unusual burger that could one day find its way into the on-board menu. Instead of the usual meat, the patty is made out of buffalo worms – the larvae of the glossy black litter beetle. Based on protein content, insects only need one-tenth of the amount of food as cattle, and significantly less water. Producing insect burgers also creates only one-hundredth of the greenhouse gases compared with beef equivalents. What's more, no hormones or antibiotics are used during rearing.





Glass straw

The image of a sea turtle with a drinking straw stuck in its nostril went viral – and was one of the reasons for plastic straws being banned as part of the EU's law against single-use plastics. This alternative made out of glass was presented by SPIRIANT at the World Travel Catering & Onboard Services Expo in April 2019. Passengers can take the straw home with them after the flight, wash it and use it again and again.

Purely plant-based

Plates made out of palm leaves and chopsticks made from rice husks are further examples of SPIRIANT's exhibits at WTCE, as were knives, forks and spoons made out of bamboo. Even toothbrushes were made with bamboo, and the paper cup they came up with is made from 100 percent biodegradable cellulose.



Clean engines last longer

The Cycleclean® Engine Wash system, of which this Cycleclean® Spray Adapter is a part, was developed by Lufthansa Technik. The device is attached directly to the engine, enabling hot water to be sprayed under pressure into the engine core. This precision cleaning gives the engine a longer lifespan and leads to lower kerosene consumption – thereby also reducing CO₂ emissions.





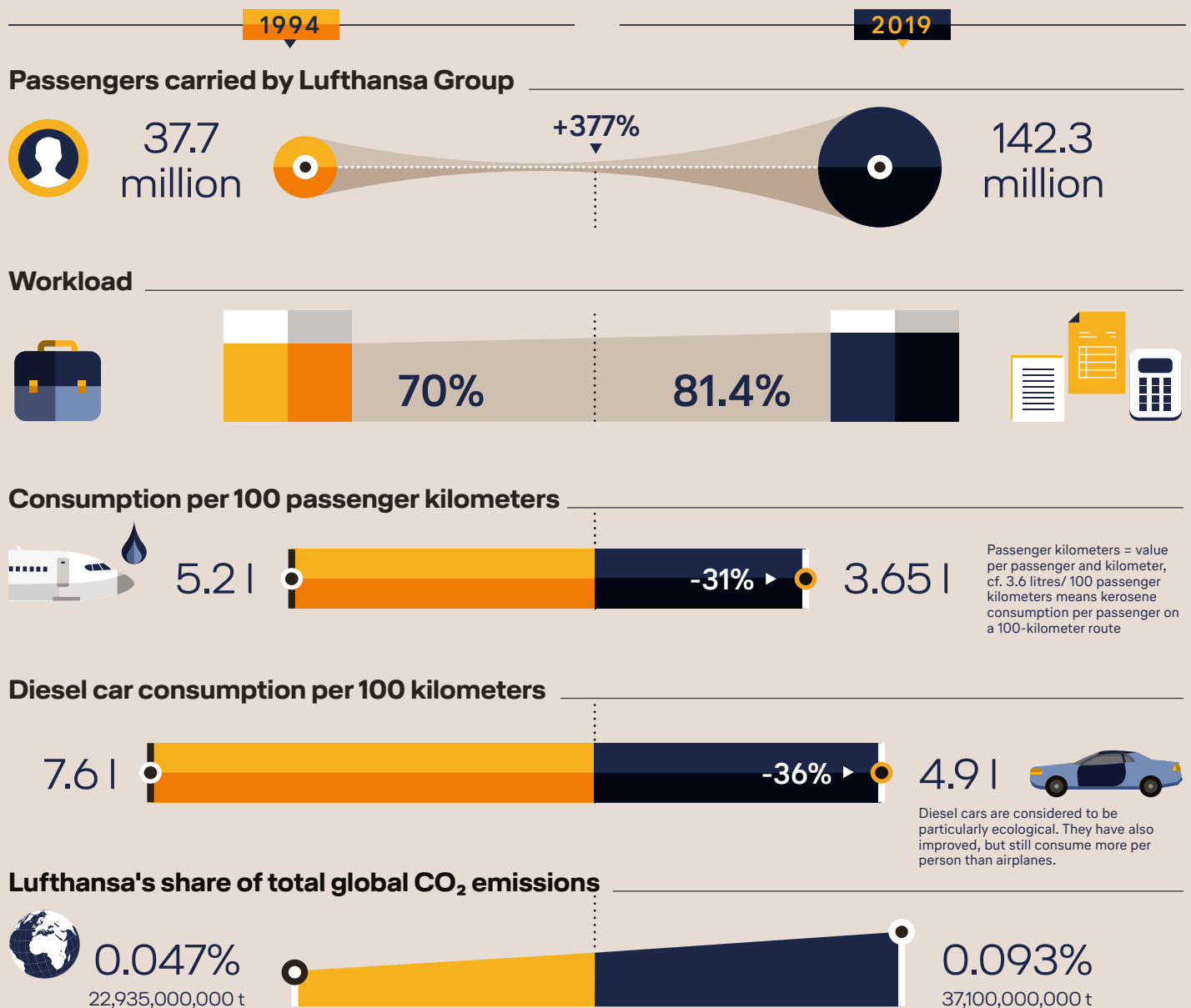


Digital weighs less than paper

Three-quarters of Lufthansa Cargo air waybills no longer travel on aircraft but instead exist only in digital format. To date, this has already saved 7800 metric tons of paper a year and reduced fuel consumption because of the decrease in weight. If all air waybills went digital, 225 metric tons less CO₂ would be released into the atmosphere each year.

25 years of sustainability at Lufthansa

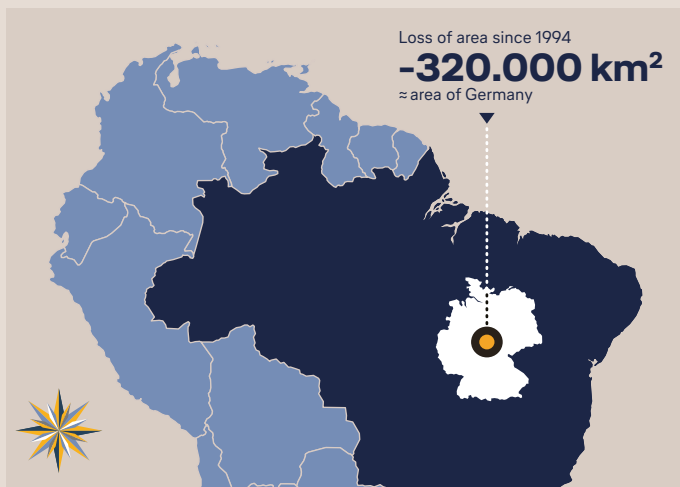
#DoingMyBit The first “Balance” report, then a purely environmental report, came out in 1994. Both the Lufthansa Group’s environmental indices and the whole world’s climate indices have changed a great deal since then



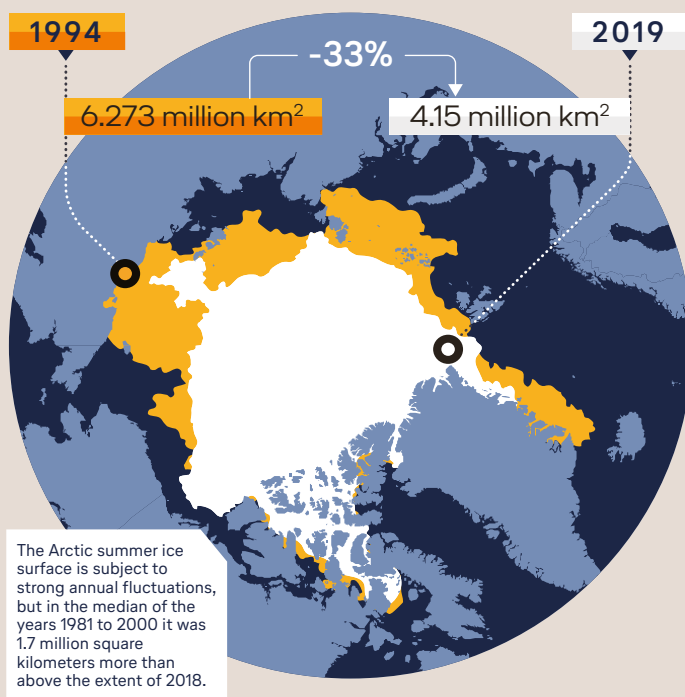
Most economical model



Area of the Brazilian Amazon rainforest



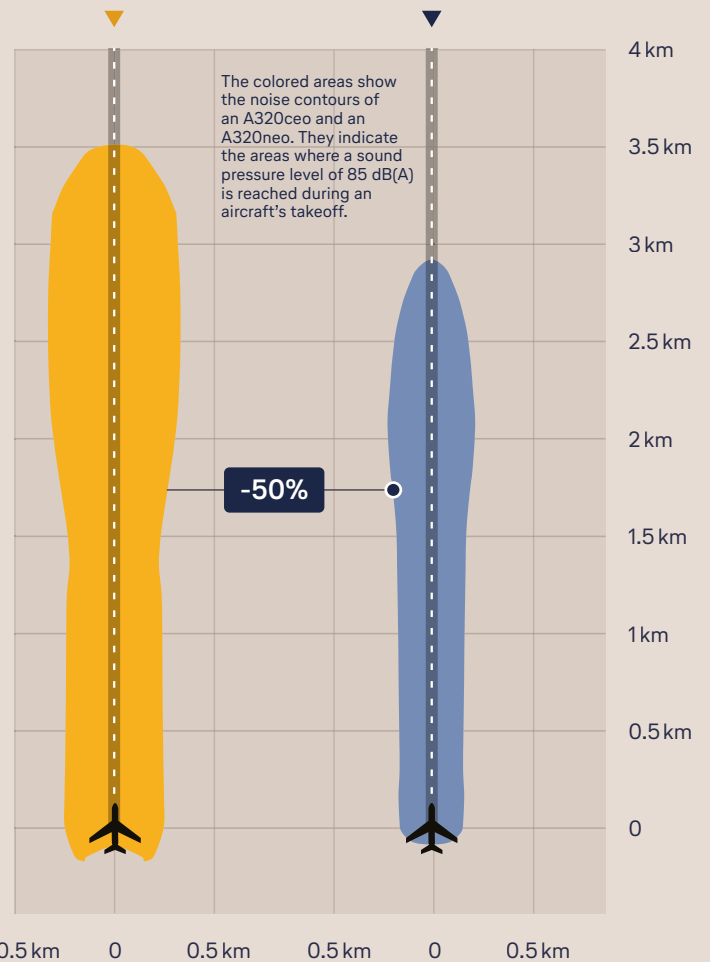
Area of Arctic Sea ice



85 decibel noise contour A320

Airbus A320ceo
 MTOW 73.5t

Airbus A320neo
 MTOW 73.5t



Average temperature Germany





Crane for Future

#DoingMyBit Fridays for Future and “flygskam” are clear responses to summer droughts, the climate crisis and environmental disasters. They are increasing the pressure on aviation to do something. Bans and laws are one way to achieve change, but there is another, and for many Lufthanses this has long gone by the name of “Doing my bit”

Text Karin Willms

A full 65 hours – that’s how long Greta Thunberg spent in early January traveling from Stockholm to Davos and back for the World Economic Forum. The 16-year-old consciously decided to go by train, for her message is that flying harms the environment since it releases CO₂ into the atmosphere – so much of it that not even the effort of having to travel for two and a half days would justify flying in the eyes of this climate activist.

In Sweden, home of the Fridays for Future school strike for the climate that has now spread worldwide, a special word for this has even entered the language – “flygskam,” or “flight shame” in English, a neologism describing how people are suddenly becoming ashamed of using aircraft.


Things used to be different. Not that long ago, flying was still something exceptional, a privilege for those who could afford it. Just a few decades on, famous people such as Olympic champion and biathlete Björn Ferry are committing clearly to a growing non-flying scene. In parallel, the tourism industry is seeing bookings decline and speculating about a “Greta effect.” But for Greta this is not enough. In Davos, the climate activist stood before leading politicians and executives and demanded immediate measures. “I want you to act as if our house is on fire – because it is,” she said.

Stronger than bans – your own initiative

She is not alone in making this demand. Summer droughts and the climate crisis are leading to growing environmental awareness worldwide. The fact that Fridays for Future and “flygskam” exist, that (diesel) driving bans and traffic restrictions are being implemented in many European cities and that green parties are once again strongly represented shows that environmental awareness and climate protection are not just a trend, but an appeal to politicians and industrialists to finally do something.

Bans, rules and statutory regulations “from above” are one way of achieving this. However, the “Do something – or else” approach is not the only option, and Lufthansa does not think it is the right one. There is another way of achieving change, one based on intrinsic motivation and on people’s own initiative and their desire to change something. It is known as #DoingMyBit.

Lufthansa was a pioneer in setting this course with its first “Balance” report 25 years ago, and this is what still motivates and inspires many Lufthanses today. In this issue, therefore, we introduce you to people who are doing something in their free time, at their workplace or at a location specially created for the purpose. They are climate protectors and environmental activists using their own initiative. They are pioneers and role models. They are our environmental heroes, showing the spirit of “doing my bit!”



“I want you
to act as if
your house
is on fire
– because
it is.”

