ENVIRONMENTAL REPORT
2012/2013

Green business models
Combining economy with ecology

Green initiatives
Our employees' environmental commitment

Environmental balance sheet
Global facts and figures

Climate-neutral logistics solution

Environmentally sustainable, economically efficient: arvato has implemented a complete solution for the E-Plus Group, covering the entire supply chain.

arvato
BERTELSMANN


FOR THE SAKE OF OUR ENVIRONMENT:
think **green**
Achim Berg
CEO, arvato AG

Dear readers,

We are living in a time of rapid change. What's hot today may be completely passé tomorrow. We experience changes every day – some driven by research and development, others by social phenomena. This is an important process for our society. Changes and innovations simplify our life, while making the world smaller and more integrated. They make it easier for us to respond with flexibility on an international scale, to keep in touch with people and to facilitate partnerships.

That's why we at arvato actively promote these innovations for our customers. We want our current positioning to reflect where our customers want to be in the future.

This poses a great challenge for us, and also comes with a great deal of responsibility – but it's a responsibility that we at arvato are happy to take on. This responsibility extends beyond our commitment to our customers; it's also a commitment to the environment. And the issue of »sustainability« is key. On the following pages, we will show how seriously we take this issue – giving account for our environmental impacts and outlining the steps we are taking each day to keep our carbon footprint as small as possible. Here, we not only rely on the active involvement of our employees. We have also developed green business models at a corporate level, ensuring that our customers' business processes are environmentally compatible. For example, we offer carbon footprint calculations for our business partners and focus on green projects such as the Trucker League.

I hope I've piqued your interest and that you will enjoy reading the following pages and discovering the many ways we are »going green« at arvato.

Warmest regards,

Achim Berg

Contents

ENVIRONMENTAL REPORT **2012/2013**

34 The Trucker League: fuel-efficient driving

14 Raising environmental awareness: »be green Day 2013«

16 Green ambassadors: Michal Grabanski and Daniel Nisiewicz, Zerniki

Who we are

6 Value-added solutions
arvato AG

8 Our strategy
Integrated solutions for tomorrow's challenges

Green initiatives

10 Efficient power generation
New cogeneration unit in Gütersloh

12 »Emerald Isle« office goes green
Extensive modernization

13 News from France
Brief presentation of some initiatives

14 Raising environmental awareness around the world
»be green Day 2013«

16 Our green ambassadors
The unique ways our employees show their environmental commitment

22 Sustainability online
Climate-neutral websites at arvato

Special topic

24 Climate-neutral logistics
Using highly efficient logistics, we are helping the E-Plus Group achieve climate-neutral operations.

Green business models

32 Efficient IT
New data center in Sefton

34 Trucker League
Incentives for fuel-efficient driving

36 Intelligent transport management system
Environmentally friendly transport chains

36 Flexible deliveries
Click & Collect

37 Eco-friendly packaging
Optimum protection for products and the environment

38 Carbon footprints
Comprehensive assessment of emissions

40 Energy management and printing services
News from our companies

Environmental balance sheet

41 Global environmental balance sheet
Details about our environmental impacts

46 Chart of input and output
Facts and figures at a glance

48 Key environmental figures
Comparison between reporting periods

13 **100 percent mobile, zero emissions**

WHO WE ARE

Value-added solutions

What can we do today to preserve our environment for tomorrow? This is a question we have been dealing with for years. So for the fifth time in a row, we are presenting a global balance sheet of our environmental impacts and initiatives. And once again, our employees have come up with all kinds of creative ideas for promoting environmental conservation.

Not only do many of our employees transform new service ideas into concrete solutions that help our customers succeed both now and in the future; their personal commitment to sustainability also plays a direct part in our efforts to operate more sustainably as a company. This environmental report presents a small selection of these many initiatives, representing the extensive involvement of our employees as a whole. Their initiatives have already made an impact at their various sites, and they have launched projects that will improve our long-term environmental impact as well as that of our customers.

Our integrated solutions allow us to support our customers in successfully facing tomorrow's

challenges. Sustainability is being given increasing priority in this endeavor. Our environmental report highlights a few examples of how we are combining economy with ecology in our green business models – creating value both for our customers and for the environment.

Our fifth environmental balance sheet shows that we have made further improvements to our environmental reporting and that our company has undergone further changes since the last reporting period.

New trends, technologies and market developments are continuing to change our business activities and those of our customers. We have also continued to pursue our reorganization of arvato as a provider of comprehensive, future-oriented technology solutions and services. As part of this reorganization, a group of arvato print works was merged with the gravure printing facilities of PRINOVIS into a separate unit, the newly established Bertelsmann division Be Printers. The importance of digital channels continued to increase, with downloads and streaming services gradually replacing the use of physical storage media. This trend has led to a decrease in the production of CDs, DVDs, Blu-ray Discs, etc. This digital transformation in arvato's business activities is reflected in the key figures outlined in this environmental report.

WHO WE ARE

Our **strategy**

Trends alter consumer behavior, thus also changing the relationship between companies and their customers. As a result, we are constantly facing new demands as a service provider. For more than 175 years, we have been designing solutions to new challenges – and remain in a process of constant development. Yet the foundations of our success remain the same: distinctive entrepreneurship, integrated services and technology-based solutions.

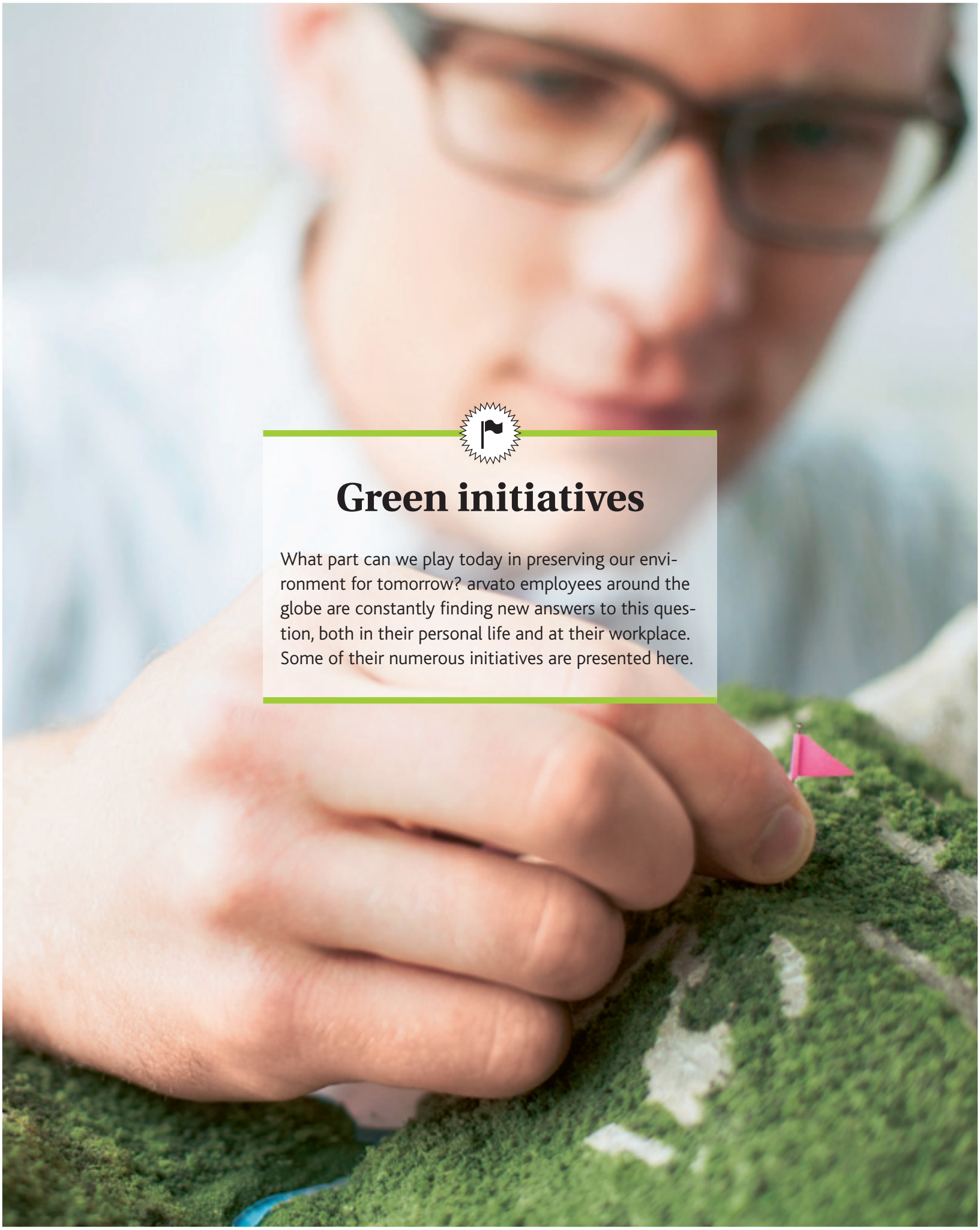
We provide our customers with customized solutions comprising digital marketing, financial, CRM, SCM, print and IT solutions as well as replication services – all connected by way of integrated IT platforms.

We support our customers on three different levels: first, we provide them with high-quality, sustainable services; second, we offer them integrated, technical solutions; and finally, as a strategic service partner, we help them to optimize their core processes in a way that creates new values.

Our global network extends to over 40 countries, and our main growth markets are Germany, France, Spain, the UK, the US and China. Our business is centered on consumer-driven industries such as telecommunications, IT/Internet, energy, automotive and healthcare, as well as on major global telecommunications, IT and Internet service providers. Our strategic objective is to create sustainable growth through systematic innovations, internationalization, flexibility, customer focus and partnerships.

At a glance

arvato AG is a leading international service provider that thrives on digital technology. More than 64,000 employees design and produce innovative solutions for business customers from all over the world, covering a wide range of business processes along integrated service chains. These solutions include digital marketing, financial services, customer relationship management, supply chain management and IT services, as well as all services related to the creation and distribution of printed products and digital storage media. The arvato group is a wholly owned subsidiary of Bertelsmann.



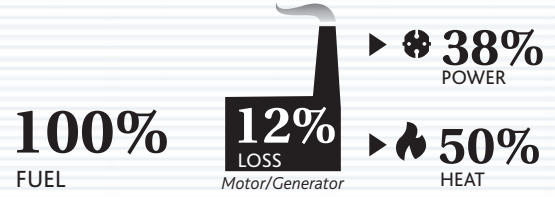
Green initiatives

What part can we play today in preserving our environment for tomorrow? arvato employees around the globe are constantly finding new answers to this question, both in their personal life and at their workplace. Some of their numerous initiatives are presented here.