Greta Thunberg Swedish climate activist
The 16-year-old spent 65 hours traveling to
and from the World Economic Forum
in Davos by train.

Plastic: Great hope, natural disaster

#DoingMyBit Huge islands of plastic waste are drifting around the world's oceans – the result of 150 years of thoughtless use of plastic. There is still no sign of the necessary change

Text Oliver Schmidt

The history of modern plastic actually begins with nature conservation. In 1863, the New York businessman Michael Phelan placed an advertisement in a newspaper looking for a substitute for ivory, which was used at that time to make billiard balls. One year later, the printer John Wesley Hyatt spilled a bottle of collodion. The substance dried and looked to Hyatt very much like ivory. Remembering the newspaper advertisement, Hyatt did some more work on his discovery. A few attempts later, celluloid – the first plastic in history – was created.

Plastic (named for its plasticity) then revolutionized industry. All manner of products could now be made quickly, easily and cheaply. This may be one reason why, 150 years later, plastic has become a threat to the environment.

A light material, hard to replace

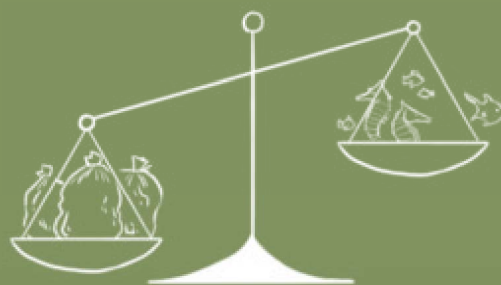
Today, around 384 million metric tons of plastic are produced annually, and this figure is rising every year. Due to the mindlessness of consumers, about eight million metric tons of that total lands in rivers, and from there it ends up in the oceans. This plastic is crushed by waves or the sun's rays and eaten by sea creatures. As a result, fish, turtles and sea birds die of hunger with full stomachs.

It is hard for aviation to give up plastic instantly. On board, weight is crucial. A plastic fork, for example, may weigh only a few grams, but metal cutlery can easily account for ten times as much. That results in increased kerosene consumption. Equally, however, even in the aviation industry many plastic products can be replaced or even dispensed with completely. This often requires a good idea, a lot of detailed work and a great deal of persuasion – as the examples on the following pages illustrate. ●

384

million metric tons

of plastic are produced worldwide each year – against just 1.5 million metric tons in 1950. Of this, some eight million metric tons end up in the oceans every year.



2050

Estimates suggest that by 2050 the world's oceans will contain **more plastic than sea creatures**. This is not just because of ever-increasing plastic waste but also because of the sharp fall in most fish populations.

2.59 kg

of CO₂ is generated in the production of one kilogram of polyethylene granulate, the raw material for the most common plastic bags. Interestingly, the complex production process for paper bags means their carbon footprint is not much better than that for plastic bags. The greenest bag is the multiple-use sort made from shredded PET bottles.

450 years

The time it takes for a PET bottle to **decompose**. This also means that even the first plastic ever made will be around on the planet for about another 300 years before it has completely decayed.



1.43 kg

of waste is left behind by the average passenger on each flight, according to the International Air Transport Association (IATA), which thinks on-board waste could double in the next ten years if no new arrangements are found.

1/10



Only about one-tenth of the **plastic waste** created since 1950 has been recycled. The vast bulk – 91 percent – has been incinerated or buried. This means there has so far been 5.7 billion metric tons of plastic waste that was not recycled. The main reason is that many plastic products are composed of a variety of plastics that can no longer be separated and are therefore unsuitable for recycling.

Change one's behaviour Goodbye environmental pest

#DoingMyBit For Késia Santos caring for the environment is not just part of her job. Environmentalism permeates everything she does in her private life, too. From biking instead of driving to reusing water, being green is a very personal calling.

Text Waldo Martin

The background: A bad habit needed breaking

Késia Santos is keenly aware of the damage plastics can do to the environment, particularly disposable cups. They have a short usage span and generate a lot of waste. Disposing of them is difficult because their decomposition process is slow and it emits polluting CO₂. In short, as Santos puts it, plastic cups have become an environmental pest. With that in mind, some time ago she noticed the large amount of cups that were being used in her unit's administrative offices and employee canteen. The same kind of cups that she knew would likely end up in our fields and, worse yet, in our oceans. Realizing that the heavy use of cups was simply a bad habit that needed to be broken, she decided to do something about it.

The idea: Reuse, save the environment ... and money, too

Santos saw that there was a need to reduce waste at her facility. There was a cost consideration as well. So, in early in 2018, she began to work with the rest of the management team to raise awareness about the importance of curtailing the use of plastic cups. In fact, they were using about 1 million disposable cups per year. The first step was to reorient the habit by motivating the administrative personnel to bring their own reusable bottles. The success of that initiative led them to extend it to the canteen, but there they took it a step further. Santos and her team decided to replace all the plastic products that were being used. That meant not only replacing the cups with reusable ones, but also the plates and all the cutlery.

The hurdle: Lack of awareness

Of course, the change didn't take hold easily. During the early stages of implementing the Waste Reduction project, as the effort came to be known, employees were reluctant. After all, using a disposable cup is just so convenient: use and then throw it in the waste receptacle. Most employees were not aware of the negative impact this seemingly harmless habit was having on the environment. So, it took an awareness campaign to make everyone understand the consequences of using so many plastic cups – and why the change was so necessary.

“Everyone can engage in similar efforts by prioritizing the importance of environmental awareness.”

Késia Freitas dos Santos Environmental Supervisor, LSG Sky Chefs, GRU

The result: Reusable cups and tangible savings

In the end, the educational campaign was successful and change was embraced. Switching to reusable products has slashed the amount of waste that was being generated in the unit, considerably shrinking their environmental footprint. But there was also a financial impact. The unit went from spending about US\$11,000 a year on disposable cups to a little less than US\$2,000 on the reusable ones. That has led Santos to firmly believe that any unit in our network can engage in similar efforts by prioritizing the importance of environmental awareness. “They just have to focus on the eventual benefits environmental measures can bring to the company, society at large and our planet,” she says.



Profile

Name Késia Freitas dos Santos

With LSG Sky Chefs since 2013

I work as... a Work Safety and Environmental Supervisor at the LSG Sky Chefs Sao Paulo (GRU) unit.

What I like most about my job is that...

I can make people aware of what it takes to protect the environment.

I want to... continue developing environmental projects.

My idea came to me through... analyzing data and calculating environmental and financial benefits.

In order for my idea to grow, I needed... support from the management and impacted areas.

It bothers me more when... people can't see the importance of sustainability.

Protecting the environment is more than... preserving natural resources. It's about preserving life.

Garbage? No way! Upcycling turns waste into something fine

#DoingMyBit It was intended as a development program for young female staff, but it turned into a new approach to handling waste. Four women at Lufthansa Cargo make upcycling respectable

Text Heike Dettmar

The idea: Not waste – inspiration for improvement

The recycling rate at Lufthansa Cargo in Frankfurt, including energy recovery, stands at almost 100 percent, but the upcycling rate is zero. So, when they kicked off in summer 2018 the four women thought: Why not pursue upcycling on a larger scale and give things a new value and purpose? The material that they rescued from the scrap heap included containers and pallets, as well as mass-produced things such as nets and string. They are being upcycled to make things like backpacks, suitcases, wall clocks and camera straps. When the prototypes were created, the emphasis was on keeping the material's previous use visible. For example, suitcases have a container number to show that this is not the first journey they have made.

The background: At first, it was about visibility

The four Lufthansa Cargo women, Daniela Simon, Christina Franz, Britta Dechent and Jule Parulewski (from left to right), met on a development program for young staff. Their mission was to create visibility – with no other requirements specified. The four of them quickly decided to use this blank template as an opportunity to do something good for the environment. Seeing all the discarded material following the launch of the new corporate design, they set to work giving a new purpose and value to the material that had been made redundant. The obsolete yellow flags were made into backpacks. What started on a small scale has become something much bigger.



The hurdle: New machines do not like old material

The bottom plates and side panels of the discarded containers have dents and stresses, both of which hamper mechanical processes. As prototype work had so far been performed only on a very small scale, some of the preliminary work had to be done by hand. This included using rollers to flatten out the aluminum. In addition, there was no budget for the conceptual project. Nevertheless, it still took up a lot of time, which the steering team of women scraped together half at work and half outside hours.

The result: Test passed

The first upcycled prototypes were recently presented at Transport Logistic. They have also succeeded in achieving visibility internally. The Chairman of the Executive Board, Peter Gerber, is the sponsor of the whole topic of upcycling and wanted to know more about the women's project. The idea is already providing prompts that are benefiting the environment. It may soon outgrow the design stage and develop its full potential. They are continuing to work on the suitcases and to fine-tune sales concepts. There are also plans to apply for EU grant funds for the nets, which are intended to be made available as a new raw material in the form of plastic granulate. If these ideas are put into practice, the environment could benefit twice over, for if less has to be disposed of, the burden on it will also be reduced. What's more, possible revenue from recycling and upcycling could be put toward environmental initiatives, for example.

Innovative ways to save the environment together

Since late summer 2018, Lufthansa Cargo has been in a cooperation arrangement with the Institut für Recycling, Ökologie & Design (IRED) and the Hochschule für Gestaltung Offenbach (HfG). The partners are looking for innovative solutions to give loading equipment and aids a new purpose at the end of their service life. For 30 students, this meant a whole semester spent analyzing materials and taking part in workshops to develop upcycling products in the form of architecture for mobile rooms and urban farming, or furniture, bags and giveaways. Resource cycles were also taken into consideration as part of this process. In addition, the manufacturer Aleon was brought on board to turn the suitcase idea into reality.



Turning it round: Disposable, not reusable

#DoingMyBit Ramon Brehmeier came across a serious environmental problem because of a customer complaint – pieces of disposable packaging at Lufthansa Technik were disappearing by the tens of thousands. This turned the engineer into a detective

Text Oliver Schmidt

The background: It began with a complaint

Ramon Brehmeier works in component overhaul at Lufthansa Technik. Here they repair almost everything in an aircraft that can be removed quickly, from coffee machines to onboard computers. The overhauled items are then sent back to customers, most of whom are airlines. In 2015, one of those customers complained that they had received a corroded component. Brehmeier – who at the time was still a specialist in Consumers & Expendables – was instructed to look into the case. His first suspicion was that the packaging was defective. Brehmeier took a closer look at the packaging used at Lufthansa Technik – Thermodyne boxes. These are robust plastic containers with foam interiors and aluminum fittings that (should) circulate in a cycle – repaired components are sent out in the packaging to customers, who send broken parts back in the same box. When Brehmeier checked his stocks, he saw that several tens of thousands of these boxes had been replaced every year with newly bought ones – which was not supposed to happen in a multiple-use system. This was both a financial and an environmental problem. He assembled a task force, and together they looked for the cause – and a solution.



The idea: Disposable, when reusable makes no sense

The team around Brehmeier soon realized that the boxes were indeed being kept by many customers and external repair service providers, because although some airlines did actually operate a cycle, others bought items from Lufthansa Technik only sometimes, as needed. Those customers were not sending broken components back but were still getting a supply of Thermodyne boxes. In many cases, these boxes are more environmentally friendly than the disposable sort. They may be more expensive and environmentally unfriendly to produce, but they can be reused hundreds of times. However, if they are sent to the shredder after only their first use, their carbon footprint will be disastrous. Brehmeier saw clearly what had to be done – reusable boxes work only if they add value. For robust, light products that do not need protective packaging, Brehmeier recommended cardboard boxes, and likewise for items sent to customers who do not have a regular materials cycle with PD COM. To do this, he adjusted the software that controls which customer receives which type of packaging to match the requirements precisely. It sounded simple, but it turned into a trial of his patience to implement.

The hurdle: Combating prejudices

Components that used to be dispatched in secure plastic boxes were suddenly supposed to travel in the cardboard alternative – was this acceptable? Brehmeier needed to do a lot of persuading to put his idea into practice. He also needed facts – which he had. He defined everything very precisely with the Hamburg Institute of Packaging. Which component required which box? How much bubble wrap was needed to protect the item? How strong did the box's cardboard need to be? What could the maximum weight of the item be? Every scenario was outlined exactly, then sample consignments were sent on a test journey, with vibrating plates to simulate a road-air-road transportation operation. Once the results were in, they worked with Lufthansa Technik Logistik Services to develop a global standard for shipping aircraft components in the future.

The result: What was the benefit?

The most measurable gain was in the cost saved by the new system. In the initial phase, Brehmeier's initiative saved €1.2 million a year. From 2019, that annual figure will be €2.1 million. It also means several tens of thousands of boxes a year will not go missing or, in some cases, be disposed of as waste. Better still, they will not need to be produced at all. This will save both resources and waste. The project has also had an impact on Brehmeier himself. The engineer, who had previously had only limited dealings with packaging, gained an in-depth knowledge of the subject. When Lufthansa Technik created a new post in the Packaging Materials Management Division, Brehmeier applied for it – and got it. In all, he did not just invent an environmentally friendly, cost-saving process – but also created his own new job at the same time.



Profile

Name Ramon Brehmeier

I work as ... Project Manager, Packaging Materials Management.

With Lufthansa since ... 2011

What I like most about my job is that ... I work with a very wide range of divisions.

In order for my idea to grow, I needed ... facts and communication.