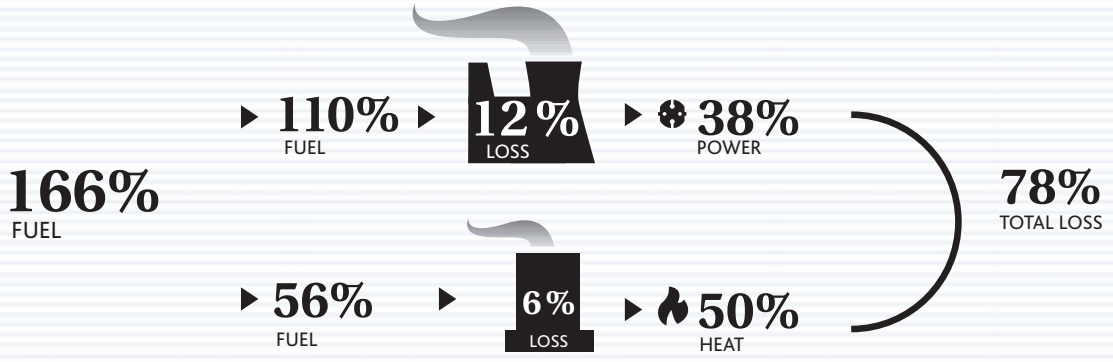
Combined heat and power

Simply put, a cogeneration unit consists of a combustion engine that powers a generator. In contrast to conventional power stations, cogeneration not only utilizes the power produced by the generator, but also the heat created during the combustion process. In this way, a cogeneration unit takes the primary energy source – such as natural gas, which is burned – and transforms it into heat and power at an approximately 90 percent efficiency rate. In the case of conventional power generation, the energy yield is only around 30 to 40 percent, with the remainder lost as waste heat.

COMBINED HEAT AND POWER
(COGENERATION UNIT)



SEPARATE GENERATION OF POWER AND HEAT
(POWER IN THE POWER PLANT / HEAT IN THE BOILERS)



Comparison of primary energy utilization (Source: Bundesverband Kraft-Wärme-Kopplung e.V.)

The new cogeneration unit

COGENERATION UNIT, GÜTERSLOH

Efficient power generation

With over 3,000 employees, the »An der Autobahn« complex in Gütersloh, Germany, is one of arvato's largest sites. It includes 17 logistics centers, six office buildings, a data center, a high-bay warehouse, and – since March 2013 – a cogeneration unit for highly efficient power generation.

In 2012 the complex required some 40 million kWh of electricity and over ten million kWh of natural gas to power the site's various buildings and installations. In order to construct the optimum cogeneration unit to meet these needs, a project team first analyzed how the facility's heat and power consumption is distributed over the course of the year.

Based on the results of this analysis, the team decided on a modular unit with a flexible output. The unit consists of two modules, one generating 800 and the other generating 400 kilowatts of electric power. Depending on the requirements at any given time, the modules can be used individually, together or not at all. Construction began in October 2012, and the unit commenced operations in March 2013. The flexibility of the existing cogeneration unit also provides security for the future, since a further module can be added if necessary.

The two existing modules have an annual capacity of six million kWh of electrical power and 6.5 million kWh of thermal power. »The highly efficient power generation in the new cogeneration unit enables us to avoid 500 tons of CO_2 emissions per year,« explains Harald Horstmann, Divisional Manager for Technology/Logistics. »This roughly corresponds to the combined emissions of 200 cars with a kilometer reading of 20,000 km each.«

»Highly efficient, highly effective: the new cogeneration unit at one of our largest sites enables us to avoid 500 tons of CO_2 per year.«

Harald Horstmann
Divisional Manager for Technology/Logistics
(Source: Logistik heute/Pieringer)

The new cogeneration unit at the »An der Autobahn« site in Gütersloh

arvato employees in Ireland have long prided themselves on their environmental consciousness. And now, thanks to an extensive refurbishment program of the office building in Dublin, they have a working environment that matches their sustainability commitments.

GREEN BUILDING

BUILDING MODERNIZATION, DUBLIN

»Emerald Isle« office goes green

arvato's office building in Dublin was designed to be as resource-efficient as possible. Innovative technologies were introduced to help with energy efficiency, such as a smart lighting system that reacts to changing light levels and the use of passive infra-red motion sensors so that lights only come on when a room is in use, minimizing electricity waste. The lighting system is also fitted with energy-saving bulbs.

Whenever possible, the building makes use of recycled materials and renewable natural resources. For example, the office furnishings were sourced from a carbon-neutral production facility accredited to LEED Gold standard by the U.S. Green Building Council, a non-profit trade association that promotes sustainable construction.

Even the employee restaurant plays its part in protecting the environment, using ionized water for cleaning, which helps to loosen dirt particles and minimizes the use of chemical detergents which can potentially have a detrimental environmental impact.

»Being environmentally responsible has always been one of the core values which runs through arvato's business in Ireland, with the infrastructure improvements being just one part of our efforts to be more conscious of the environmental impact of our actions,« explains Adrienne Bevins, CFO. »We enable our employees to create positive behavioral changes by providing them with reusable drinking bottles and encouraging re-cycling and up-cycling, with opportunities to ›bring and share‹ magazines and books in our restaurant and lounge areas.« arvato also participates in a government-backed tax-efficient initiative, the Cycle-to-Work scheme, which allows individuals to purchase bicycles through arvato and save up to 40 percent of the value through tax concessions, at the same time promoting green travel and better health all round. »Being environmentally aware is not just a nice-to-have; it's an obligation that we as an organization have to the wider society that we operate in, and arvato takes this obligation seriously.«

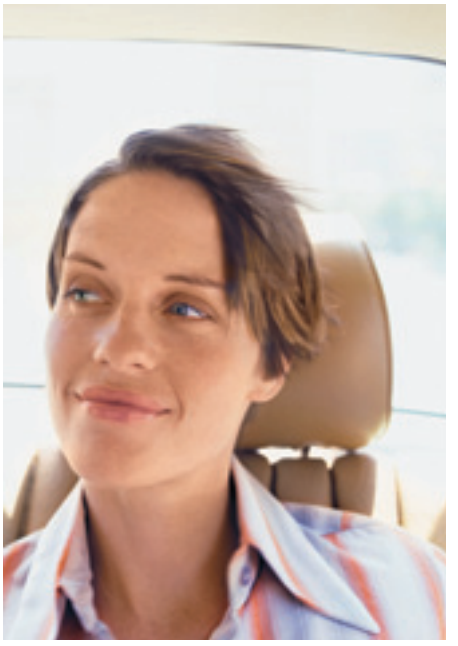
NEWS

ZERO EMISSIONS
100 PERCENT MOBILE

In June 2013, arvato employees in France had the chance to test electric vehicles with Renault for an entire day. At the Vendin-le-Vieil site, 240 employees took advantage of the opportunity to closely examine and test drive the Renault Twizy two-seater and the Renault Zoe compact model. »I had the chance to drive the Renault Zoe, which is powered exclusively by electricity and generates zero emissions and zero noise,« said Gaëtan Damman. »It was a great experience, driving an eco-friendly car while also enjoying the ›Sound of Silence‹ – as Simon & Garfunkel would put it.«

Team challenge gets employees moving

The arvato team in Chasseneuil-du-Poitou came up with an interesting challenge: For every kilometer that employees travel by foot, by bicycle or in a carpool – rather than in their own car – they can collect points, depending on the particular mode of transportation. This really encourages participation. »We're less of a burden on the environment because we produce fewer emissions – and we're doing something for our own health too,« says Guillaume Skrzelezyk, who had the highest point score for the month of May.



Online carpooling service

The team at the Coudekerque-Branche site developed a mobility project for employees in order to reduce the negative impact of traffic on the environment and the neighborhood.

A special day of action was held, in which an online carpooling service was introduced and the local bus connections were explained. An emphasis was placed on the CO_2 pollution caused by various modes of transport.

All of the employees who attended the presentation on public transport services received a free weekend bus ticket. And those who are unable to use public transport have the option of searching for carpool partners on a special website operated in conjunction with the town.

»BE GREEN DAY,« WORLDWIDE

Raising environmental awareness **around the world**

Once a year, arvato places an extra-special focus on the environment. On »be green Day« – a Group-wide global initiative – employees come up with all kinds of creative ideas for promoting environmental conservation. In 2013, for the first time, awards were presented for the best ideas.

On June 5, 2013, arvato teams around the world focused on steps they could take – whether large or small – to promote a more responsible treatment of the environment. Numerous measures were launched or continued, their long-term impact going beyond »be green Day« itself. One of Singapore's new initiatives is called the »arvato Hour,« in which all computers, monitors and desk lamps are switched off during the lunch break in order to save electricity. The »Reduce, Reuse, Recycle« program is also held regularly, providing information on how to conserve natural resources. The UK and Ireland saw the continuation of the initiative »The big switch off,« in which all employees take similar care to switch off electrical devices when not in use.

In Germany, employees planted trees and flowers in countless locations, had the opportunity to win bus tickets, and collected old cell phones and batteries for recycling. Employees also had the chance to have their own carbon footprint calculated.

Batteries were also collected in Poland. The resulting 890 kilos of batteries were donated to an organization that gives one zloty per kilo toward the reconstruction of civic buildings damaged by fire.

The team in Shanghai set up a »be green Arts Club,« which takes an artistic approach to environmental conservation. Used bottles, cans, paper and other materials that would otherwise be thrown away are transformed into decorative pieces of art.

Global competition among the arvato sites

As in previous years, arvato offered central activities for all employees to participate in. One was the previously introduced activity stream on the microsite begreen.arvato.com, where employees could post their ideas for taking a more environmentally conscious approach to everyday life. All who participated were entered into a drawing lot for an iPad.

Another activity was a competition that all arvato sites were invited to join. »We have really been impressed by our employees' involvement in ›be green Day‹ over the past years,« explains Sonja Groß, organizer of the annual environmental campaign at arvato. »We felt that this commitment needed to be rewarded, so we launched the ›be green‹ site competition in 2013.«

The objective of the competition was to develop the most sustainable and creative environmental initiative that would incorporate as many employees as possible. The winning team would receive EUR 5,000 – which they could donate to an existing environmental project or use toward their own sustainability project. Choosing a winner was no easy task for the five-member jury, who had to review countless submissions and then reach a decision.

In the end, the prize was awarded to the arvato team in Zerniki, Poland. The employees there introduced an extensive waste sorting system, launched a campaign for using natural lighting, and organized an arts recycling drive that collected materials that could no longer be used and transformed them into works of art. The jury deemed this the best and most sustainable combination of initiatives. The prize money will be invested in new, energy-efficient refrigerators for employee break rooms and a solar power system.

PLANTS MAKE SITES GREENER

BE GREEN, WEAR GREEN

RECYCLING BECOMES A WORK OF ART

PITCH IN FOR THE ENVIRON-MENT

Elena Huang, Schanghai

Jörg Schulkowski, Gütersloh

Johnny Xu, Schanghai

Tony Matthews, Birmingham

Michal Grabanski, Zerniki

Erica He, Schanghai

Yoyo Yao, Schanghai

Chen Jun, Schanghai

Daniel Nisiewicz, Zerniki

ENVIRONMENTAL COMMITMENT

Our green ambassadors

Not only do many of our employees transform new service ideas into concrete solutions that help our customers succeed both in the present and the future; their personal commitment to sustainability also plays a direct part in running the company in a more sustainable way.

There are countless possibilities for structuring one's own activities in a more environmentally compatible way – both at work and at home. Whether it's taking a more responsible approach to everyday items, waste, food, or resources such as water or energy – a good idea can go far. And with over 63,000 employees worldwide, the arvato team has great potential to make a difference, one small step at a time.

During our »be green Day« environmental campaign (see p. 14), our employees make use of a live stream especially set up for this purpose to regularly post many good ideas that can easily be implemented. On the following pages, we'd like to introduce some of our employees – representing the entire arvato team – and share their commitment to promoting sustainability. They come from China, Germany, the UK and Poland – and they are all actively pursuing their vision of a greener future.

Their initiatives have already made an impact on a local level, and they have launched projects that will also improve our long-term environmental impact as well as that of our customers. They have also inspired their colleagues to become more involved in issues relating to environmental conservation. We call them our »green ambassadors« – with good reason.

»We need to ask **more** questions«

JÖRG SCHULKOWSKI, MANAGER OF A COMPANY RESTAURANT, IS OFFERING SUSTAINABLE OPTIONS IN THE FORM OF ORGANIC MENUS AND MEAT FROM NATURAL LIVESTOCK FARMING.

If the saying is true that food holds the body and soul together, then Jörg Schulkowski and his 45 employees have a very important part to play at arvato's »An der Autobahn« site in Gütersloh, Germany. They serve up to 5,500 customers per day in the company restaurant. Each year, 77,000 servings of meat alone are served across the counter. But it's not just Schulkowski's customers that are important to him; he's also concerned about the environment. He is committed to using sustainably grown foods, serves meat from extensive livestock farming and also offers vegetarian options.

»I'm opposed to factory farming,« says the 56-year-old restaurant manager. »We want to move away from such farming practices. That's why I'm especially proud of a project we are undertaking together with the restaurants at Mohn Media and the Bertelsmann head office.« In this project, suppliers within a radius of 150 km have to prove that they are farming sustainably. »For instance, they must guarantee that animals are raised in species-appropriate conditions, that young animals are not taken from their mother directly after birth, and that adult animals are slaughtered in a stress-free environment. These are all very important aspects for me personally.«

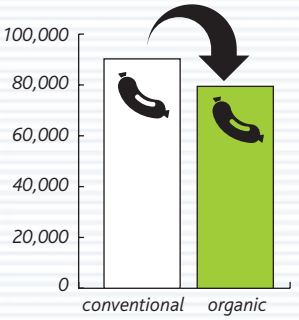
But this joint project of the company restaurants is just one step along the path that Schulkowski and his team have been taking for some time now – and with apparent success: the guests in the company restaurant appreciate the sustainable menu options that use products from responsible animal husbandry and organic farming practices. »As consumers, I think we need to ask more questions: Where is my food coming from? How are the animals treated? How is the produce cultivated?« Schulkowski wants to provide transparency in these areas, and he offers options that are just as delicious as they are »green.«

Schulkowski works in close cooperation with the general management when introducing changes in the company restaurant to benefit the environment. »We receive a lot of support from the management. I'm really pleased about this, and it's not something I take for granted.« And so, one step at a time, he and his team are helping promote a sustainable approach to the environment. »To be honest, I don't know if we always get everything right – but we're certainly trying.«

CO_2-equivalents

10,810.8 kg

of CO_2-equivalents per year can be saved by purchasing exclusively organic meat for the company restaurant.



Calculated using co2online.de/service/energiesparchecks/konsumcheck

»Save energy and **stay fit**«

E-COMMERCE SPECIALIST TONY MATTHEWS IS ALWAYS LOOKING FOR NEW WAYS TO ACT SUSTAINABLY, BOTH AT WORK AND AT HOME.

As Head of E-Commerce, Supply Chain Solutions, at arvato in the UK, Tony Matthews is responsible for developing new solutions for arvato's clients – and that includes more sustainable logistics and fulfillment operations. »As a global company our actions have an impact across the world. We have a responsibility to act in an environmentally-conscious way, to minimize our own carbon footprint and that of our clients, both in the workplace and at home,« he says.

For example, for one of arvato's US-based clients that sells its products on the British market, rather than importing each item as a completed unit, individual parts are shipped to arvato's state-of-the-art warehousing facility and assembled by the team on site. »This cuts the amount of packaging needed and saves space during transport to reduce the number of loads,« Matthews explains. Additionally, all of the packaging used for deliveries is customized to fit a specific product, further reducing the amount of materials needed.

In addition to deliveries, Matthews is committed to reducing the amount of waste through returns as well. His aim is for all unspoiled return items to be placed back into the inventory for resale, while damaged goods are repaired and resold through other channels in cooperation with the client. All leftover materials are recycled where possible. In the case of packaging, 99 percent of what is used is recycled.

Matthews is also mindful of sustainability in his personal life. »Saving energy is a good excuse to get some exercise and stay fit. I sold my car last year as a way to motivate myself to cycle more or use public transport. Wherever possible, I try to take the stairs instead of the elevator, even to reach my office on the ninth floor,« he adds. »We only get one world and it's important we do our part to look after it for future generations. By making only small changes to our daily routines in work and at home, we can reverse the negative impact.«

CO_2 savings

Tony Matthews' daily commute to and from work covers **6 km.** Based on **220 workdays** a year, his annual commute amounts to **1,320 km.**

If traveling by car

A COMMUTE OF 1,320 KM = 184 KG CO_2

If traveling by bicycle

A COMMUTE OF 1,320 KM = 100% FIT

Calculated using co$_2$-rechner.focus.de

»Waste materials are valuable«

DOING THEIR BIT FOR THE ENVIRONMENT – DANIEL NISIEWICZ AND MICHAL GRABANSKI ARE TACKLING THE TOPIC OF RECYCLING TOGETHER.

Daniel Nisiewicz, Warehouse Manager at the arvato location in Zerniki, Poland, has long been consciously trying to reduce his environmental footprint when he is not at work. He produces his own yogurt, thereby avoiding a lot of plastic waste. »It tastes better, too,« he says, smiling. When he heard about the first arvato-wide location competition in 2013, it was clear to him: »We have to take part. Whether we win first prize or not, both we and the environment only stand to win!«

No sooner was it said than done. With the support of Production Manager Michal Grabanski, the team set to work and gave its all. A strict system for sorting and recycling trash avoids waste, reduces costs and helps make arvato's customer solutions in Poland greener. Daniel Nisiewicz even came up with a special way of recycling paper that involved the families of his work colleagues: paper rolls, cardboard boxes and other paper waste can be used to create works of art in kindergartens, for example. »If you are always thinking about what you can use waste materials for, you treat them with a lot more care,« he explains. »And then waste materials become valuable resources!«

The team in Poland is also very conscious of environmental protection and the economic use of resources in other respects: »Leaving the car at home, switching off lights when the sun is shining outside – sometimes it's just small things,« says Michal Grabanski. »But if everyone does their bit, lots of small things can turn into something big!« And the efforts of the team in Poland were recognized when it was crowned the winner of the site competition (see p. 14).

Waste management

With its new waste management system, the logistics center in Zerniki accomplished the following in 2013:

RECYCLING OF 200 TONS OF PAPER PACKAGING AND 25 TONS OF PLASTIC PACKAGING

REUSE OF 25 TONS OF PAPER (CUT ON SITE) AS FILLING MATERIAL, RATHER THAN SPECIAL BUBBLE WRAPPING

»Taking **new directions**«

IN CHINA, YOYO YAO HAS ESTABLISHED THE BE GREEN ARTS CLUB, WHICH PROMOTES ENVIRONMENTAL PROTECTION IN FUN AND CREATIVE WAYS.

Day after day, Yoyo Yao and her colleagues in Shanghai recognize the importance of environmental and climate protection: »There is hardly anywhere else in the world where the negative impact of environmental pollution can be seen quite as clearly as here. The smog increases every day, and the city's inhabitants long to see blue sky again – it's been a rare sight this winter,« she says. Recently, in the winter of 2013/2014, fine-particulate air pollution once again reached critical dimensions in various major cities in China, far exceeding the limits set by the World Health Organization. »That's why environmental protection has been an issue of particular importance for all of us for quite some time. We are mindful of saving energy, not wasting water, and so on. Now I'm wanting to take a new direction and encourage more creativity.« Her idea: the be green Arts Club – a venue for all employees who want to use their creative vein to make little works of art and useful items out of discarded objects. Crafting is, after all, a popular pastime in China. »The club offers people the chance to focus on the important and serious topic of sustainability in a way that is also fun.«

Fabric remnants, for instance, have been used to make stuffed animals; a burned-out light bulb was transformed into a small biotope; and an old cardboard box was made into a board game. All of the items were put on display, giving the employees of arvato China the chance to choose their favorite. They were most impressed by the work of their colleague Elena Huang: she used a wedding invitation and other materials to create a satchel. »Of course, our Arts Club doesn't solve every problem,« says Yoyo Yao. »But it's a step in the right direction, and it raises awareness.«

CLIMATE-NEUTRAL WEBSITES AROUND THE WORLD

Sustainability **online**

More than 60 websites belonging to various arvato units have their technology centralized in an interconnected system. These sites have operated in a climate-neutral way since spring of 2012, offsetting unavoidable emissions by supporting a certified environmental project.

The first step involved calculating the web server's power consumption. Then a carbon footprint was generated which registered the amount of harmful greenhouse gas emissions actually produced during the operation of the web server. These emissions are now being offset through emissions savings in a climate protection initiative in Africa – more specifically, in a water purification project in Kenya (see box). »Experts believe it is most effective to carry out climate protection projects in developing or newly industrialized countries, since this is where the highest emissions savings can be achieved,« explains Sonja Groß, Marketing Manager at arvato.

Environmental project in East Africa

The water purification project that arvato is supporting in Kenya is one of the largest non-government funded projects in the country. The initiative provides rural households with water filtration systems that run without electricity or fuel.

In the past, households have had to boil water in order to kill off germs; this required burning wood. The filtration system makes this step unnecessary. As a result, the project eliminates two million tons of CO_2 emissions each year and considerably improves public health. After all, contaminated drinking water poses a significant health risk: according to World Health Organization statistics, diarrhea is the third leading cause of death in Kenya.

Green business models

Our integrated solutions allow us to support our customers in successfully facing the challenges of the future. The following examples are just a few of the ways in which we are combining economy with ecology in our green business models – creating value both for our partners and for the environment.

Climate-neutral logistics

Efficient and sustainable

The E-Plus Group aims to achieve climate-neutral operations by 2020. With highly efficient logistics services, arvato is helping the company to reach this ambitious goal and to quickly respond to changes in the market with first-rate service. At the core of this solution is a climate-neutral logistics center.

André Berninger (Director of Procurement, E-Plus) and Martin Stirm (Vice President of Logistics at arvato, left to right) at the opening of the facility in Marienfeld

How does one go about designing such a climate-neutral site? This was the very question faced by Christoph Kortmann, Lean Management Consultant at arvato, along with his team. »The four principles we pursued from the very start were: prevention, reduction, substitution and offsetting,« Kortmann explains. The team was also committed to meeting the high demands of the E-Plus Group regarding service quality and speed. With these considerations in mind, the new logistics hall in Marienfeld (near Gütersloh, Germany) was developed to support optimized workflows and environmental aspects. Construction began in December 2011, and the logistics team moved into the building in the spring of 2013.