Protecting the environment is more than ... separating waste.

#DoingMyBit The lifestyle of the world's population is draining the energy from the planet by using its natural resources faster than they can be renewed. It has taken a long time for global politics, the economy and society to realize this, so now we need to target sustainable concepts. But we are still lacking information

28 | **one** 02 2019

146,000 metric tons

of CO₂ could be saved if only recycled paper was used in homes and offices in Germany.

53%

of German paper production goes to the packaging industry – more than 12 million metric tons of paper in Germany alone. Some 284 kilograms of CO₂ are generated and around 10,000 liters of water used for every metric ton of paper produced.

July 29th

When this magazine is released, it will only be a few days until the world's population has used up more resources this year than the earth can possibly replace itself within 12 months. This point in the year, known as **Earth Overshoot Day**, falls on July 29th in 2019. In 1987, it fell on December 19. In Germany, the overshoot day for 2019 was back on May 3.

The use of natural resources has more than tripled since the 1970s, according to the United Nations' International Resource Panel (IRP). Since then, the population has doubled and is consuming the world's natural resources – the biological diversity of our environment is being lost, drinking water is becoming scarce and the climate is changing. Unfortunately, it is only because of the effects of climate change that the advocates of the sustainability principle are being listened to. New regulations such as the EU ban on single-use plastics, increasing competitive pressure and, not least, demands from society are forcing companies to come to grips with sustainable concepts. Finally.

However, discussion around oceans clogged with plastic waste still misses the fact that a material such as paper, while being less damaging on the world's bodies of water, is only marginally better for the environment because of the way in which it is manufactured – alongside a great number of trees, countless liters of water are required. At the same time, the focus on mounds of plastic waste

threatens to detract attention from the fundamental principle of sustainability that goes way beyond protecting the environment. Because it is important to consider the entire lifecycle of a product, starting with the supplier.

Alternatives are required

Growing awareness about sustainability also increases the willingness to seek alternative solutions beyond simply looking at costs in production – even for airlines. Single-use products and packaging made out of plastic, paper and cardboard are all in everyday use on board. Still, such tried and tested materials are versatile and above all lightweight, but can only be recycled to a limited extent due to legal requirements. In addition, the EU ban on disposable plastic items doesn't take into consideration the specific requirements of an area such as airline catering, which creates waste that must be burnt or landfilled. New materials could contribute to preserving natural resources and avoiding waste. Our resources are dwindling, but good ideas are not, as the work of Vladislav Voron demonstrates. ●



Conserving resources Power lies in cycles

#DoingMyBit Vladislav Voron devotes himself entirely to sustainability. As Product Manager for Leisure & Smart Solutions, he works worldwide for SPIRIANT as a consultant, supporting airlines in putting ambitious concepts into practice

Text Christian Daumann

The background: Sustainability? Nice to have!

According to the International Air Transport Association (IATA), onboard waste is going to double over the next 10 years – if nothing changes. Packaging expert Vladislav Voron knows the figures. He has long specialized in environmentally friendly products and, in the search for suitable materials, collaborates with suppliers who, like him, embody the principle of sustainability. He needs products to be resource-friendly, recyclable or degradable – and, ideally, without waste. “Sustainability used to be an optional piece of added value or a marketing slogan,” Voron recalls. Today, sustainability it is a selling point. “New statutory requirements, competitive pressures and changing attitudes in society are creating genuine interest in sustainable products. This was also a chance and an opportunity for me to change the focus of my work,” he says. Since the spring of 2018, Voron has been the first customer contact for sustainable products at SPIRIANT – purely because of the significant increase in the number of inquiries.



The idea: Rethink – Replace – Reuse

Voron works according to the cradle-to-cradle concept that, like nature, is based on closed cycles. It aims to save resources and minimize waste, emissions and energy consumption. For example, Voron is working under an exclusive deal with Dutch company PaperWise to develop (through the only project of its kind in the airline-catering sector) a product portfolio made from agricultural waste. This includes meal boxes, bowls, tray mats and drinking cups. The environmental impact of this paper-like material, produced in a CO₂-neutral manner, is 47 percent lower than that of wood-fiber paper and 29 percent less than that of recycled paper. PaperWise products can be reused and take the place of items made from plastic. The raw materials that they require, such as rice, corn, maize and sugar-cane leaves, regrow up to 40 times faster in a year than trees do.

The hurdle: Sustainability has its price

With the explosion of the interest in sustainability, it is almost possible to forget how long it took before customers were ready for it. This is because environmentally friendly alternatives make production processes more laborious and, sometimes, more expensive. But Voron no longer has to do a lot of persuading. "Right now, we are on a wave of sustainability that everybody wants to ride," the packaging expert says. "However, end consumers now also expect companies to behave sustainably." Voron has won out against cost pressures, esthetic demands and increased complexity and has never lost his nerve. "I feel privileged in that I receive so much support for my work. Everybody is willing to listen."



Profile

Name Vladislav Voron

With the LSG Group (SPIRIANT) since October 2017

I work as ... Product Manager Leisure & Smart Solutions at SPIRIANT

What I like most about my job is ... cooperating internationally and having the opportunity to do some good for my fellow human beings.

I want ... policymakers to make it simpler and possible to use sustainable materials and concepts.

My idea came to me through ... my experience as a packaging engineer.

In order for my idea to grow, I needed ... information and new laws.

It bothers me when ... suppliers do not realize (or accept) that legal rulings no longer let them make their products the way they have been accustomed to making them.

The result: Sustainability? Must have!

More than 10 airlines established contact with SPIRIANT in 2018 to be advised by Voron, and their number continues to grow. Skeptics may think this figure is insignificant, but the number is a sign of a rethink in an industry and would still have been wishful thinking just a few years ago. Voron's customers include companies that are aiming to fly without disposable plastic within a few years. They do not yet know how they will achieve it, but Voron probably already has an idea. "In a medium-sized airline, you could replace 50 million disposable plastic products with sustainable alternatives each year. This would save around 250,000 kilograms of fossil resources like crude oil and simultaneously do something to counter global warming," he says. Voron is currently examining ideas such as the potential of ethanol-based bioplastics (sugar cane).

Energy from oil: The pumped resource

#DoingMyBit Kerosene is unbeatable as an aviation fuel, especially in economic terms, but not necessarily right for the future in an age of energy transition. However, there is an alternative

Text Oliver Schmidt

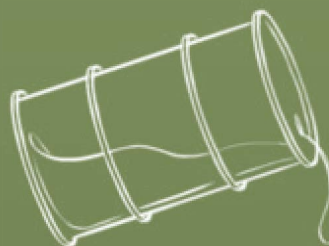
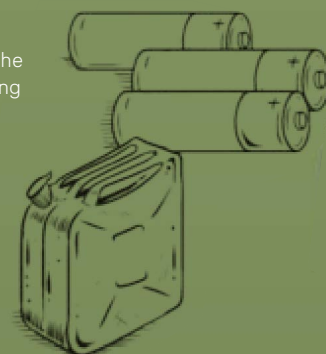
When the solar-powered aircraft Solar Impulse flew around the globe, it was sensational – despite the fact that it took more than a year to complete the feat and that, despite being as wide as a 747, it could transport no more than the weight of a medium-sized automobile. Nevertheless, everybody was now wondering whether air transportation with a large number of passengers could also be powered by electricity – with batteries or even solar power. The short answer is no. The longer answer is also no, but maybe in 30 or 40 years. This is because batteries are heavy but have relatively low energy density. In other words, they cannot store enough energy to provide the thrust that a 200-metric-ton aircraft needs for takeoff. Also, until the source of the electricity is itself climate-neutral, electric flight would mean merely replacing one harmful emission with another. Hydrogen is not a suitable option, either. The gas would have to be transported under pressure, so tanks would need to be cylindrical or, even better, spherical. In the wings, where kerosene is currently stored, that would not be possible. There is therefore no quick way for aviation to turn its back on the liquid fuel known as kerosene. However, there are two levers that would make the use of kerosene more environmentally friendly. These are the fuel efficiency of aircraft – the fleet consumption of German airlines has fallen by 43 percent since 1990 – and the provenance of the kerosene.

This is where great opportunities lie. Kerosene from an oil other than crude oil that, when burned, releases gases that have been bound for hundreds of millions of years could protect the climate. The danger here is that it must not work on the “from plate to tank” principle. Kerosene should not be made from food crops and devour large areas of land. Turn to the next two-page spread to find out how it can be done. ●



47%

of Germans, according to a survey by the YouGov institution, could envisage giving up flying for environmental reasons.



2067

The year by when the world's **oil reserves** will have been **exhausted**, according to calculations by petroleum company BP. This means around 46% of historical global oil reserves have already been used up.





357 bn

liters of aviation kerosene were consumed in 2018. This volume is equivalent to a cube with an edge length of about 700 meters.



3.15 kg

of CO₂ is produced when one kilogram of kerosene is burned.



From 2020

airlines covered by the International Civil Aviation Organization (ICAO) are committed to **climate-neutral** growth. After a transitional period, new technologies, savings on the ground and CO₂ compensation are intended to help achieve this goal.

Alternative fuels: Time to get real on kerosene replacement

#DoingMyBit Getting fuel from plants has a reputation for fighting one evil with another. Thorsten Luft thinks one solution could be kerosene made from wind power – if policymakers join in

Text Oliver Schmidt

The background: All the alternatives are no alternative

Lufthansa and alternative fuels – this is a story with its a history. Back in 2011, Lufthansa used sustainable aviation fuel (SAF) for scheduled services for six months. An Airbus A321 on the Hamburg-Frankfurt route had half its tank filled with this alternative fuel. However, doing good can be harmful too. This is because, at that time, the manufacturer still made most of its product from palm oil, so there was a storm of criticism from Greenpeace and others – even though the raw materials for Lufthansa's kerosene were abattoir waste and camelina oil. Three years later, Lufthansa's flight LH190 from Frankfurt to Berlin Tegel took off with 10 percent of its fuel composed of sugar-based SAF. Then, in 2016, around 5000 flights by Lufthansa Group airlines flew from Oslo using kerosene with a 5 percent SAF content. The Lufthansa Group's Head of Fuel Management, Thorsten Luft, says of these trials, "We gained a lot of good experience. Sadly, however, this included the discovery that it is not yet possible to obtain an alternative fuel on a long-term basis and in a way that is reliable and economically viable." There was always at least one element missing – and even though it would actually have been possible to make sacrifices on price, he took the view that the prospect of not having enough fuel available from a guaranteed source of supply was always the criterion for ruling it out. "I do not want any more trial phases – we have really had enough of those," he says. "We have to finally get serious about it."



The idea: Kerosene from wind power

In February 2019, the Lufthansa Group signed a letter of intent with Raffinerie Heide. This provides for Raffinerie Heide to supply kerosene with a 5-percent synthetic kerosene content for Lufthansa flights from Hamburg in 2024, for five years. The synthetic kerosene is set to be produced by using wind power. When wind turbines cannot feed their power into the grid because demand is too low – at night, for example – they will use the energy to obtain hydrogen from water by electrolysis and then to convert that hydrogen into a synthetic oil by combining it with CO₂ from a cement power plant in a chemical reaction. It will then be possible to obtain kerosene from that oil. This project has many advantages – it uses green energy that already exists, the distances from the refinery to the airport are short, and CO₂ that has already been created is converted again.

The hurdle: It is not yet clear whether it will work

Technologically, there is not much still standing in the way of the process. As Thorsten Luft puts it, "we are currently negotiating only about whether the surplus electricity that would otherwise be 'thrown away' will be liable for the payment stipulated under the EEG." The EEG – the German Renewable Energy Sources Act – stipulates that producers of renewable energies must receive a specified payment for their electricity. However, that amount is so high that kerosene production would not be worthwhile at present. "Lufthansa is fundamentally very open to innovations," Luft says. "As a Corporate Fuel Management Department, we have always supported SAF development and shall continue to do so. It would be a pity if the opportunity of making sustainable kerosene from surplus energy and surplus CO₂ were to be missed."

"None of us will probably experience any fuel types other than the liquid variety in commercial passenger transportation."

Thorsten Luft Head of Fuel Management, Lufthansa Group

The result: What will be the benefit?

The use of synthetic fuel from Heide will be virtually climate-neutral. This is based on the fact that the CO₂ generated in the process of burning the synthetic kerosene will already have been taken out of the atmosphere beforehand. Nevertheless, even if kerosene from wind power is a success, this will not be the answer to every problem, for this synthesis is possible only with surplus energy from wind. If the synthetic fuel were then transported by truck across the country or abroad, this would again negatively impact the carbon footprint. However, even if synthetic kerosene were not permanently available everywhere, it would still be a good start, for every metric ton of CO₂ that is saved counts.



Profile

Name Thorsten Luft

I work as ... Head of Fuel Management for the Lufthansa Group

With Lufthansa since ... 2012

What I like most about my job is that ... it lets me collaborate with a unique, highly professional team.

I want ... us, as Lufthansa, to be able to use SAF even more regularly soon.

It bothers me when ... people do too much talking and presenting and then do not put decisions into effect.