The site features numerous optimizations that ensure an efficient use of resources. An advanced

insulation of the façade helps prevent energy losses. Conveyor belts are operated with efficient motors and only run when needed. The forklifts are equipped with efficient electric motors, and LED lighting is used instead of fluorescent tubes. The hall's underfloor heating system is powered by geothermal energy – a free and renewable resource supplied by a collector field under the hall. Three brine heat pumps generate a total of 256 kilowatts, which corresponds to the heat output of 30 single-family homes. Electricity is also generated by renewable means: a solar power system on the roof of the hall generates an output of 900 kWp – equivalent to the energy consumption of the entire facility.

Various measures are also in place to reduce the amount of waste produced. Instead of using plastic straps to package products, the facility uses paper tape with a cornstarch-based adhesive. And the optimum packaging size and method are determined for every shipment that leaves the facility. The result of these combined measures: »We were able to reduce CO_2 emissions by 30 percent in comparison with our previous logistics hall,« says Kortmann.

To make the site climate-neutral, however, the emissions that are currently generated have to be offset. In order to accomplish this, a carbon footprint is generated from the time a product arrives in Marienfeld until it is transported to the recipient. Inside the warehouse, special software collects relevant data – such as energy consumption or the volume and weight of packing units – for the individual stages of the process. For the final conveyance of goods to consumers and E-Plus Group shops, we only use logistics providers who can provide information on their transport emissions. To ensure that any additional trips are considered in the calculation, an extra five percent is added to the figure for transport emissions in the carbon footprint. arvato then offsets the resulting total CO_2 emissions through investments in a climate protection initiative (see box on p. 22).

Christoph Kortmann, Green Services Logistics Engineering, arvato

»When planning the new hall, the principles we pursued from the very start were prevention, reduction, substitution and offsetting.«

E-PLUS

E-PLUS GRUPPE arvato BERTELSMANN

LONG-TERM **PARTNERSHIP**

The E-Plus Group – which encompasses brands such as BASE, Simyo and AY YILDIZ – is one of Germany's largest mobile telephone network operators. Around 25 million customers telephone, send texts or surf using the network provided by the company.

E-Plus has relied on the services of arvato since 1994. The partnership began with arvato's distribution of the first E-Plus cell phone model, the PT-11, and further services gradually followed. Today, the range of services includes the handling of forward and reverse logistics, warehousing, packaging SIM card starter packs, controlling the production processes and transports, repairing devices, processing warranties and managing invoices.

The logistics hub for the E-Plus Group is arvato's 7,200 m² site in Marienfeld. All relevant sales channels are managed from this location. One million packages are sent out each year, both to consumers and to BASE shops. More than 98 percent of the orders are delivered the next day.

Climate-neutral logistics

At a glance

arvato's state-of-the-art logistics facility contributes considerably to the E-Plus Group's carbon footprint. Here, all of the processes throughout the service supply chain are managed in a highly automated way.

The range of services includes the handling of forward and reverse logistics, warehousing, packaging SIM card starter packs, controlling production processes and transports, as well as providing services such as device repair, warranty processing and invoice management.

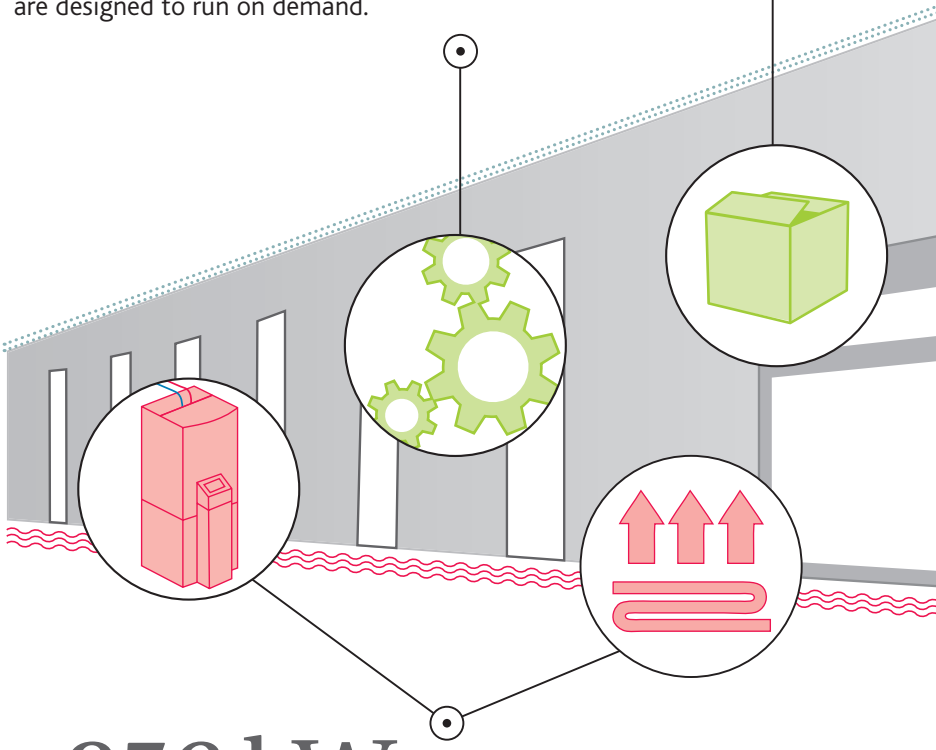
When the logistics hall was designed, consideration was given to both economic and environmental aspects. Thus, the facility not only provides efficient service processes, but also implements countless measures to avoid waste, save energy and reduce emissions – whether by using geothermal energy supplied by a collector field under the hall, or by generating renewable electricity through a solar power system on the roof.

Less packaging

The optimum packaging size and method are determined for every shipment that leaves the facility.

Run-on-demand operation

The conveyor belts use highly efficient motors and are designed to run on demand.



256 kW

The hall's underfloor heating system is powered by geothermal energy, with three brine heat pumps providing a thermal output of 256 kW.

16 tons less plastic

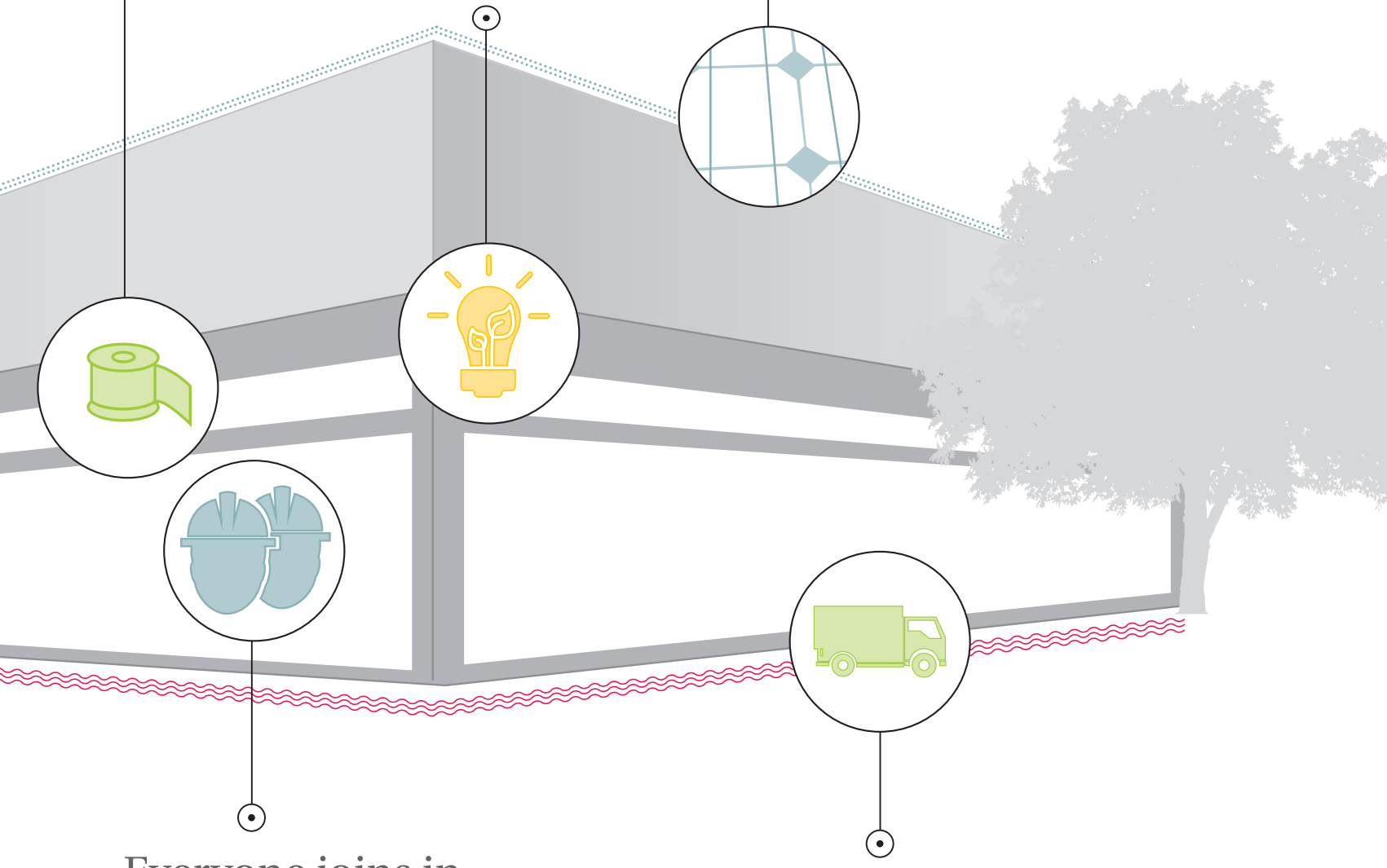
Packages are sealed with wet adhesive tape made from recycled paper, rather than with polypropylene tape.

900 kWp

A solar power system on the roof generates renewable energy.

Lighting

Efficient lighting is supplied by LED bulbs outdoors and by T5 tubes indoors. This saves some 33,000 kWh of electricity each year.



Everyone joins in

Every employee plays a part in saving energy.

Delivery

The company offsets CO_2 emissions that result from transporting goods and supplies.

An interview with Dr. Karsten Menzel and Jannine Schrön

Everything's in the green

An interview on the topic of sustainability with Dr. Karsten Menzel, head of the Environment, Health & Safety Department at the E-Plus Group, and Jannine Schrön, Key Account Manager at arvato.

The E-Plus Group is pursuing the goal of establishing climate-neutral operations by 2020 – which is no easy task for a telecommunications provider with a high level of energy consumption. How much progress have you made so far?

Menzel: Conservation, efficiency and renewable energies – the E-Plus Group is making simultaneous adjustments in these three key areas on its path to sustainability. And we're making good headway in all three areas. For example, we have been able to achieve significant savings just by using more energy-efficient ventilation systems – which have already replaced the outdated air-conditioning systems at 200 mobile communications sites. Modernizing our network has also shown significant returns, with efficiency improved by more than 13 percent since the year 2009.

Moreover, we have implemented some exemplary projects in the field of renewable energies. We are especially proud of our two self-sufficient mobile base stations that supply themselves with energy from solar power, wind power and fuel cells; a third base station is also set to begin operations very soon. Furthermore, our main data center is powered by its own biogas plant.

What does sustainability mean for E-Plus?

Menzel: In recent years, the name E-Plus has achieved a very high level of recognition among the public, because we have democratized mobile communications and made it accessible to everyone. This role makes it clear that we are focused on the future and offer sustainable products and services. We are also fully convinced that sustainable economic activity is the only way to ensure long-term success.

You also place an emphasis on sustainability when choosing your external service providers. How do you determine how sustainable a company's operations are?

Menzel: Since our service providers are integrated in a chain of suppliers and partners, it's very important to us that they share our environmental strategy. That's why we strongly emphasize credibility in choosing our partners and verify their sustainability. Also, within the framework of our partnership, our suppliers are audited to see if the companies are abiding by the contractual terms.

What issues are especially important to you in this regard?

Menzel: In the end, it's always a comprehensive end-to-end examination of the various processes, not just limited to partial aspects; it's a holistic view, extending from a company's raw materials to their recycling practices.

What are the determining criteria for you when deciding to partner with a particular service provider: economic, social or environmental aspects?

Menzel: All three criteria are important to us. After all, environmental, economic and social aspects must go hand in hand for a company's sustainability to be credible. If we did things that weren't environmentally sound, we wouldn't experience sustainable success and wouldn't gain support from within our own ranks. The same applies to the other aspects: if there is a weak point in one of the areas, it affects the success of the other areas.

What made you decide to partner with arvato in developing a »green« logistics facility?

Dr. Karsten Menzel, Head of Environment, Health & Safety, E-Plus Group

»Environmental, economic and social aspects must go hand in hand for sustainability to be credible.«

Menzel: For one reason, we've been collaborating with arvato for several years already. For another, arvato's combination of economic, social and environmental aspects was a perfect fit – we were altogether satisfied with the integrated approach of the partnership.

What components make the logistics center in Marienfeld a »green facility«?

Schrön: The new logistics center produces 30 percent less carbon emissions than the old location, thanks to various measures that have been implemented: the solar power system on the roof, the geothermal heating system that supplies the entire logistics installation, and the use of the latest insulating materials that reduce energy costs.

Were these components already specified at the outset, or were you consulted during the development process?

Schrön: arvato also took on a consulting role in the planning of the logistics facility. We have experts in our specialized departments who focus exclusively on integrated logistics concepts and the related environmental challenges. In fact, their profound expertise and extensive practical experience were a decisive factor in our partnership with the E-Plus Group having moved into the next phase.

Menzel: Since arvato's overall concept was strong and harmonized with our sustainability strategy, we were happy to consult with them during the course of developing the facility. Our partnership has always worked very smoothly.

Dr. Karsten Menzel

Dr. Karsten Menzel has served as head of the Environment, Health & Safety Department at the E-Plus Group since 1997 and is in charge of issues such as environmental strategy and management. In this position, he promotes the environmental strategy of the mobile communications company and ensures that all processes – from development to operations – are optimized in terms of their environmental impact.

Jannine Schrön, Key Account Manager, arvato

»Increasing numbers of customers want support in implementing their own sustainability measures.«

How are the emission reductions calculated, and by whom?

Schrön: A special software tool is used for the calculation; it documents figures such as the exact amount of energy consumed, the expenditures for waste disposal, the consumption of paper and all additional materials that are used in logistics processes.

This makes it possible to account for all emissions along the value chain, resulting in a total figure of CO_2 emissions produced. After accounting for the greenhouse gases already offset in our external logistics (by transport services providers who account for their own emissions), the carbon footprint for our internal logistics is then calculated and the emissions are offset through corresponding carbon credits.

Apart from the facility, in what areas are you still making adjustments to guarantee the sustainability of your logistics operations?

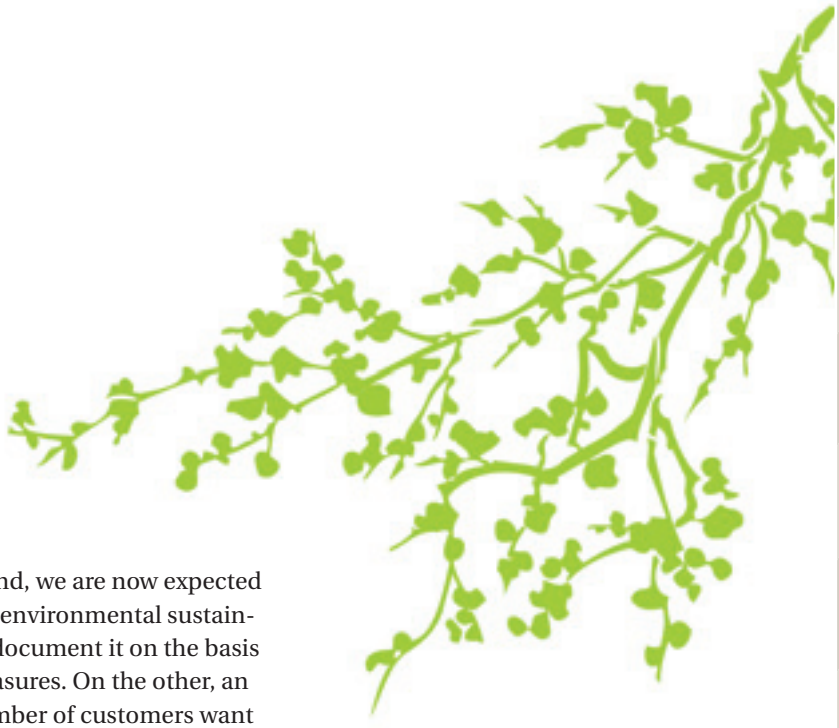
Menzel: Of course, we also want to handle shipping in the most climate-neutral way possible. For deliveries to the end customer, we are working with logistics service providers such as DHL and Hermes, who are known for their environmentally compatible shipping solutions. By bundling goods, we have also succeeded in substantially reducing the number of transports to the store chains we deliver to. Here, too, we pursue the end-to-end approach mentioned earlier, in order to achieve significant reductions in CO_2 emissions.

Are these measures developed in cooperation with each other, or in some other way?

Menzel: We work in close cooperation with arvato, since the company's posi-

Jannine Schrön

Jannine Schrön has been Key Account Manager at arvato since 2007 and supports customers from the telecommunications sector. Not only does she serve as a principal point of contact, she also supports her customers in developing and optimizing their products, services and processes.



tioning is so compatible with our own. Together, we are ensuring that our entire process of distributing our devices to shops or the end customer has been structured as green as possible.

To what extent are companies prepared to pay more for sustainable logistics facilities?

Menzel: The question is whether or not it really costs more in the end. The short-term initial investments certainly exceed those of a »normal« facility – owing in part to the newer technology. However, these initial investments pay off over the long term, since geothermal heating and solar power allow for self-sustaining operations. That's why this type of project is usually planned for the long term. Although economic aspects played an important part in our negotiations with arvato, the environmental and economic factors cannot contradict each other. They must work hand in hand – like arvato's concept does.

Schrön: We are also noticing that environmental issues and aspects are increasingly becoming a component of tenders and are being emphasized more than they were a few years back. On the one hand, we are now expected to present our environmental sustainability and to document it on the basis of specific measures. On the other, an increasing number of customers want support in implementing their own sustainability measures – particularly the offsetting of CO_2 emissions.

How relevant to the market are sustainable service solutions such as »climate-neutral logistics«?

Menzel: If we want to continue advancing Germany's energy transition, everyone has to play a part – namely, in the three areas of conservation, efficiency and renewable energies. The E-Plus Group is already trying to implement these concepts in their network. It's clear to us that, at the end of the day, this commitment will pay off and ensure our company's long-term success. Ultimately, only companies that take responsibility and clearly show where they stand on climate and environmental protection will be able to win over customers with their service.

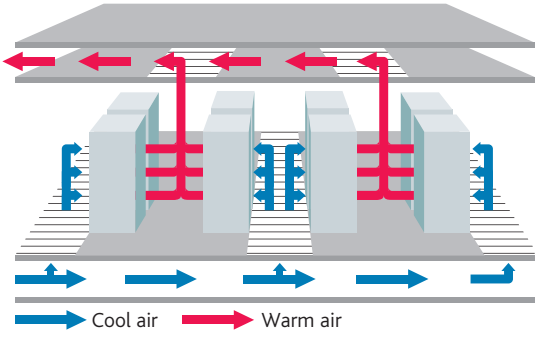
Schrön: Even the employees themselves have »gone green« at the Marienfeld facility. The site has made such an impact that even the staff is embodying this sustainable point of view.

It's often seen in the little things: for instance, the last person to leave a room automatically turns out the lights, and people think twice about printing short-lived memos on paper. This dedication is bound to leave its mark on the end consumer – which is why I'm certain that customers are also taking note of the E-Plus Group's measures.

Menzel: That is definitely the case. The E-Plus Group did, after all, take top position in a 2012 consumer survey published in the magazine *Wirtschafts-Woche*, which addressed the sustainability image of German telecommunications providers.

Hot and cold aisle containment

Hot and cold aisle containment essentially divides a data center into two zones and ensures more efficient cooling. The cold aisle conducts cool air to the servers, keeping the hardware at the optimum operational temperature. The hot aisle channels the waste heat away. The containment keeps the two air streams separated from one another.



EFFICIENT IT

New **data center** in Sefton

As part of its 10-year public-private partnership with Sefton Metropolitan Borough Council (United Kingdom), arvato has made significant investment in technology, to create a more efficient and sustainable data center.

Previously, the Council's IT systems were disjointed and expensive. Now, a single data center in Bootle is home to the Council's IT system, servicing 4,000 users at over 250 locations. As well as speeding up processes, the new technology is helping the Council to save costs by being more energy efficient. Compared to the previous data center, the new site emits 14.85 tons less CO_2 per year thanks to a number of carbon reduction measures.

One major area where organizations can waste a lot of energy is through cooling IT hardware, which could otherwise become too hot and reach critical temperatures. To stop components overheating, arvato introduced an energy-efficient cooling system that uses hot and cold aisle containment, with one zone conducting cool air to the servers, and the other channeling the waste heat away. The separation of the air streams increases the efficiency of the cooling system and keeps the hardware at optimum temperatures.

Furthermore, arvato virtualized over 250 of Sefton's physical servers. A virtual server shares a central high-powered physical server with other virtual units. The processor power is allocated based on demand. This avoids poor performance during periods of high usage, a historical problem with physical servers which have fixed processor and memory availability. As most servers do not experience constant high demand – especially during non-work hours – processing power is reduced, which means the data centre needs less power and cooling.

These measures and others – such as using proximity sensors to control lighting – have reduced the Council's energy consumption by 28,000 kilowatt hours per year – the equivalent of the annual energy consumption of six families. Not only has this helped to minimize the Council's impact on the environment, but it also generates cost savings of roughly EUR 4,500 per year.

Public-private partnership

Since October 2008, arvato has provided a wide range of services to Sefton Metropolitan Borough Council, including customer services, benefits and revenues, payroll, pensions, transactional human resources, accounts payable and ICT.

In addition to the data centre, arvato has launched a series of sustainable initiatives to deliver added efficiencies and cost savings. The introduction of multi-purpose printers has reduced the number of devices from 1,500 to 220, all computers have been programmed to automatically shut down when not in use, and video conferencing technology has been installed to reduce business travel.

arvato has almost 10 years' experience in the UK public sector. At a local government level, arvato also works with Chesterfield Borough Council, Slough Borough Council and Derbyshire Dales District Council.