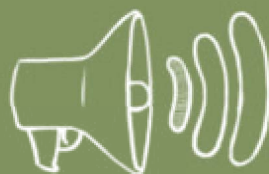
Noise: Loud, louder, jet engine

#DoingMyBit Noise is a form of environmental pollution. Although far fewer people are affected by aircraft noise than by the noise caused by trains and cars, it is very strictly regulated

Text Oliver Schmidt

As loud as a jet taking off." People often use the analogy of an aircraft to indicate that something is very loud. Regardless of the fact that today's jets are 80 percent quieter during takeoff than their predecessors in the 1960s, many people still find aircraft noise particularly unpleasant. This may be because it is generally possible for the noise to spread out from above without interruption. This is an unusual direction for noise to come from and therefore it attracts a lot of attention. In addition, jet engines, which are the main source of the noise, produce unpleasant frequencies. Experts agree that stress levels among the people affected have risen dramatically. They also suspect that this has increased the occurrence of cardiovascular disease.

This is one of the many reasons why the aviation industry is making major efforts to reduce aircraft noise. The most effective method is always to use modern, quieter aircraft. The latest generation of aircraft are much less noisy than their predecessors. For example, replacing an A320 with a new and quieter A320neo cuts the amount of noise generated during takeoff by half. Other measures include using special approach procedures based on satellite navigation that avoid major urban areas. Passive noise abatement measures such as sound insulating windows and walls also help to reduce the problem. Between 1975 and 2016, a total of €1.12 billion was invested in this area. Perhaps these efforts will lead to the expression "as loud as a jet taking off" being used less often as a comparison in a few years' time.

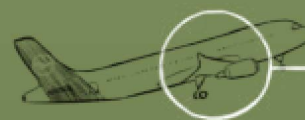
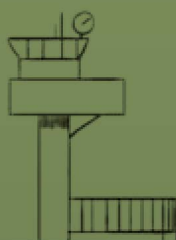


25
dB (A)

is the **reduction in the noise levels** of the latest aircraft when compared with the pioneers of the jet age. In other words, a Boeing 787 is 80% quieter than a 707.

65%

less aircraft noise is the EU's plan for Europe. The technologies needed will have been developed by 2050.



846,600

people in Germany are affected by aircraft noise (>50 dB), 6.425 million by train noise and 8.435 million by car noise.

The solution: Into the vortex

#DoingMyBit Gerd Saueressig was a member of the team that eliminated a noise emitted by the Airbus A320. This reduced the acoustic pressure by half and saved Lufthansa millions of euros

Text Oliver Schmidt

The background: A whistling sound

Aircraft in flight produce a wide range of different sounds. It is not only the jet engines that generate noise, but also components located in the flow of air over the airplane. The German Aerospace Center (DLR) discovered this in the course of a study carried out in an examination. Using microphones, the researchers thereupon recorded the noise caused by an Airbus A320 during landing and found that sounds with two different frequencies were particularly loud. Investigations in a wind tunnel enabled them to track down the source of the noise quite quickly. Two round openings on the underside of the wings were positioned in the flow of air. The principle is the same as blowing over the open neck of a bottle. To find out more about the cause, the researchers contacted the department of Gerd Saueressig, Environmental Concepts Manager at Lufthansa. In collaboration with Lufthansa, the DLR tracked down the precise origins of the sound.

The idea: Using a vortex

To remove the noise, it was essential to disrupt the air flow in front of the hole. The DLR designed a vortex generator, a trapezoidal metal component that was fitted at the front of the opening. The air flowing over the component is disturbed at each end and passes over the opening without causing any noise.

The result: What was achieved?

Starting in 2014, Lufthansa fitted its entire fleet of A320s with the component. The acoustic pressure of an approaching A320 was reduced by up to four decibels at a distance of 17 kilometers from the airport. A reduction of three decibels is the equivalent of halving the acoustic pressure. As a result, Lufthansa aircraft in Frankfurt moved down two noise classes, which led to a fall of a sum in the millions in airport charges during the first year. Most major airlines have now modified their A320s or are planning to do so.



Profile

Name Dr. Gerd Saueressig

I work as ... an expert in aircraft noise and jet engine emissions.

With Lufthansa since ... 1999

What I like most about my job is that ...

I constantly have to use my brain to understand different relationships and introduce improvements.

I want to ... identify new "vortex generators".

It bothers me when ... formalities take up a lot of time.

Is there a greener way?



#DoingMyBit Kerstin Halfmann-Kleisinger gets larger amounts of sustainable products into cabins and lounges. One part of her job involves weeding out plastic products. The other is about greater transparency

Text Claus Hornung

The scene was reminiscent of a detective at work – opening drawers and cupboards and asking what was inside and why it was there.

In fact, the participants were Lufthansa employees in a recreation of an aircraft cabin, and the activity was part of a workshop. Their aim was to find out where there were plastic objects that could be weeded out or replaced. “We dubbed it our plastic checkup,” Kerstin Halfmann-Kleisinger laughs.

Halfmann-Kleisinger has been in charge of the new Sustainability Onboard and Lounges program since April 1. Her task is to increase the sustainability of all products in the Group’s cabins and lounges. “The concept is nothing new, of course, for we are already doing a lot in a very wide range

“Today, customers do not merely want a vegetarian option – they also want to know what the packaging in which it is served is made from.”

Kerstin Halfmann-Kleisinger,
Head of Sustainability
Onboard and Lounges
Halfmann-Kleisinger has been
coordinating all Group-wide
sustainability programs for cabins
and lounges since April 1, 2019.

of areas,” Halfmann-Kleisinger says. “However, we wanted to coordinate our efforts better.”

Customers want to know more

In addition, she says, this issue is becoming increasingly important. This is partly because of legal requirements such as the EU Single-Use Plastics Directive, under which certain products are not supposed to be used anymore – and mainly because of customers. Current discussions on social media and the results of customer events contain a clear message. “Today, customers do not merely expect there to be a vegetarian option on board – they also want to know where the ingredients come from, and what the packaging in which it is served is made from,” Halfmann-Kleisinger says.

To achieve greater sustainability, first she needs information. “We have to find answers to seemingly quite trivial questions, such as how many plastic bags are actually used every day in the entire

Group,” she says. Finding out such things was also part of the purpose of the “plastic checkup.” Over those two days, the attention of Lufthansa’s product management team, the product developer SPIRIANT and cabin crews was directed toward issues such as polybags used to pack items that do not need any additional packaging.

As a first result, many polybags and other plastic packaging will disappear. To be more precise, this is equal to a total of around 18 metric tons of plastic waste on all Lufthansa European and intercontinental flights. Other things will take longer to implement, such as the search for alternatives to composite packaging. In addition, ice cubes will have to continue to be packed in plastic for reasons of hygiene – only one example that shows why a “just get rid of it” approach does not always work.

In addition, glass bottles are heavier than PET bottles and increase fuel consumption; blankets that are no longer wrapped in plastic create extra work in folding and storage and thus lead to higher costs; and stirrers made of wood instead of plastic can affect the taste of drinks. “It is a triangle,” Halfmann-Kleisinger says. “We have to see how we can balance sustainability, customer benefit and cost against each other.”

Is it actually worth all the effort – for instance, as compared with the sustainability potential of aircraft that use less fuel? “Some of these things may seem rather trivial,” Halfmann-Kleisinger says, “but if you multiply them by the number of flights, ten kilograms soon turn into a whole metric ton when looked at over the course of a year.” What is more, she notes, it is not just about the figures. “It is about what passengers see and experience on board,” she says. “We want to create an awareness, and this includes transparency – such as information about how waste is disposed of or whether the coffee is fair-trade.”

Sustainability checklist

Halfmann-Kleisinger also wants to create awareness among colleagues, so she is already planning the next “plastic checkup” – this time at SWISS and Austrian Airlines.


For that reason, she and her team are now developing a toolbox for colleagues to enable them to take environmental and social aspects into account in every decision about new products or changes to existing ones, or their packaging.

“We want to establish sustainability as an aspect that is considered automatically in future product development – a real change of approach,” Halfmann-Kleisinger says.



In her work, Kerstin Halfmann-Kleisinger often has to weigh up many aspects against each other. Slippers and blankets for cabins are one example. In the future, they will no longer be sealed in plastic. This will save on packaging, but create extra effort in wrapping and transportation.

oneFocus



Mira Kapfinger, 29, campaigns in Vienna for climate justice and sustainable mobility. She studied environmental and bioresource management and has co-founded a global network for the reduction of air traffic.

“Flying should once again be the exception to the rule”

#DoingMyBit

No compromise: “Stay Grounded” is the clear message of an international initiative to reduce air traffic. We spoke to Austrian co-founder and activist Mira Kapfinger about her views on mobility

Text Karin Willms

One: When was the last time you flew?

Mira Kapfinger: I flew to London in 2014. I wouldn't do that now in the light of my current views.

Why not?

Because since then I've become more and more aware of the repercussions. We're at a crossroads – according to the Intergovernmental Panel on Climate Change, we have eleven years to put in place drastic measures in order to bring the climate crisis back to a manageable level. And that means that, by 2030, emissions from international air traffic have to be almost 40 percent lower than they were in 2005. The current trend, however, is moving in the opposite direction.

In saying that, are you not condemning aviation as the sole cause of emissions?

Of course flying isn't the only climate killer. There are many areas of life that will have to change significantly – transport, energy policy, globalized trade. But in mobility, flying is simply the quickest route to a climate crisis; large quantities of other substances that harm the environment are emitted in addition to CO₂. The German Federal Environment Agency even suggests

that we need to further multiply the CO₂ by a factor of between three and five. In addition, emissions from aviation are increasing the fastest and there is no end to this growth in sight.

What are you looking to achieve with initiatives like Stay Grounded?

Based on current trends, passenger numbers could double or triple over the coming decades. That would mean that aviation alone would consume up to one-quarter of the global carbon budget that we consider necessary for a reasonably liveable climate. With System Change, not Climate Change! and Stay Grounded, we therefore want to raise awareness of the fact that the damaging impact of aviation can only be reduced if there are fewer flights.

How is that possible in a global, interconnected world?

Basically by questioning what constitutes necessary, normal mobility. For us in Germany or Austria, flying seems to be the norm these days, whereas historically and globally that was not the case. It wasn't normal 15 years ago to be able to purchase a flight to the Canary Islands for €30.

So is the problem actually budget airlines and frequent flyers?

There are estimates that assume only 5 to 18 percent of the population have ever flown, but there is a small proportion of people that fly too much at other people's expense. Measures to restrict air travel therefore need to be designed in a way that is socially equitable.

For example?

One idea would be a progressive tax on tickets – a tax on frequent flyers. That would be important in combination with a tax on kerosene. It wouldn't simply be a case of only allowing a smaller proportion

5

Climate-saving initiatives

1 Fridays For Future

One Friday in August 2018, the 15-year-old Swede Greta Thunberg refused to attend school in order to protest against climate change. Thanks to the #FridaysForFuture movement, millions of students around the world now strike for climate protection on Fridays.



2 System Change, not Climate Change!

The Austrian climate action group has been campaigning since 2015 for solutions to the global climate crisis. Over 130 national groups and organizations support the initiative that fights for social change and against the expansion of Vienna airport. →



3 Plant-For-The-Planet
Felix Finkebeiner founded the Plant-for-the-Planet initiative in 2007 at the age of just nine. His vision was for children around the world to plant trees to offset CO₂ emissions. The million-tree threshold was quickly reached and the new target is one trillion trees!



4 Earth Guardians educates young people around the world about the environment, climate and social justice, and was started in 1992 at a high school in Hawaii. The best-known head of the NGO is Xiuhtezcatl Martinez, who sued the US government in 2015 at the age of 15 for ignoring climate change.

5 Stay Grounded was founded in 2016 and is a global network campaigning to reduce air traffic and for a fair transport system. Active members include more than 110 organizations and groups worldwide.



of people to fly in the future through increased ticket prices, but of reducing the frequent flyers to an even smaller minority by making it less appealing to fly so often. Furthermore, cheap flight tickets are only possible because the rights of employees in the airline industry – especially at the low-cost airlines – are not respected. So we also need better working conditions in aviation.

Does that mean flying needs to be made more expensive again?

Just because a flight is expensive doesn't mean it is less harmful to the environment. Quite the opposite. Business Class tickets mean larger seats and fewer passengers being transported for the same amount of fuel. According to World Bank studies, the carbon footprint of a First Class ticket is nine times greater than that of an Economy Class ticket.

But could that be reduced through offsetting?

Offsetting creates the wrong kind of incentive – someone else reduces emissions so that I can emit more. That leaves the door wide open for profit-making climate protection projects that need to happen anyway. But they can't be used as a way of legitimizing others producing more CO₂.

How would you like the future of aviation to look?

My vision is of a world in which flying once again becomes the exception to the rule. All travel that can be achieved without the necessity of aircraft will be handled in a different way. Short- and medium-haul flights can be transferred to the railroads with no problem. Of course that also means that trains will need to be affordable and run on renewable energy.

Do you think that's realistic?

Something is shifting at the moment and a new way of thinking is already under way. In Sweden, flying is suddenly not such a modern idea, and the new trend is for environmentally friendly travel. But what's more important is not just for the consumption habits of individuals to change, but also the

“Measures to restrict air travel have to be socially equitable.”

Mira Kapfinger

Austrian climate activist and co-founder of Stay Grounded

general conditions of that consumption. As long as the norm continues to be that flying is cheaper than taking the train, it's not enough.

How do you see companies like Lufthansa in the future?