TRUCKER LEAGUE

Incentives for fuel-efficient driving

An incentive model devised by arvato Systems is motivating truck drivers and company car users to save fuel. The system reduces costs and carbon emissions, optimizes the efficiency of the company's vehicle fleet – and is fun as well.

The rising costs of energy and natural resources pose a challenge to every company. The trucking industry is particularly affected, with fuel consumption making up 20 to 30 percent of its operational expenses – and that figure keeps rising. One approach to reducing fuel consumption and the related costs is to encourage employees to drive more efficiently. Every liter of fuel saved also leads to a reduction in emissions. Offering incentives to the drivers makes it possible to reduce fuel consumption by more than five percent.

Several trucking companies already use such incentive systems. However, most of these systems are based on unfair assessment methods, since factors such as weight, route profile, vehicle type, etc., are not calculated in the analysis – or only marginally so. Also, the maximum bonus for the drivers usually does not exceed EUR 150 per month. As a result, the drivers lose their motivation and the potential savings are far from what they could be.

arvato Systems has developed an incentive model whose calculation method ensures maximum fairness in the evaluation process as well as higher incentive payments. It's called the Trucker League. The solution is independent of vehicle manufacturer, vehicle type or company software; and it's easy to connect to individual system environments. Its overarching approach enables drivers to compare themselves with their own colleagues as well as with drivers from other companies, thus increasing the solution's competitive nature. Furthermore, vehicle fleet managers receive information about the efficiency of their fleet compared with those of other companies.

The solution itself generates no running costs, and is financed exclusively by the fuel cost savings. These savings are then divided between the company, arvato Systems and the incentive pot for the drivers. The business model is also ideally suited for optimizing fleets of company cars.

Ready to roll!

Marc Römling (left) and Joachim Dietrich, long-distance drivers from Spedition Schwarz, a trucking company in Herbrechtingen, Germany, are training for the next Trucker League.

Interview

Three questions for …

… Bernd Jaschinski-Schürmann, Head of SCM Consulting at arvato and inventor of the Trucker League.

How did you come up with the idea of the Trucker League?
Essentially, it was an extension of the idea behind our carbon footprinting software (see p. 38). We asked ourselves: How can we help companies to calculate and optimize their carbon footprint? We came up with the Trucker League, a model that uses financial incentives and an element of fun to encourage more fuel-efficient driving – in particular for the trucking industry. After all, less fuel consumption translates to fewer emissions and lower costs.

How complex is the integration of the system?
The system doesn't need its own hardware; instead, it uses data from the existing telematics systems. So it doesn't require any major hassle. Also, our solution is independent of vehicle manufacturers and telematics providers, making it possible to implement the system as either an in-house or a web-based solution.

The system is still pretty new. How have customers initially responded to it?
Quite positively, so far. The incentive model with its fun and competitive character has been just as well received as our financing model – which, of course, is risk-free for the user. We now plan to gradually expand the solution. And who knows – maybe the Trucker League will join the big sports leagues on TV one of these days (laughs).

INTELLIGENT TRANSPORT MANAGEMENT SYSTEM

Environmentally friendly transport chains

Every day, arvato's transport specialists coordinate over 100 carriers around the world; and they handle over 30 million deliveries in over 200 countries each year. arvato's transport management system, artis, is a climate-neutral IT solution – and the central element of this transport network.

With artis, arvato provides intelligent IT functions that facilitate the process of coordinating transports – from managing shipments via tracking and tracing features, to reporting and the billing of transport costs. This allows customers to benefit from a multi-carrier strategy without having to deal with a high level of complexity themselves. artis is integrated by way of certified interfaces and is compatible with our customers' ERP systems. The carriers' systems are also connected to artis.

It's a highly efficient system – but it cannot run without power. The data center's web servers, which are used for hosting, have a particularly high level of energy consumption. To ensure the system's climate-neutral operation, arvato uses its own specially developed software to calculate the amount of energy consumption and emissions related to running the system. This calculation also points out areas with potential for optimization, allowing for a reduction in energy consumption and emissions. Unavoidable greenhouse gas emissions are neutralized by means of compensation certificates that provide support for environmental projects in developing countries. Every year, an average of 100 tons of CO_2-equivalents are neutralized in this way.

As a result, all customers connected to artis are able to benefit from a carbon-neutral transport management system. Customers also have the option of selecting a carrier that offers an environmentally-friendly solution for the physical shipment of goods – ensuring an entirely »green« transport chain.

Further optimizations – both in environmental and economic terms – can be achieved by consolidating transport volumes: Shipments from different senders, which are addressed to the same country, can be bundled together in a single shipment. This reduces the number of transports needed and also saves costs, since the final delivery of the package only incurs national postage costs.

NEW SERVICE

Flexible deliveries

Click & Collect

In the UK, arvato has expanded its supply chain management offering with a new eco-friendly Click & Collect option that creates more flexible deliveries and simplifies returns.

The Click & Collect service is of huge benefit in e-commerce. Instead of having to dispatch directly to the consumer, orders are sent to a pre-agreed collection point, such as convenience stores, shopping centers or even service stations.

For customers, this allows them to conveniently pick up their packages on the go, fitting around working hours, and also drop off any returns at the same location. The benefit for merchants is that Click & Collect prevents failed delivery attempts – and the unnecessary trips associated with them – while increasing the ability to meet delivery deadlines.

Additionally, Click & Collect helps to minimize a vendor's impact on the environment. It's much more fuel efficient to deliver multiple shipments to a single location, rather than to ship to individual addresses.

ECO-FRIENDLY PACKAGING

Optimum protection for products and the environment

To what extent can outer packaging be reduced without losing its protective function for the packaged products? To a great extent – as demonstrated by the arvato team in Ireland.

Andrew Hetherington (CEO, Repak), Kay O'Leary (Director of Global Quality Compliance, arvato), Phil Hogan (Minister for the Environment), Denis Gleeson (Quality Engineer, arvato) and Deborah Spence (Arthur Cox, left to right)

Since 2011, arvato quality engineer Denis Gleeson and his team have been pursuing a single goal: to create optimum packaging that offers the best possible protection for the packaged goods while using the least amount of materials, energy and space. For one of its customers, arvato designed a special CD/DVD/Blu-ray packaging that proves that less is truly more. The weight was reduced, the discs fit better in the packages, and more products were able to fit on a pallet. In recognition of this packaging innovation, the voluntary economic initiative Repak distinguished the team with the Best Packaging Prevention Initiative Award 2011 (see Environmental Report 2010/2011).

But the team in Ireland's town of Swords was not yet satisfied; they were determined to reduce the packaging material even further, by at least 20 percent per pallet. To achieve this goal, the team closely examined every single component of the packaging. And the results were a clear success. Over 40 tons of material was saved altogether – amounting to a 61 percent reduction in weight. This earned the team yet another distinction: the Top Repak Award 2012.

Even just the switch from double-wall to single-wall corrugated cartons saved 17 tons of cardboard. Using a lighter plastic wrap enabled the team to reduce plastic wrap consumption by 44 percent. The additional savings in weight resulted in reduced transportation costs and fewer transport emissions.

»To reduce the packaging material even further, we closely examined everything.«

Denis Gleeson
Quality Engineer, arvato

Corporate and product carbon footprint

Comprehensive assessment of emissions

For today's businesses, assessing their corporate carbon footprint is an important step along the path to providing sustainable products and services. Assessing the carbon footprint of a specific product goes a step further: it not only factors in the corporate processes, but also the entire value chain – making it possible to structure processes in an even more sustainable and environmentally responsible way. With its comprehensive carbon footprint software, arvato provides the basis for both types of assessment.

The software enables companies to accurately assess all emissions related to their business operations – whether for transports, for office or industrial operations, or for other specific processes along the supply chain. The calculation of the corporate carbon footprint factors in both direct emissions, such as those resulting from production sites or company vehicles, and indirect emissions, such as those related to electricity and gas consumption or to business trips and commuting.

Moreover, the calculation of the product carbon footprint includes the suppliers and aftermarket distributors. The carbon emissions are measured per output unit, with each unit representing a particular product – such as a T-shirt or medication. Both types of carbon footprint assessment identify the areas where emissions are being generated and propose suitable measures for optimizing these areas.

The assessments and calculations are based on the Greenhouse Gas Protocol and the DIN EN 16258 as well as their French counterpart, Decree 2011-1336. They incorporate all relevant and standard emissions factors in compliance with the Kyoto Protocol of the United Nations. Of course the software can also be connected to energy management systems in order to continuously monitor key figures.

Furthermore, the software contains analysis tools specially developed for transport management. Their functions include comparing different means of transport, outlining variations in emissions over time, and facilitating the use of forecasts, benchmarks and simulations. By comparing the carbon footprint's actual and target values and by monitoring the individual key figures, arvato's assessment software provides full transparency with extensive control options.

Sustainable services

Further details about our carbon footprinting solutions can be accessed by using this QR code.

Examples of carbon footprints

CORPORATE CARBON FOOTPRINT
(REPORTED IN KG OF CO_2 P.A.)

✓ ***Calculated components:***
- current, oil, gas
- transports
- business trips
- commuter trips
- waste

DIN EN 14064

PRODUCT CARBON FOOTPRINT
(REPORTED IN KG OF CO_2 PER UNIT)

✓ ***Calculated components:***
- raw materials
- procurement
- production
- distribution
- consumption

DIN EN 14067

TRANSPORT CARBON FOOTPRINT
CREPORTED IN KG OF CO_2 PER RELATION)

✓ ***Calculated components:***
- road transport
- rail transport
- air transport
- maritime transport
- inland waterway transport

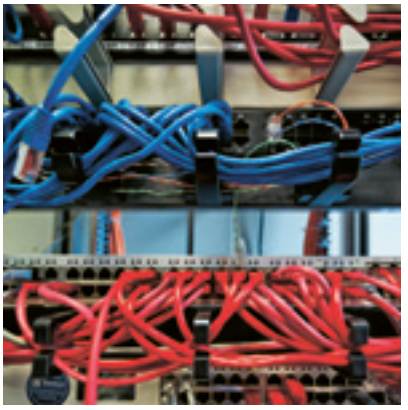
DIN EN 16258

REAL ESTATE
CARBON FOOTPRINT
(REPORTED IN KG OF CO_2 PER ENERGY TYPE P.A.)

✓ ***Calculated components:***
- current, oil, gas
- paper
- water
- waste

DIN EN 16001

NEWS



Certified energy management

Energy efficiency plays an especially important part – both in economic and environmental terms – in companies that are engaged in production. In June 2013, the printing services company Mohn Media (Germany) had its energy management certified according to ISO 50001, and in April, the arvato subsidiary Topac (Germany) received its ISO 50001 energy management certification. In-house specialists and external environmental consultants regularly monitor the companies' compliance with relevant standards. This facilitates further strategic improvement of the companies' energy efficiency, while further reducing energy costs and negative impacts on the environment.

The energy management at the Balbriggan location in Ireland, where among other things Blu-ray Discs are replicated, is not yet certified but is still very efficient. In August 2012, for example, the heating, ventilation and air-conditioning systems were switched to fresh air cooling. As a result, it was possible to reduce the power consumption by over 1,250 megawatt hours in the first twelve months alone.