I hope that the Lufthansa of the future is a company in which the employees themselves make all of the important decisions, and that it has developed into a more diverse mobility service provider. As an example, Air France is already offering rail connections. Innovative concepts for online conferences could contribute to minimizing business travel. An important step would also be to abolish the Miles & More program in order to stop rewarding people for traveling so much, with a progressive ticket tax being introduced instead. Stopping the expansion of Frankfurt and Munich airports would also be strongly symbolic, as continuing to boost air travel is shortsighted.

What would you like to say to the 135,000 Lufthansa seats?

I would like to tell them that it requires each and every one of us to drive forward the big social change that is needed to confront the climate crisis. With this in mind, all employees should consider what contribution they can make so that their jobs will remain secure and sustainable in the long term. One suggestion might be to shift the core business from flights to other, less harmful forms of mobility. ●

“We want to drive forward climate protection”

Matthias von Randow
Executive Director
of the German Aviation
Association

#DoingMyBit

Climate protection is the central question for the future of our industry. The goal is clear: in the long term we want to fly carbon-neutrally

Text Matthias von Randow

Aviation is experiencing global growth. Over 40 percent of the German population have flown in the last two years alone. But ever more people in other countries such as China or Brazil also want to fly – for work, to visit friends and family or to see the world. Of course, that contributes to more emissions that are harmful to the environment.

So should we make flying more expensive through government measures so that it once again becomes something reserved for the rich? We do not think that makes sense – or that it could be implemented. Our task is therefore to bring flying more in line with climate protection. Our goal is carbon-neutral flying.

On the road to zero emissions

We are already making good progress along this road. First, we are investing in innovative technologies that reduce CO₂ emissions: fuel-efficient power units, lighter aircraft, more energy-efficient flight procedures. Since 1990, we have seen decreases in emissions of 43 percent per passenger. That is real, measurable climate protection.

Admittedly, this success has been partly swallowed back up by the increase in traffic, so we are taking the next step by aiming to replace fossil fuels with renewable energy sources in the medium term. This would make flying totally carbon neutral. However, there is not enough of

this type of fuel and it is not available at competitive prices, so it will take time and significantly more ambitious action from politicians in Germany and Europe. But we don't want to wait that long. That is why we're applying further leverage to reduce to zero the additional carbon emissions from the increase in traffic. This has been happening for flights in Europe over the last seven years thanks to the inclusion of aviation in emissions trading, and from next year, when the CORSIA international carbon offsetting program comes into force, it will also be the case for air travel around the world. Emissions trading and CORSIA mean that airlines will have to purchase emission units.

This will require worldwide spending of several billion dollars every year, but businesses are nonetheless committed. In this way we will achieve the goal: not a single ounce of extra carbon despite the increase in air travel! We are certain that if we commit to continuing down this road, we will achieve further measurable improvements. ●



These small energy-saving cookers use only half of the energy of open fires. Solar cookers cut wood consumption to zero, but can only be used in certain areas of Madagascar.

Cooking for the climate

#DoingMyBit One click can have a big impact. By making a small donation, passengers can offset the CO₂ emissions of their flights and help people in Madagascar to cook more energy efficiently and without harming their health

Text Claus Hornung



Madagascar was once densely forested. Now the forest is estimated to cover only 10 percent of the island.



Most Madagascans cook over open wood fires. This is inefficient and the smoke is also harmful to people's health.

Eléonore Rabotoson says that her grandmother summed up the fate of Madagascar in just two sentences. “She said that Madagascar used to be a green island. Now it is a red one.” The red color is the soil that can be seen everywhere, because the island has been almost completely deforested over recent decades. The people of Madagascar, one of the poorest countries in the world, need wood for the open fires where most of them have to cook meals for their families.

In the home of Eléonore Rabotoson and her husband Rado Luc is a small barrel-shaped device that is helping to change

things. What looks like a barrel is actually an energy-saving cooker that uses half as much fuel and therefore not only improves the Rabotosons’ lives, but also helps to reduce the number of trees being felled and the amount of CO₂ being released into the atmosphere. These cookers exist partly thanks to the Lufthansa passengers who chose to offset the carbon footprint of their flights.

Protecting the climate with a click

Offsetting is one of the four pillars of the Lufthansa Group’s climate protection strategy, alongside technological

progress, improved infrastructure, operational measures and reductions in the weight and fuel consumption of aircraft. “Until we can fly using renewable energies, every flight will produce CO₂ emissions. This cannot be helped,” says Jan-Ole Jacobs, Senior Manager Corporate Responsibility. “But we can reduce the impact.” This is why Lufthansa is working with myclimate Deutschland. The charity is supporting a range of offsetting projects, including ADES, an organization founded by Regula Ochsner, a Swiss woman who visited Madagascar for the second time after a 20-year interval and was shocked to discover how much of the island’s forests had disappeared.

Since then a local factory has been producing the energy-saving cookers from clay covered with a protective metal casing. The factory also manufactures a solar cooker that burns no wood at all,



Rado Luc and Eléonore Rabotoson outside their home with an energy-saving cooker. Rado Luc works in the cooker factory.

but this can only be used in the hotter southern regions of the island. For every cooker that is sold, a tree is planted.

The success of the project is clear from the figures. A total of 212,220 cookers have been sold and around 1.7 million metric tons of wood have been saved. This corresponds

Around 250 people work in the cooker factory and roughly half of them are women.

to an area of forest covering 88 square kilometers or 12,750 soccer pitches. More than 1.2 million people are benefiting from the cleaner cooking process.

“Offsetting alone will not save the planet, but it is an important means of reducing emissions,” says Stefan Baumeister, Managing Director of myclimate. “Lufthansa is a key partner in this area.” The coop-

eration began in 2007 when Lufthansa wanted to give its customers the option of offsetting their flights as part of its four-pillar strategy for climate protection.

Accurate emission calculations

“We researched a number of different potential partners,” says Jacobs, “and myclimate was the one that met most of our requirements. One of the decisive factors was myclimate’s guarantee that 80 percent of the money it received would go to fund high-quality climate protection projects. Many of the other organizations were not able to give a similar assurance.”

Another reason for Lufthansa’s choice was myclimate’s expertise in calculating flight-related emissions and the CO₂ calculator that the organization had developed on this basis.

It not only identifies the average carbon footprints of flights. “Our algorithm can calculate the exact amount of emissions produced per person for the specific flight that a passenger has booked, taking into account the type of aircraft and the ticket class,” says Baumeister.

According to Jacobs, another consideration that was important to Lufthansa

“myclimate projects not only help protect the climate, but also create jobs and provide education.”

Jan-Ole Jacobs

Senior Manager for environmental projects at Lufthansa



Manufacturing energy-saving cookers in Toliara. Afterward they are enclosed in a protective metal casing.



was myclimate's in-depth understanding of sustainability. "myclimate's projects not only help protect the climate, but also create jobs, provide education and improve the healthcare available for people in the countries where the projects take place."

Rado Luc Rabotson is a good example of this. He is one of the employees in the factory where the energy-saving cookers are made. In his previous job he would not have been able to afford to start a family, he says. A total of 250 people are working in the cooker factory and almost half of them are women. Their employment contracts include health insurance, pension contributions and payment of school fees, all things that are by no means common in Madagascar.

Simpler booking and offsetting process

Despite the big successes on the ground, fewer Lufthansa passengers are participating than had been hoped, according to Jacobs and Baumeister. For technical reasons, passengers who wanted to offset their flights had to go to the sep-

arate Lufthansa.myclimate.org portal at the end of the booking process. "There you had to enter all your details again," says Jacobs. "It was very time-consuming and put a lot of people off." Less than 1 percent of Lufthansa passengers made use of the option. By comparison, at Lufthansa's associated company Austrian Airlines, which had integrated the offsetting click into the booking process, 71 times as many passengers chose to offset their flights, despite the fact that far fewer people fly with Austrian Airlines.

The situation is now changing. As part of the Airline.com project, the offsetting option will be a direct part of the booking process for all the airlines in future. "This makes things much simpler," says Jacobs. The ongoing debate about the climate crisis had already increased the number of people taking part. From January to March 2019, more passengers clicked on the offsetting button than in the whole of 2018. The new booking process will definitely lead to a further significant increase in these figures, according to Baumeister and Jacobs. "It will be a quantum leap forward." ●

Selling energy-saving cookers at the market in Mahareza, a town in the interior of Madagascar.

Climate offsetting

People are used to paying to have their sewage and household waste removed, but the "polluter pays" principle does not yet apply to greenhouse gas emissions. Travelers who want to take responsibility for their emissions can only do this voluntarily by offsetting them and making a donation that helps to compensate for the CO₂ that has been emitted. myclimate runs projects that encourage a move to renewable energies, promote energy efficiency and lead to a decrease in carbon emissions. For more information, visit:

ebase.dlh.de/myclimate

We're wearing green



#DoingMyBit Lufthansa uniforms shouldn't only fit well and look good – they should also be sustainably produced

Text Barbara Küchler

Silke Metz travels professionally on a regular basis, sometimes as far as China. Her destinations are manufacturing facilities where the scarves and ties for the Lufthansa uniform are produced. Metz is a consultant for uniform management at LGBS and responsible for internal clients at Lufthansa Airlines. “For Lufthansa, it is hugely important that all elements of the uniform are sustainably and fairly produced,” she says. “We therefore make sure that social stand-

ards are maintained along the value chain – for example, that companies are certified according to the Business Social Compliance Initiative (BSCI).”

Regular monitoring

The aim of this initiative is to improve working conditions around the world. Members of the BSCI are obliged to implement the code of conduct in their supply chain, and suppliers are monitored at least every two years by independent



auditors. All parts of the uniform are manufactured by certified and audited businesses that operate according to the 100 by OEKO-TEX standard, which guarantees, for example, that all raw, semi-finished and finished textile products are processed in an environmentally friendly way.

Every year, independent testing labs examine clothing that comes into contact with the skin, such as blouses, shirts and dresses, for harmful or toxic substances. If any residue is found, the products

are removed from use and cleaned, or replacements are procured. "Fortunately, that happens very rarely," says Metz.

A large proportion of the textiles are produced in Europe. Outdoor coats and jackets, purses and accessories come from Asia. Metz and her colleagues regularly visit the main contractor DHL, the manufacturing facilities and the suppliers. "We know who is sitting at the sewing machines," says Metz. Oliver Ruehl, Head of Retained Unit Uniform at Lufthansa Airlines, has also been on quality assurance trips. Both he and Metz have been impressed by what is being manufactured in China to the highest standard, and they particularly appreciate the detailed and organized manufacturing process and the awareness of quality.

Regular incoming goods inspections are carried out at the uniform warehouse in Bremen, where more than 500,000 items of uniform can be stored over a surface area of 4000 square meters. Goods to be examined are picked out according to a test schedule, and in the event of abnormalities are sent back to the supplier. The warehouse is run by DHL, and even here, Metz and her colleagues carry out random sampling of incoming goods every quarter.

New target: packaging

"We want to turn our attention to packaging, which up until now has been made mostly out of plastic," says Ruehl. "We are still in the development stages." Packaging should be durable and also visually appealing.

So, in the future, the plastic ring around the collar of a shirt will instead be made out of cardboard. "We will replace plastic packaging wherever possible with an alternative option that is biodegradable and recyclable," says Ruehl. "At the same time, we also need to check how the shirt looks when several shirts are placed on top of each other. Do they retain their shape? Does the shelf life change with the new packaging?"

"During test runs, we check whether all components have been taken into consideration," says Ruehl. "We will continue to work on sustainable packaging, as with awareness come new ideas." ●

Keep the change!

#DoingMyBit If you'd like to get involved but don't have the time to look after projects of your own, there is a simple solution for many Lufthanses – payroll giving. This lets you round your salary down by the cent figure or a few euros. Donations like these enable help alliance to achieve great things

Text Oliver Schmidt

Option 1

You choose to **donate odd cents** and thus round your monthly transfer amount down to the nearest whole euro.

€1558.45 becomes €1558.00

→ **€0.45** goes to help alliance

Option 5

You choose a combination of **a donation of odd cents and a selected amount**. In this way, cents are rounded down to a whole number, and then the selected amount is deducted.

For example: €13

€1558.45 becomes €1545.00

→ **€13.45** goes to help alliance

Option 4

You enter a selected amount up to **a maximum of €15**, which is deducted as a donation each month through your salary statement.

For example: €13

€1558.45 becomes €1545.45

→ **€13** goes to help alliance

Statement of gross/net earnings for July 2019

Company Deutsche Lufthansa AG
Personnel number: 12345678
Name Hanna Luft
Musterstraße 22
12345 Happytown

Salary	X	X	EUR 2348.45
Deductions	--	--	-----
Tax	X	X	EUR 318.14
Social insurance deduction	X	X	EUR 471.76

Bank 1234567 Musterbank
IBAN DE123456789 XX 1234567

Amount paid **EUR 1558.45**

Option 2

You choose a **donation of odd euros worth <€5** and round your monthly transfer amount down to the nearest whole €5.

€1558.45 becomes €1555.00

→ **€3.45** goes to help alliance

Option 3

You choose a **donation of odd euros worth <€10** and round your monthly transfer amount down to the nearest whole €10.