Certified printing services

The team at GGP Media in Pößneck, Germany, spent a year preparing, and in 2013 it was finally done: the 45-page functional specification of the French printing association P2i had been met, and the arvato subsidiary became Germany's first printing company to receive »Imprim'vert« certification. This certification shows that a company meets the highest environmental standards in its production and is becoming increasingly important to French customers looking for a company to manage their printing orders.

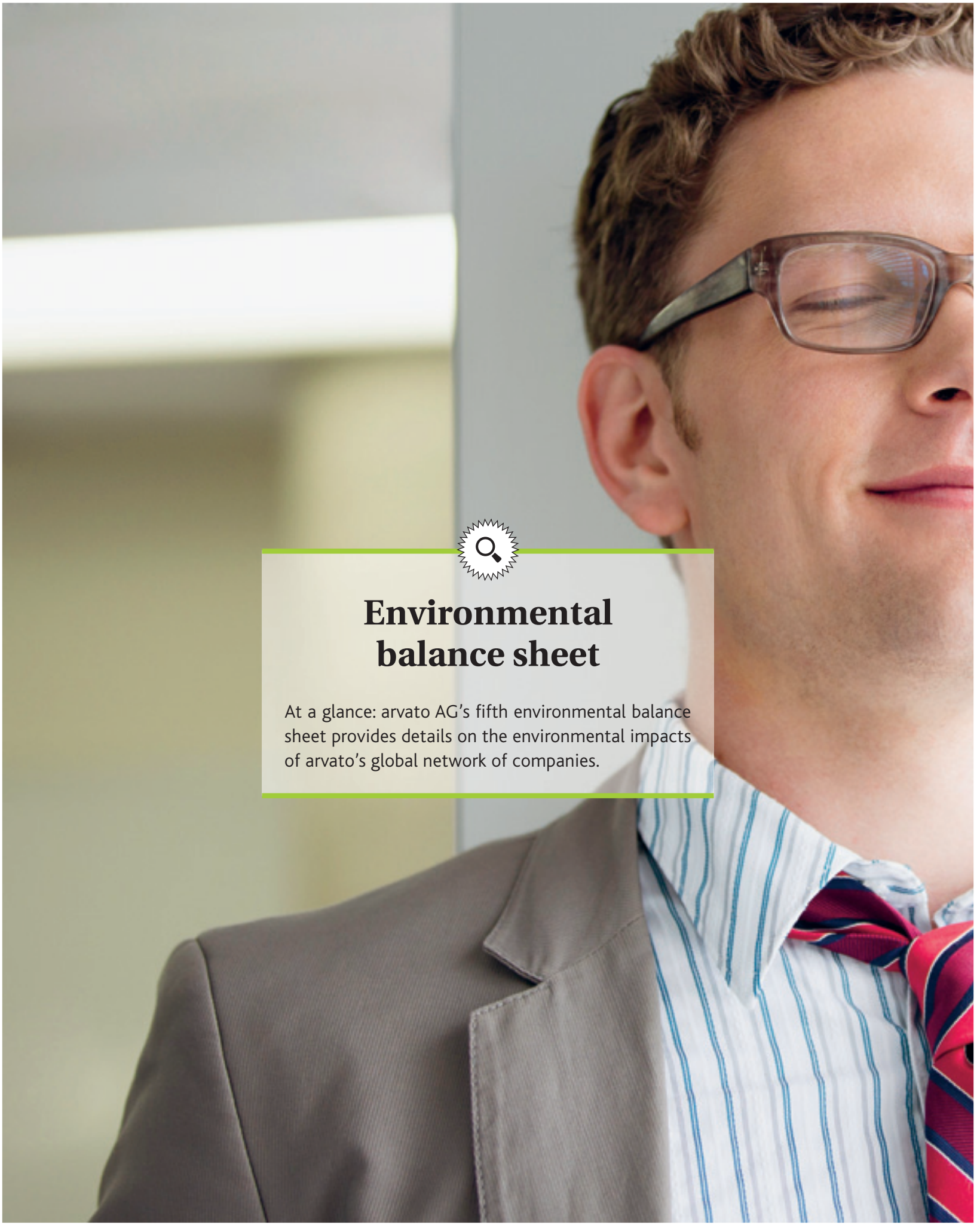
Medienfabrik's printing house in Gütersloh, Germany, was also granted certifications in 2013 for its compliance with relevant environmental standards. In mid-June, the company received FSC certification (Forest Stewardship Council). This was followed by PEFC certification (Programme for the Endorsement of Forest Certification) at the end of July. Both organizations set standards for responsible forestry and monitor the chain of commercial wood and paper products originating from this forestry practice.

Efficient use of raw materials

Optimizing processes also means ensuring that production and materials procurement are closely interlinked. By doing this, arvato Replication in Ireland, for example, has been able to significantly reduce its waste quota for UV ink.

UV ink is used to create the artwork on media such as CDs, DVDs and Blu-ray Discs. Originally, the warehouse management for the ink was not directly linked to the production process. This meant that seasonal fluctuations in demand could not be sufficiently taken into account, and on numerous occasions it was found that the ink had become too old to use and had to be disposed of.

At the end of 2012, a project team led by Pat Comiskey and Padraig Butler developed a strategy for linking the procurement and storage of UV ink closely to production and taking into account seasonal fluctuations more effectively. Since putting these measures in place, it has been possible to reduce the volume of unused ink by 45 percent compared to 2012 – and the on-site improvements are continuing.



Environmental balance sheet

At a glance: arvato AG's fifth environmental balance sheet provides details on the environmental impacts of arvato's global network of companies.

Dr. Achim Schorb,
ifeu – Institute for Energy and Environmental Research, Heidelberg, Germany

»The digital transformation of arvato's businesses is reflected in the key figures outlined in this environmental report. The report has also been further developed in line with the new G4 Sustainability Reporting Guidelines of the Global Reporting Initiative.«

GR4 indicator	Description	Degree of fulfillment	Page
EN 1	Materials used	+ +	44
EN 2	Materials recycled	+ +	42
EN 3	Direct energy consumption	+ +	42, 46
EN 4	Indirect energy consumption	+ -	43 (km for business travel)
EN 5	Energy intensity	+ +	46 (energy consumption per employee)
EN 6	Energy savings	+ +	44
EN 7	Energy-saving initiatives	++	10-13, 38
EN 8	Water consumption	+ +	42, 44, 47
EN 9	Impacts of water consumption	+ -	42
EN 10	Water recycled and reused	-	
EN 11	Operational sites in or near protected areas	none reported	
EN 12	Impacts on biodiversity	none reported	
EN 13	Habitats protected or restored	none reported	
EN 14	Red List or endangered species on operational site	none reported	
EN 15	Direct greenhouse gas emissions (Scope 1)	+ +	43
EN 16	Indirect greenhouse gas emissions (Scope 2)	+ +	43
EN 17	Other indirect greenhouse gas emissions (Scope 3)	+ +	43 (related to business travel)
EN 18	Intensity of greenhouse gas emissions	+ +	48
EN 19	Reduction of greenhouse gas emissions	+ +	48
EN 20	Emissions of ozone-depleting substances	none reported	
EN 21	NO_x, SO_2, and other significant air emissions	+ +	45
EN 22	Water discharge by quality	+ +	43, 45
EN 23	Waste by disposal method	+ +	43, 45
EN 24	Significant spills	none reported	
EN 25	Hazardous waste as per EWC; type of accumulation	+ +	43, 45
EN 26	Impacts of waste on biodiversity	none reported	
EN 27	Minimization of environmental impacts	+ -	10-13, 18, 24-27
EN 28	Packaging materials reclaimed	none reported	
EN 29	Sanctions for environmental offences	none reported	
EN 30	Environmental impacts related to transports	+ -	32-34, 43 (company's own transports)
EN 31	Expenditures for environmental protection	none reported	
EN 32	New supplier screenings conducted	none reported	
EN 33	Negative environmental impacts in the supply chain	-	

arvato's global environmental balance sheet

For the fifth time in a row, we are presenting a global balance sheet of arvato AG's environmental impacts. The balance sheet also shows that we have made further improvements to our environmental reporting and that our company is continuing to change – along with the markets we currently work in.

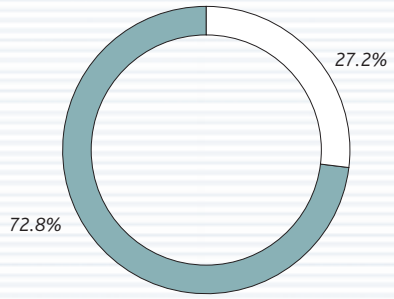
We have also continued to pursue our reorganization of arvato as a provider of comprehensive, future-oriented technology solutions and services. As part of this reorganization, a group of arvato print works was merged with the gravure printing facilities of PRINOVIS into a separate unit, the newly established Bertelsmann division Be Printers. The importance of digital channels continued to increase, with downloads and streaming services gradually replacing the use of physical storage media. This trend led to a decrease in the production of CDs, DVDs, Blu-ray Discs, etc., and led to production being concentrated in fewer sites.

As in previous years, the environmental balance sheet follows the guidelines and standards set by the Global Reporting Initiative (GRI). With the close involvement and support of the Bertelsmann Corporate Center, these guidelines have, predominantly over the past two years, been further developed into the new »G4 Guidelines.« The outlines for these guidelines were published for the first time at the end of 2013.

As an environmental report, however, the balance sheet presented here only refers to the GRI's reporting category of environmental impact (EN), and does not include the GRI's economic and social impact categories. Further information about these areas is available in the comprehensive CSR-related reports provided by Bertelsmann SE & Co. KGaA: http://www.bertelsmann.com/corporate-responsibility/.

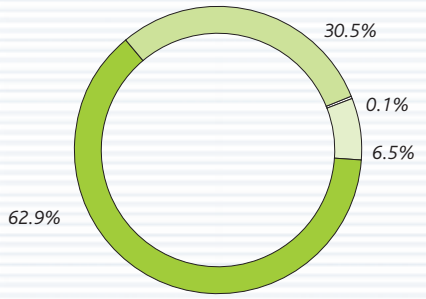
During the reporting period, the number of employees at arvato was nearly 64,000, representing only a slight decrease from the year 2010 (- 0.3 percent).

Water consumption



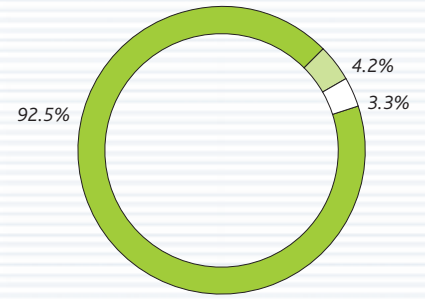
WATER	in m³	in %
Public supply	722,747	72.8
Company wells	269,716	27.2

Energy consumption



ENERGY	in MWh	in %
Electricity	444,843.4	62.9
Heat	215,707.6	30.5
Fuels	46,019.1	6.5
Propellant gas	981.5	0.1

Heat consumption



HEAT	in MJ	in %
Natural gas	718,389,577	92.5
Heating oil (EL)	32,771,417	4.2
District heating	25,386,539	3.3

Production materials and water consumption

Due to regrouping and production relocation, the use of materials decreased by more than half in comparison with 2010. A total of 730,828 tons of production materials were used (-52.7 percent). The principal raw materials used in production were once again paper and cardboard. The printing services that remained at arvato used a total of 662,823 tons of paper and cardboard, almost 52 percent less than during the previous reporting period.