€1558.45 becomes €1550.00

→ **€8.45** goes to help alliance

The concept of making donations out of your earned income – known more catchily as payroll giving – is not entirely new. Ten DAX-listed companies, including the Lufthansa Group, offer their staff the opportunity to round down parts of their salary and donate these amounts to social causes. Since 2017, it has been possible for 70,000 Lufthanses and about 20,000 pensioners to round their net salary down – for example, by an amount in cents to the nearest whole euro. Its success to date has been reasonable, but it still has potential – around 3300 Lufthanses are using payroll giving, and it is raising about €10,000 per month. “For help alliance this is a major part of our funding,” says help alliance Managing Director Andrea Pernkopf. “What is crucial here is not the amount of the donation but the number of participants. Here, everybody can make a difference, and even small amounts result in big totals,” Pernkopf adds. This is because, if only half of employees actively participated in payroll giving and rounded down and donated just the amount in cents from their salary, this alone would raise around 17,500 euros. “If you would like to support our projects beyond that, you can do so with a one-off or regular donation and thus do a lot of good,” the Managing Director recommends. At present, help alliance is supporting 40 projects, which are each led by Lufthansa Group employees. In all, around 23,000 disadvantaged people benefit directly or indirectly from help alliance projects. ●

What it results in

help alliance puts the donations into projects on the ground. The amount that you donate can then be turned into:



€1

A meal for one child in Benin



€5

15 days' clean drinking water supply for one family in Nigeria



€10

One school uniform for a child in Ghana

Worth knowing: Tax

In Germany (correct as of May 2019), donations to charitable organizations up to a level of 20 percent of your income can be claimed as special expenses.

→ To make this claim, when you submit your tax declaration you should also attach a copy of the second page of your December salary statement. This will show the total of your payroll giving donations in that calendar year.

How can I get involved?

Are you interested? Then register with Employee Self Service “Payroll Giving” at ebase.dlh.de/PayrollGiving. If you have any questions about payroll giving, please contact Birgit Kleff by email at birgit.kleff@dlh.de.

Participating companies

Albatros Versicherungsdienste GmbH, Aviation Quality Services GmbH, Delvag Versicherungs AG, Deutsche Lufthansa AG, help alliance gGmbH, Jettainer GmbH, LSG LH Service Catering- u. Dienstleist.ges. mbH, LSG Lufthansa Service Holding AG, LSG Sky Chefs Berlin GmbH, LSG Sky Chefs Bremen GmbH, LSG Sky Chefs Düsseldorf GmbH, LSG Sky Chefs Frankfurt International GmbH, LSG Sky Chefs Frankfurt ZD GmbH, LSG Sky Chefs Hamburg GmbH, LSG Sky Chefs Köln GmbH, LSG Sky Chefs Leipzig GmbH, LSG Sky Chefs München GmbH, LSG Sky Chefs Retail GmbH, LSG Sky Chefs Stuttgart GmbH, LSG Sky Chefs Verwaltungsges. mbH, LSG Sky Food GmbH, LSG-Food and Nonfood Handel GmbH, Lufthansa Aviation Training GmbH, Lufthansa Aviation Training Berlin GmbH, Lufthansa Aviation Training Crew Academy GmbH, Lufthansa Aviation Training Operations Germany GmbH, Lufthansa Aviation Training Pilot Academy GmbH, Lufthansa Bombardier Aviation Service GmbH, Lufthansa Cargo AG, Lufthansa Commercial Holding GmbH, Lufthansa Consulting GmbH, Lufthansa Engineering and Operational Services GmbH, Lufthansa Global Business Services GmbH, Lufthansa Global Business Services Hamburg GmbH, Lufthansa Industry Solutions BS GmbH, Lufthansa Industry Solutions GmbH & Co. KG, Lufthansa Job Services Norderstedt GmbH, Lufthansa Process Management GmbH, Lufthansa Seeheim GmbH (Lufthansa Training & Conference Center GmbH), Lufthansa Service Europa-Afrika GmbH, Lufthansa Super Star GmbH, Lufthansa Systems GmbH & Co. KG, Lufthansa Technical Training GmbH, Lufthansa Technik Aero Alzey GmbH, Lufthansa Technik AG, Lufthansa Technik Immobilien Verwaltungs GmbH, Lufthansa Technik Logistik GmbH, Lufthansa Technik Logistik Services GmbH, Lufthansa Technik Maintenance Int. GmbH, Miles & More International GmbH, Spiriant GmbH, Time Matters GmbH



Sweating for a good cause

#DoingMyBit Sport sustains good health. But employees of Lufthansa Systems are making running, cycling and walking even more responsible than ever – because the company is donating money in return for their sporting exertions. active4helpalliance has made all this possible

Text Isa Breckner

Time to leave work. For Sabine Schwenninger that means putting on her cycling shorts, jersey, helmet and sneakers and setting off on her bike. She is collecting for a good cause on her way home, kilometer by kilometer, cent by cent.

Schwenninger is just one of around 150 Lufthansa Systems employees who are cycling, walking and running in order to raise a large amount of money by the end of the year in support of help alliance. Employees from almost every Lufthansa System site have registered to take part in the active4helpalliance challenge. The fact that they can help to give slum children in the Kenyan capital Nairobi access to education, or pave the way for Mexican girls who are rape victims to start a new life is all the motivation they need.

The person behind the idea of active4helpalliance is Bernd Jurisch, Head of Flight & Navigation Products & Solutions. "The year before last I cycled home from the Christmas party. That is when the idea came to me that we could collect kilometers and transform them into a donation," explains Jurisch. "But I had no idea how to organize it." Together with colleagues from the marketing department, he started to turn the idea into reality. Employees from the Gdansk site who take part in a lot of sport helped to integrate active4helpalliance into the endomondo app, which allows runners and cyclists to record the kilometers that they cover either via a smartphone or a fitness watch. This ensures that every kilometer gets counted.

Staying fit and doing good

The campaign began on January 1, 2019. Schwenninger was involved right from the beginning. "Sport has always played a big role in my life," she says. "The campaign to collect kilometers for help alliance caught on really quickly, particularly among the cyclists here in the Lido department." For Schwenninger the campaign has two main benefits.

help alliance

help alliance is the charity founded by the Lufthansa Group and its employees. It was established in 1999 and is currently running around 40 projects around the world, most of which aim to give young people access to education. In addition, help alliance assists young entrepreneurs, for example in Senegal. Since it was set up 20 years ago, help alliance has supported around 140 projects.



"I can keep fit and make a donation at the same time. Those are two really good causes."

These were also decisive factors for the company management team that launched the campaign. "We want to demonstrate our responsibility for the health of our employees and, most importantly, our social responsibility," says Olivier Krüger, CEO of Lufthansa Systems. "That is why we are happy to support an organization like help alliance, whose projects are funded by the commitment of Lufthansa Group employees." active4helpalliance is not the first campaign that the Lufthansa Group's IT company has initiated on behalf of help alliance. Lufthansa Systems has been supporting fundraising activities for several years, for example on employees' anniversaries and at the annual Christmas tombola.

61,000 kilometers in five months

To encourage employees to take part, the management team announced that they would add 10,000 kilometers to the active4helpalliance total if the participants passed the 10,000-kilometer mark in the first quarter. "We managed much more than that, with over 20,000 kilometers," explains Schwenninger with a laugh. "No one really expected the campaign to be so successful." In May, the total had reached more than 61,000 kilometers.

Alongside the fundraising and fitness aspects of the campaign, it has another benefit: team spirit. Lufthansa Systems employees from Gdansk took part in the Gdansk marathon and the Gdynia half marathon, for example, and added a lot of kilometers. Who knows? Perhaps when the summer comes, running groups will start up in other places. "I will be there," says Schwenninger. ●

Cash for kilometers: Sabine Schwenninger (second from right) and her colleagues are converting the distances they cover with their wheels into donations.

It could all be so simple

#DoingMyBit When society demands greater sustainability, critics often oppose it by saying implementation would be too difficult. Some improvements would be feasible – if it weren't for the regulations

Text Kevin Dusch

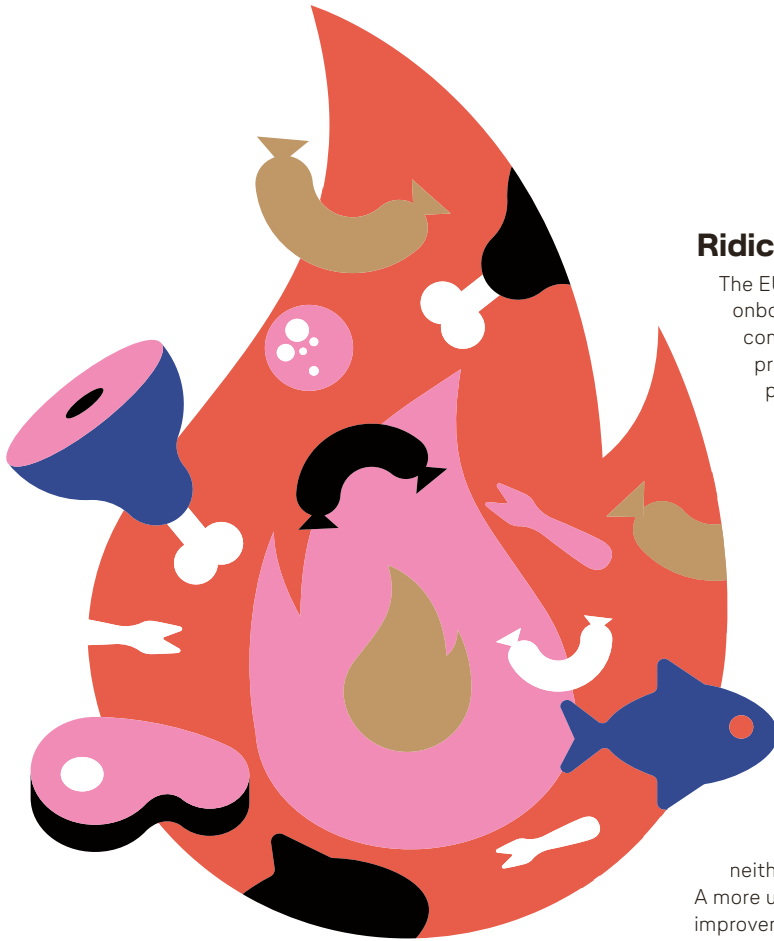


Airspace as a patchwork quilt

There is no unified European airspace – Germany alone is divided into four different airspaces. This means that, depending on the location, flight paths can cross different jurisdictions even within the country's borders. Altogether, there are 63 major air hubs in Europe that are responsible for air traffic control, often leading to ridiculous and inefficient flight routes. In 2018, one-quarter of flights in Europe were also delayed by more than 15 minutes. In total, delays were double what they were in 2017. The European Union has set itself a target of restructuring the current national airspaces according to the airlines' requirements and therefore facilitating more direct routes. The goal is a Single European Sky (SES) – a more efficient and more unified European airspace based on modern technology and aligned processes. To

this end, the EU Commission initiated the SESAR program to foster innovation in technology and standardization. The Lufthansa Group is involved in the SESAR program at all levels, from research and development all the way up to Europe-wide implementation of projects. But it will be a few years yet before there is a truly united European airspace. Until then, alongside commitment from the airlines, the largest environmental protection project in European airspace requires commitment from governments.





Ridiculous disease control

The EU stipulates that any meat left over from the onboard menu has to be burned after the flight if it comes from outside the EU. This also applies when products haven't even been taken out of their packaging. Because of this, a large quantity of edible food is destroyed unnecessarily and in an energy-intensive way. Want an example? In March 2019 alone, 750 metric tons of what is known as Cat 1 ICW (Category 1 International Catering Waste) was destroyed at Frankfurt airport. And that's just the figure for Lufthansa flights. But that's not all. Packaging that carried food containing meat, often made of single-use plastic, aluminum and cardboard, also ends up in the trash. Fabio Gamba, Managing Director of the Airline Catering Association, makes it clear that "plastics from cabin waste usually do not end up in the oceans because we operate them in a closed loop. We even could recycle some of these plastics." But EU hygiene regulations that also apply to Germany break this sustainable cycle, something that is neither good for the environment nor cost-efficient. A more up-to-date revision would be an enormous improvement and reasonably easy to put into practice.

A rethink starts with coffee

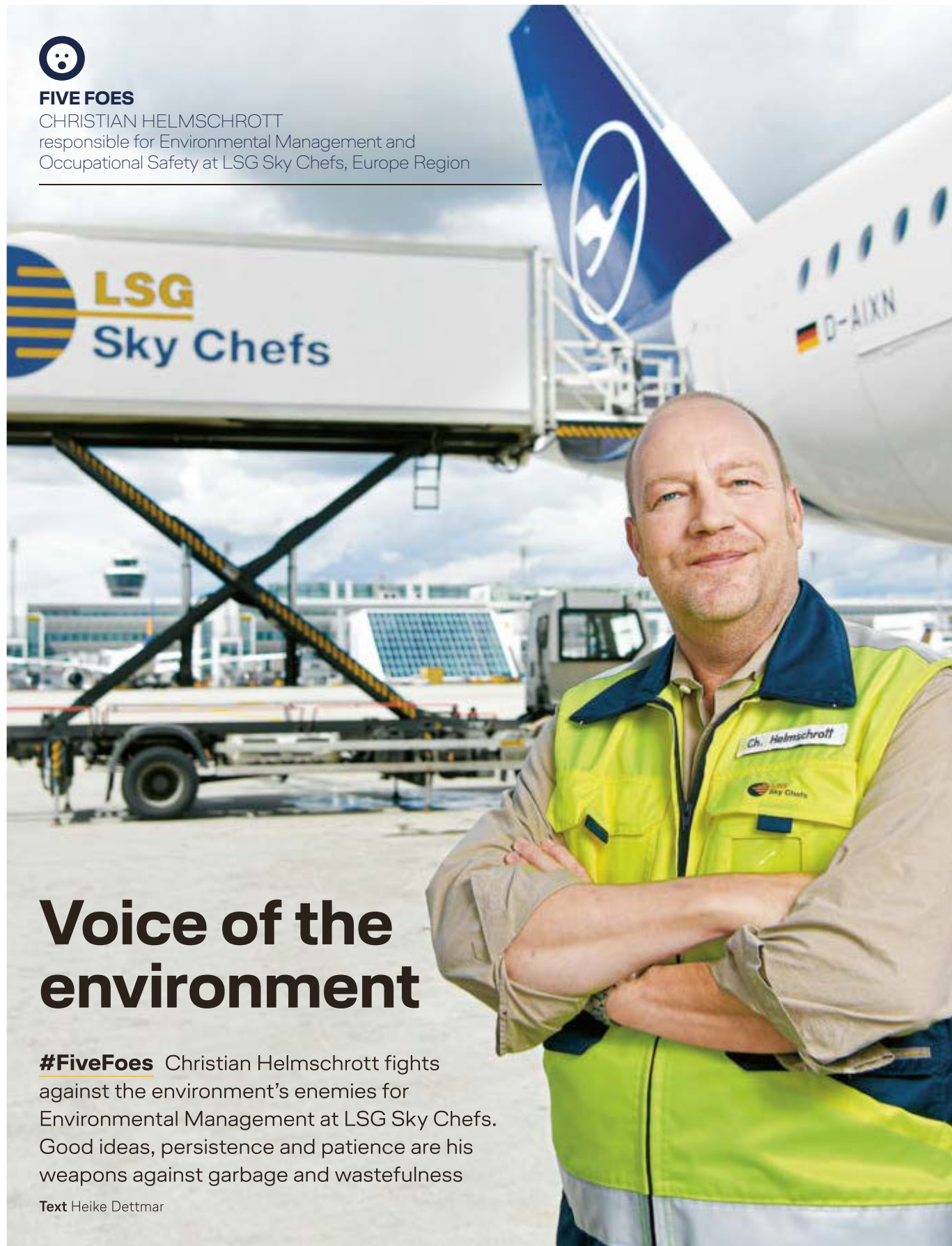
The Lufthansa Seeheim conference hotel is reasonably environmentally friendly. Coffee is no longer served in the break areas in plastic cups but rather in recyclable cups made out of cardboard. Used cups are disposed of in separate waste containers and recycled. But at the LAC in Frankfurt, as in many other locations, there are still single-use cups – even though everyone wanted to avoid them when the LAC started operating in 2006. Originally, there were only ceramic cups at the self-service coffee machines, but the system faltered with the washing up and people switched to disposable cups that end up in the trash after just one use. That's around 600,000 cups a year from the LAC alone. But now there seems to be something happening in the Aviation Center: inspired by their Seeheim colleagues, a task force is looking to introduce sustainable cups here as well. How exactly it will work remains a secret for the time being, but here's one clue we can give you: the new initiative probably won't involve a deposit system.





FIVE FOES

CHRISTIAN HELMSCHROTT
responsible for Environmental Management and
Occupational Safety at LSG Sky Chefs, Europe Region



Voice of the environment

#FiveFoes Christian Helmschrott fights against the environment's enemies for Environmental Management at LSG Sky Chefs. Good ideas, persistence and patience are his weapons against garbage and wastefulness

Text Heike Dettmar

1

Cheap plastic

The airline industry uses vast amounts of plastic. It is absolutely wrong to buy from the cheapest provider. The right approach is to take account of the costs of product value, delivery and disposal – in other words, to think about the value chain from beginning to end.



4

Crazy packaging

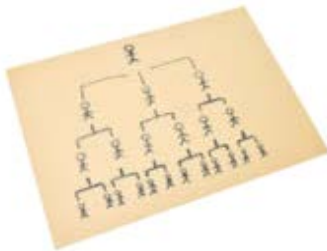
A very small item in a very large box – we've all seen it. And then the box goes into general waste or a cardboard baler and ends up as pressed bales. Less elaborate packaging would be one solution; recycling would be another.



2

Hierarchies

Getting new waste disposal ideas through the various hierarchies is really hard work, not only in applying pressure but also in getting the right information to the right people. Before you know it, a whole year has passed and nothing has changed.



5

Cigarettes

Unfortunately, I cannot give up smoking. I get through ten cigarettes in a day. However, I am careful with the waste. After all, even the filter is bad for the environment, and is far from being a harmless little bit of cotton wool. I would never simply throw the butts on the ground.



3

The false promise of e-mobility

Replacing gasoline with electricity is good in theory, but right now e-mobility is only environmental window-dressing. The manufacture and disposal of lithium-ion batteries significantly damages the environment, which is partly why there are still so few e-vehicles in the LSG fleet.



Christian Helmschrott has his hands full. On paper, his job in Environmental Management would be virtually done if he confined himself to collecting data on consumption levels. However, there is one more cause to which he has dedicated himself – waste disposal, an issue as broad as the mountains of waste are high. Here are just two examples. One is recyclable PET cups. They are set to replace traditional plastic cups on board by the end of the year, and already exist. What has not yet arrived is the new process for waste disposal on board, and later at the interface with the caterer. The other example is recycling waste trolleys. A second prototype now exists, but only after a lead time of some months. “It is all moving very slowly,” Helmschrott says.

What drives him is an “ethical commitment.” He has loved nature since childhood – he is a cyclist, a walker and a passionate fisherman. “For me, there is no doubt about it, you have to concern yourself with the environment,” he says firmly. He believes everybody has to start with themselves. He drives a natural-gas automobile, separates garbage religiously and buys local products as much as possible. The only thing that he cannot give up is smoking – although his butts do not end up in the countryside but are carried around in his jacket pocket until he finds a garbage can. For Helmschrott, one thing is clear: “We cannot abdicate our responsibility for the planet. If we do not do something, no one will do anything.”



Profile

Name Christian Helmschrott

I am ... a biologist. I'm interested in the laws that govern living things.

I have now been ... working for LSG Sky Chefs for 18 years, four of them in Environmental Management.

What I like especially about my work is that it ... is so varied.

For me, sustainability means ... thinking about the consequences of my actions.

Eating for the climate

Judging the food of the future.
Chefs (for the assessment of meals
regarding their on-board potential):
Stefan Grammel, Mathieu Castex
(LSG Group), Preparation: Alois
Strobl (LSG Group).
Tasters: Christian Daumann,
Phyllis Fercho (LSG Group) and
Steffen Milchsack (Lufthansa AG)

#DoingMyBit On average, around one-third of the CO₂ emissions produced by each person in Europe comes from food production, and animal products make up a particularly large proportion of this. We investigate what climate-friendly food without meat tastes like – and what it means for in-flight menus

Text Heike Dettmar



Beyond Meat burger with Jerusalem artichoke fries

It is just like real meat. This lab creation uses pea protein to imitate the texture of muscle fibers. Beetroot juice is the substitute for the meat juices. Plant-based meat will help to reduce the huge volume of greenhouse gases emitted as part of conventional meat production. Beyond Meat wants “to make the world a better place” and provide a sustainable supply of protein for the growing global population. The Jerusalem artichokes that accompany the burger are part of the biomass that occurs naturally on earth, but only 3 percent of this biomass can be eaten by humans. Nevertheless, we still do not fully exploit its potential. As well as Jerusalem artichokes, the 3 percent also includes duckweed and wheatgrass.

- **Flavor:** The appearance and taste of the grilled patties are very similar to those of their meaty counterparts. The consistency is slightly softer, but still pleasant.
- **On-board potential:** Burgers from Beyond Meat and patties from Impossible Burger are already served on aircraft.

Lupin bean escalopes with kohlrabi salad

Lupin beans are called the soya of the north. In botanical terms the plant belongs to the legume family, but only specially cultivated sweet lupins are suitable for human consumption. They contain a much lower level of alkaloids than the plants you see by the roadside. They are also impressively healthy. With a protein level of 40 percent, they come very close to soya beans. They contain all the

essential amino acids that the body needs and, in addition, vitamins A and B1 as well as minerals such as potassium, calcium, magnesium and iron. The plants are soil improvers and take up only one-fifth of the space needed by one cow and its feed. Until now, lupin products have mainly been found in flour mixtures of the kind used in bread, for example.

- **Flavor:** The escalopes tasted of nothing. Fried cardboard would have been just as good.
- **On-board potential:** No chance. Lupin beans are hard to process and, from an airline catering-perspective, they can also be dangerous because they can cause severe reactions in allergy sufferers.

Barbecue-style pulled jackfruit in a tortilla shell

Exotic jackfruit is the food of superlatives. It is the largest tree fruit in the world and is cultivated in many tropical countries in Southeast Asia. Its special feature is that it does not have to be eaten ripe. The green, unripe fruit is the latest meat substitute. It is about as big as a pineapple and weighs between two and three kilograms. The flesh is white and has a consistency similar to that of meat. This means that when the jackfruit is used to replace meat, no additives are needed. However, the long journey from the tropics increases the environmental footprint of the jackfruit. It has a high nutritional value, with around six grams of fiber for every hundred grams, as well as significant amounts of vitamin C, beta-carotene, magnesium and potassium. However, in comparison to meat it contains almost no protein and very little iron.

- **Flavor:** The texture is surprisingly similar to pulled pork. The taste is a spicy combination of mushrooms and artichokes.
- **On-board potential:** The basic acid notes will go well with spices. The jackfruit is definitely suitable for on-board meals.



Hybrid Thai curry with pea protein and chicken

In hybrid dishes, the amount of meat is reduced and combined with plant-based products. These dishes have all the positive features of a vegetable diet and the advantage that meat lovers do not need to go entirely without meat. They represent a transition from meat-rich to meat-free. Pea protein is one possible additive. It is extracted from yellow peas and then processed using heat and pressure to create a texture similar to chicken. Pea protein is an iron-rich source of amino acids and is also low in allergens. In addition, it has environmental benefits. The cultivation of peas uses less water and fertilizer than the production of animal proteins and also enriches the soil with nitrogen. Other popular ingredients of hybrid food include the pseudocereals that come from Central and South America, such as chia seeds, amaranth, quinoa and kaniwa with their high protein content.

- **Flavor:** Processed pea protein is fascinating. There is no difference in taste or consistency from a curry that has been made using only chicken.
- **On-board potential:** The green Thai curry made with pea protein from Amidori is already used by airlines. It is supplied by the LSG subsidiary, Evertaste.





Algae chips with algae pesto

More than 70 percent of the planet's surface is covered by water, which is where algae live. In order to thrive, this highly efficient organism just needs a little light. Algae have a positive environmental footprint. They take up very little space, are available in large quantities and grow quickly. In addition, they are highly nutritious. Around one-third of edible algae consists of valuable fiber, another third is made up of protein and the remaining third comprises important vitamins such as A, B and K, together with minerals such as iron and iodine. In Asian countries, these maritime vegetables are on the menu almost every day, but they are rarely served in Europe. Of the 40,000 or so varieties of algae that have been identified, around 160 are edible. Many of these are red or brown algae. Some taste like meat. Dulse is known as vegan bacon and a new nutrient-rich variety of red algae that has a flavor very similar to ham.

- **Flavor:** A crispy snack with a low-key salty taste and hints of bacon and the sea.
- **On-board potential:** A definite candidate for on-board use.

In the future: meat from a petri dish

The first hamburger made from cultivated meat was created in 2013 and cost more than €250,000. The first laboratory chicken nuggets went on sale recently in supermarkets in the United States for the equivalent of almost €11. The race is on in three regions of the world to turn a lab product into a mass-produced food item. In Silicon Valley, there are three companies carrying out research into clean meat: Just, Memphis Meats and Finless Food. Supermeat is working in this field in Israel, as is Mosa Meat in the Netherlands. Artificial meat is made from animal muscle cells that are cultured in the lab. The researchers' ambitious goal is to produce artificial meat that is cheaper than conventionally reared chicken. Experts believe that this could be possible within ten years, if the research and development processes receive adequate support. In vitro meat is a good way of reducing the amount of factory-scale livestock farming. It uses less water and less land and produces less climate-harmful

methane than conventional meat production. In addition, no antibiotics are required, which is why artificial meat is marketed under the name "clean meat."

- **On-board potential:** This is currently being produced at a rate of 200 grams per week, so it will be a long time before it becomes a mainstream product.
- Even if clean meat never makes it into an airline meal, the LSG Group need to stay up to date with the latest developments in this area.



Ideas without meat

Consumers are becoming increasingly aware of the impact that meat consumption has on the environment. A range of alternatives is conquering the market. For example, insect protein bars have been on sale in Spanish Carrefour supermarkets since 2018. The meals offered by LSG Sky Chefs and Evertaste are also coming under the spotlight, and the latter is increasingly incorporating meat alternatives, such as the Beyond Meat burger, into its menus.

What do you think is the biggest environmental sin?

#DoingMyBit Sustainability is a relatively new topic. Discoveries are being made in many areas and ever more threats to the environment are being identified. We want to know what Lufthansa employees consider the greatest threat to the environment

Text Kevin Dusch

“Both the **destruction of the rainforests**, the green lungs of the world, and the pollution of the seas and therefore the pollution of our own food chain are the biggest problems, in my opinion.

No other creature deprives itself of the basics for survival. To call ourselves the most intelligent of all living beings and to act in this way is beyond strange.”

Tina Alexa Ardente
Lufthansa Technik
Logistik Services GmbH



“I believe the largest threat to our environment is humanity, especially a **lack of education**.

We need to educate people, starting with the future generations, about sustainability. It needs to be included in their primary school education and continue throughout the rest of their years, so that humanity learns and become enlightened. We also need to hit all social media and television with educating news stories that bring awareness about sustainability. Sierra Club and GreenPeace need to go mainstream.”

Eugenia Pabich Lufthansa Cargo Atlanta

“I see the constant **increase in the consumption of meat** and animal-based products in general as one of the biggest threats.

In addition to the plundering of animal species and the negative effects on the human body, there is also increasing demand for water, areas for grazing, areas for the cultivation of grains and plants for animal feed, and rising CO₂ emissions. The extent of groundwater pollution should also not be underestimated. Three years ago I decided to take action and stopped eating animal-derived products, opting for a purely plant-based diet – with the result that I feel much better and fitter in general.”

Franziska Horn Lufthansa Systems



"I once watched a woman in the grocery store put a **plastic pack** of grapes into another plastic bag.

It was inconceivable and totally unnecessary in my opinion. I keep hearing that we're all powerless and that it doesn't make any difference whether we act in an environmentally friendly way or not. But the consumer has a lot of power. Every single one of us. We just need to make a decision, and maybe not just have an opinion but also a practical approach."

Julia de Neufville
Lufthansa Basis Frankfurt



"For me, one of the worst threats is the **death of insects**. If we no longer have any insects, no fruit trees and other plants will be pollinated.

For this reason, I've hung up a bug hotel in my garden and planted a lot more flowers than last year. That's my way of being sustainable."

Wolfgang Kellermann Lufthansa Technik



"**Aviation** is right up there among the biggest environmental sins.

Very soon, I don't believe it will be enough to just purchase new aircraft with better noise and fuel consumption figures. If the Lufthansa Group wants to remain successful in the decades to come, we urgently need to take on a leading role in terms of the impact of flying on the environment. This includes new fuels and power units."

Felix Schmidt-Hidding
Lufthansa Aviation Training Germany GmbH



"We alone create around 45 million metric tons of **waste** in Germany alone every year.

If we start to produce less waste, we will minimize our carbon emissions. Having our own bag to take shopping, a drinks bottle made out of glass or vinegar, as the best and most environmentally friendly alternative for cleaning would be super easy and cheap to integrate into everyday life, and the effect on the environment would be overwhelmingly positive. Making a statement is a good thing; doing something (small) yourself is decisive."

Gözde Erol Lufthansa Cargo Frankfurt

"I think our **daily life** presents an enormous problem.

We know the problems and we know who and what's to blame. But many of us don't know the alternatives. Yes, we should use a bike rather than a car, but the most waste comes from something like a toothbrush. We buy a new one every six months but it takes almost 100 years for a toothbrush to decompose. Finding alternatives to everyday items, like this bamboo toothbrush, would be a great contribution. I actually believe that there are high-quality substitutes that we unfortunately know very little about – awareness of information sources on this topic is very limited."

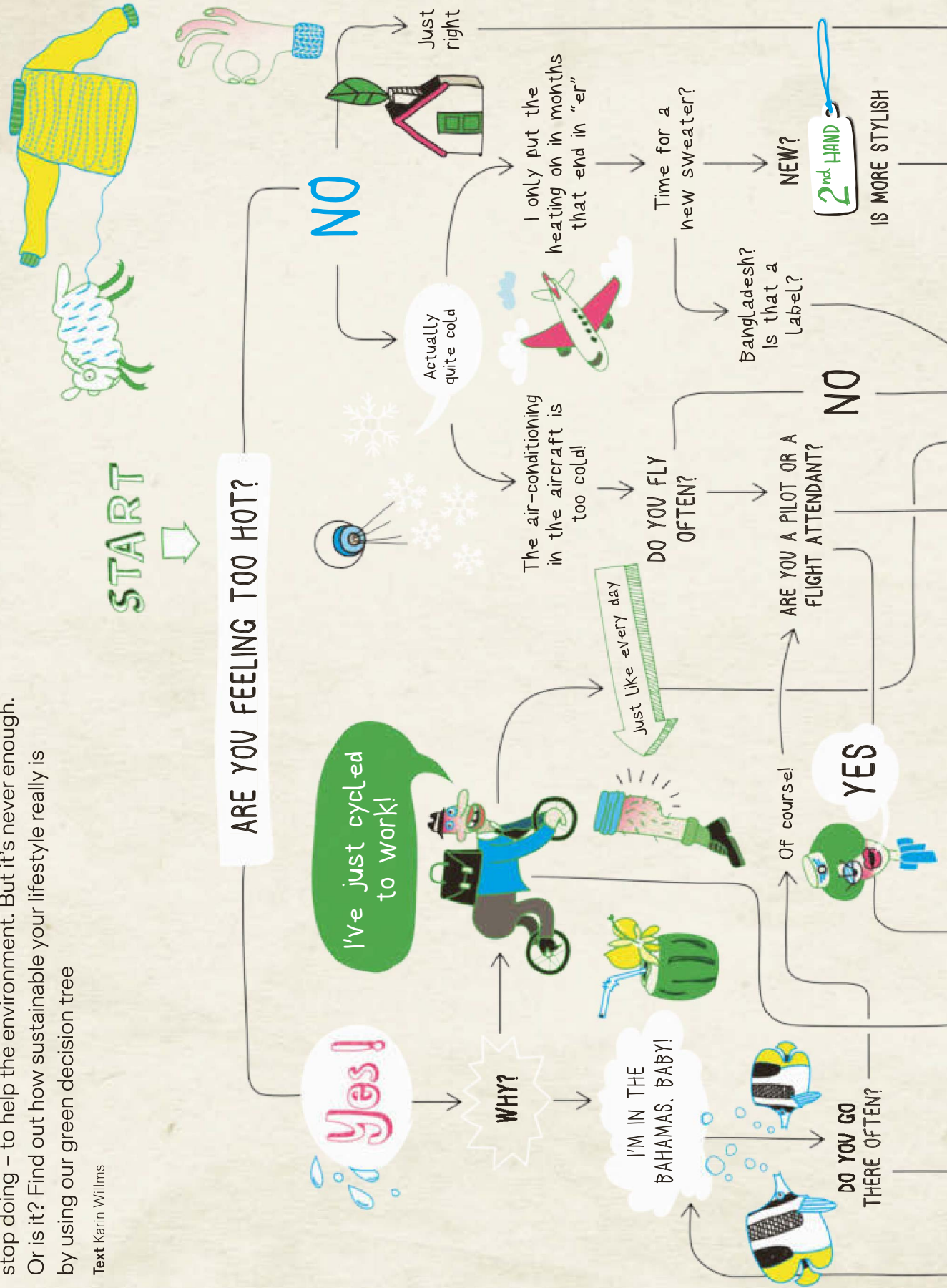
Claudia Fedorko
Lufthansa Technical Training GmbH



Should I have a greener lifestyle?

#DoingMyBit There are plenty of things we can do – or stop doing – to help the environment. But it's never enough. Or is it? Find out how sustainable your lifestyle really is by using our green decision tree

Text Karin Williams





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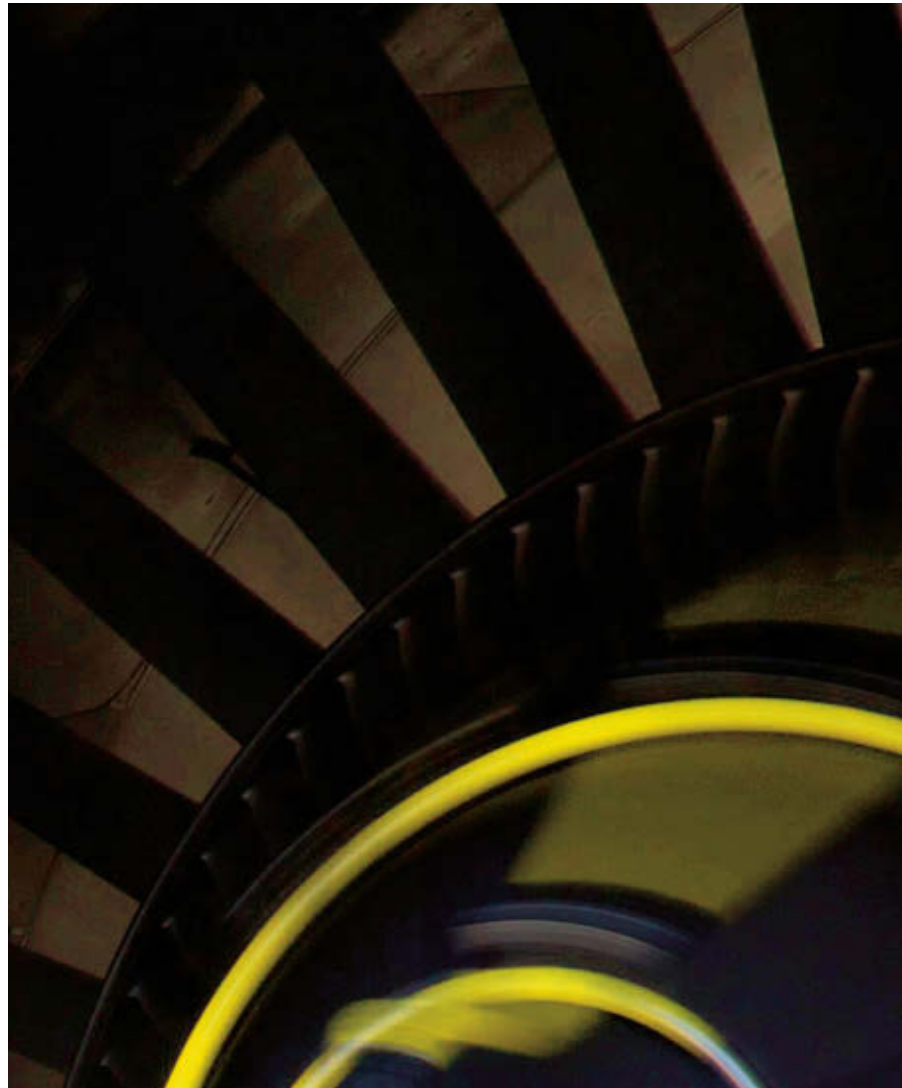
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What do you see here?

We've zoomed in on something way too close here. Can
you work out what it is? Hint: it's already taken center stage
elsewhere in the magazine.



Do you speak emoji?

In each issue of One, the hashtag represents an event, person or thing. And in the world's simplest
language: emoji. Can you tell which sustainable object we are looking for here?



? Who am I?

Do you know the game Who Am I? We're switching it up and are looking for one of the environmental heroes from this issue using the profile below. If you've been paying attention so far, you'll know who we're talking about.

- I was born and grew up in Vienna.
- I went to university and studied environmental and bioresource management.
- I regularly attend environment and climate change demonstrations.
- I am a member of an Austrian climate change action group that has been implementing solutions to the global climate crisis since 2015.
- I am campaigning against the expansion of Vienna airport. I also think it's important to stop the expansion of Frankfurt and Munich airports, too.
- In order to limit the uncontrolled increase in flight traffic, I co-founded the global Stay Grounded network.
- In my opinion, flying should not be the norm but once again something exceptional.

✉ Take part and win



Sustainability on the move: by using the Bag to Life, you're doing a good deed for the environment wherever you go

From the participants who submit correct answers to the three puzzles on these pages, we will draw one winner of a Bag to Life rucksack made from old aircraft seats, seatbelts and other components. Life vests spend an average of ten years on board an aircraft before being disposed of. But that's not the case with the Bag to Life: instead of ending up in the trash, the parts used to make it, including the parachute, life vests and their whistles, take on a new purpose – it's upcycling at its best. Further information and terms and conditions of our competition can be found at ebase.dlh.de/Quiz

Do you know the correct answers?
Write to us by October 31, 2019 at one-competition@dlh.de

nextone

✈ Preview



NEW: #Craftsmanship

Our next issue of One will be released **initially only in digital format** yet will present the analog processes that are essential to the Lufthansa Group. Be it in the kitchen, the cockpit or the workshop, we take a closer look at craftsmanship at Lufthansa.



"Lower kerosene consumption protects the environment and cuts costs. The same applies to printing and paper. Hence a digital One magazine is an important step toward greater sustainability."

Stefanie Stotz Head of Communications Strategy and Content Production



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✉ Have your say

Are you interested in our topic or do you have any suggestions? Share them with us by emailing one@dlh.de

“We all have a choice.
We can create
transformational action
that will safeguard
living conditions for
future generations.
Or we can continue
with our business as
usual and fail.”

Greta Thunberg climate activist