In line with the GRI indicator EN2, the share of recycled paper was recorded for 2012 in addition to that of office paper. Office paper accounted for a mere 0.4 percent (2,566 tons) of the total paper usage, over half of which was recycled paper (1,412 tons). In the case of printing paper, 22.1 percent was recycled paper (145,729 tons).

Substantial reductions were registered in the amounts of auxiliary materials (36,442 tons), operating materials (2,643 tons) and fresh water (992,463 cubic meters) used. The same applied to both drinking and industrial water from the company's own sources (-65.4 percent), since many of the production sites that are no longer part of arvato had a water supply from their own wells. The numerous office sites supplied by the public network registered a decrease in water consumption, to 722,474 cubic meters (-27 percent).

Energy sources and fuels

The reorganization of the company also affected the figures for energy consumption and fuel consumption. Therefore, a comparison with previous years is only marginally informative.

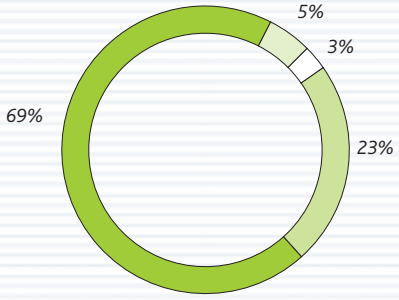
Electricity consumption decreased by nearly half to 444,843 megawatt hours, and heat consumption decreased by 27 percent to 776,548 gigajoules. Diesel consumption, on the other hand, increased in comparison with the previous reporting period. This is due to the fact that, for the first time, it was possible to record the consumption figures for all German sites by means of a centrally managed database. The total number of kilometers traveled on business decreased by 23 percent to just under 42.9 million kilometers. The kilometers traveled in rental vehicles increased in comparison with the year 2010, which is also a result of the further improvements made in data collection, particularly in our sites outside of Germany.

Emissions and waste materials

During the reporting period, arvato AG has steadily continued to develop into a global service provider primarily covering the areas of IT, services and supply chain management. With some of its print works having been moved to other Bertelsmann divisions, arvato's production of printing products and storage media now plays only a minor part in its overall activities. Hence, recording the quantities for this output is no longer useful.

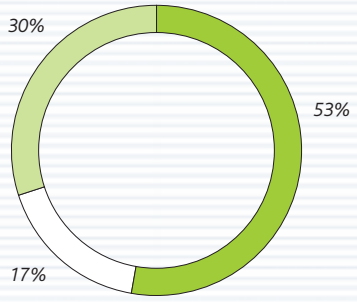
Likewise, due to these disincorporations, the emission and waste material figures have decreased considerably in comparison with those from 2010. The amount of emissions assigned to the primary greenhouse gas, carbon dioxide, decreased by 40.1 percent to 350,719 tons worldwide. The other registered air emissions show similarly high reduction rates.

Fuel consumption



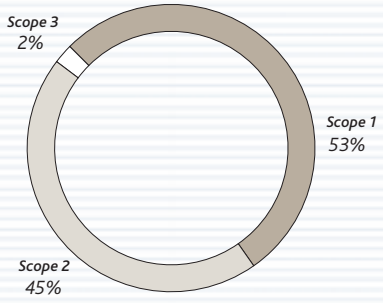
FUEL	in l	in %
Diesel (cars)	3,316,354	69
Diesel (trucks)	1,097,848	23
Gasoline	249,007	5
Liquified gas	146,277	3

Business travel



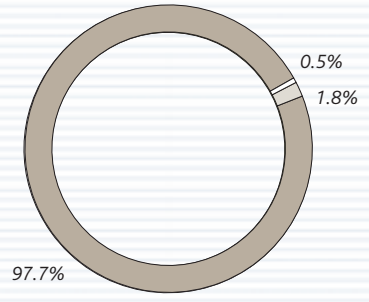
MODE OF TRAVEL	in km	in %
Air	22,652,760	53
Rental car	12,801,213	30
Rail	7,430,885	17

Greenhouse effect



GWP	in t	in %
Scope 1	195,595	52.7
Scope 2	167,450	45.1
Scope 3	8,115	2

Amount of waste



TYPE	in t	in %
Waste for recycling	149,063.7	97.7
Waste for disposal	2,745.623	1.8
Hazardous materials	788.099	0.5

Dividing the greenhouse gas emissions into direct and indirect sources (scopes) – as recommended by the Kyoto Protocol – yields the composition depicted in the greenhouse effect diagram for the year 2012.

At arvato AG, the sources of emissions can be categorized as follows:

Scope 1, direct emissions: All consumption of energy sources for generating heat and electricity in the company – i.e. gas and oil for heating, natural gas for the cogeneration units – as well as the consumption of fuel and propellant gas for company vehicles.

Scope 2, indirect emissions: All additionally purchased final energies, such as electricity, local heating and district heating.

Scope 3, other indirect emissions: Emissions attributable to business travel by air, rail and rental car.

Despite the substantially lower volume of freight transported in 2012, the composition under the various scopes showed a slight move toward the direct emissions under scope 1 (2010: 49 percent).

As expected, the amount of waste materials decreased by nearly half (-48 percent). Recyclable waste makes up 97.7 percent of this amount (149,064 tons), and hazardous materials make up only 0.5 percent (788 tons) of the total amount of waste. The largest proportion of waste materials that are recycled are print waste and office paper, amounting to 121,681 tons.

Wastewater amounts registered an increase of nearly 200,000 cubic meters during the reporting period, reaching a total of 1.31 million cubic meters. However, this figure is not due to an actual increase in the amount of wastewater, but to the more thorough collection of data and the continued improvement of data quality in the individual member companies. In previous reporting periods, the possibilities for providing data on wastewater were often more limited – particularly for the numerous arvato companies outside of Germany; in the meantime, however, these sites have more appropriate measurement and reporting systems in place. Due to the low levels of pollution, 97.5 percent of our wastewater is removed via public sewers. Only 2.5 percent (32,242 m^3) has to be purified in separate wastewater treatment plants.

INPUT

At a glance

Input	2010	2012	Change in percent
Total raw materials (metric tons)	1,443,953	691,439	-52.1
Paper/Cardboard	1,364,526.8	524,445.6	-61.6
Paper/Cardboard, recycled		147,140.5	++
Dyes/Lacquers	29,262.1	11,771.0	-59.8
Plastics (PC, PS, PE, etc.)	40,321.2	8,081.8	-80.0
Other raw materials	9,843.2	0.0	--
Total auxiliary materials (metric tons)	**91,853**	**36,442**	**-60.3**
Glue	6,327.2	2,586.2	-59.1
Binding material/Plastic film	13,575.4	13,282.0	-2.2
Packaging	71,950.7	20,574.1	-71.4
Total operating materials (metric tons)	**8,739**	**2,519**	**-71.2**
Chemicals	291.7	219.4	-24.8
Cleaning agents	317.4	620.8	+95.6
Solvents	6,393.2	831.6	-87.0
Lubricants	177.8	30.2	-83.0
Other operating materials	1,559.4	816.7	-47.6
Total fresh water (m^3)	**1,769,462**	**992,463**	**-43.9**
Company wells	779,773.6	269,715.7	-65.4
Public supply	989,688.1	722,747.2	-27.0
Total energy sources (MWh)	**1,216,826**	**707,552**	**-41.9**
Electrical power (MWh)	823,725.1	444,843.4	-46.0
Thermal/Process heat (MWh)	305,352.5	215,707.6	-29.4
Natural gas/Liquefied petroleum gas (MWh)	64,966.0	981.5	-98.5
Diesel and gasoline fuels (MWh)	22,782.8	46,019.1	+102.0
Diesel and gasoline fuels (liters)	2,329,991.8	4,663,208.9	+100.1
of that amount, diesel fuel (liters)	1,952,906.8	4,414,201.4	+126.0
of that amount, gasoline (liters)	377,085.0	249,007.4	-34.0
Total business travel (km)	**55,960,626**	**42,884,858**	**-23.4**
Air (km)	37,696,450.1	22,652,760.3	-39.9
Rail (km)	8,519,473.0	7,430,884.9	-12.8
Rental car (km)	9,744,703.3	12,801,213.0	+31.4

OUTPUT

Output	2010	2012	Change in percent
Total products (millions of items)	12,099	3,595	-70.3
Print products	6,924.5	1,539.8	-77.8
Mailings	2,619.0	1,671.5	-36.2
Storage media	2,556.0	383.8	-85.0
Total waste (metric tons)	292,883	152,597	-47.9
Waste for recycling	283,002.9	149,063.7	-47.3
Total waste for disposal	9,879.6	3,533.7	-64.2
Share of hazardous materials	2,135.3	788.1	-63.1
Total wastewater (m^3)	1,112,454	1,307,000	+17.5
Amount treated in wastewater plants		32,242	++
Air emissions (metric tons)			
Carbon dioxide, fossil	585,072.4	350,719.1	-40.1
Carbon monoxide	536.3	512.8	-4.4
Nitrogen oxides	1,115.1	781.3	-29.9
Sulfur dioxide	768.9	267.0	-65.3
Dust/Particles	83.6	30.0	-64.1
Total VOC	1,341.2	934.8	-30.3
Methane	1,247.0	817.7	-34.4

Key environmental figures

In order to obtain an overview of the company's long-term environmental development, we designed a system of key environmental figures in 2004, which outlines the development of arvato AG over the past reporting periods and shows potential areas of future action.

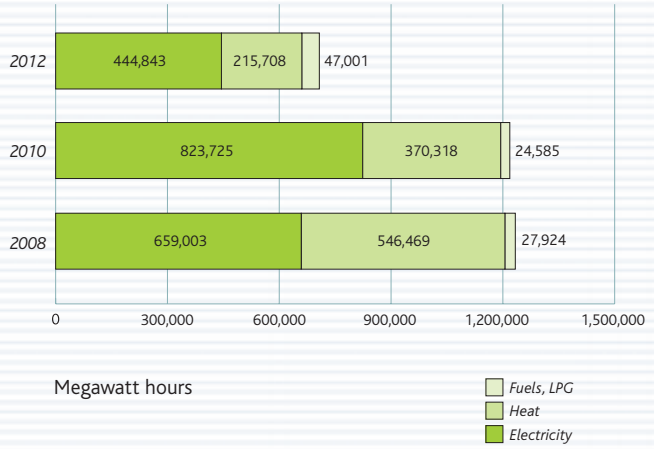
The individual employee has served as the basis for assessment since the reporting year 2008. Through the global redevelopment and expansion of our business sectors, the number of employees has remained almost constant – in spite of the previously mentioned restructuring measures; on the reporting deadline of December 31, 2012, the number of employees at arvato was 63,818 (2010: 63,985).

We assess a total of six key figures within the context of our environmental balance sheet. The two most important figures are **energy consumption** and the **greenhouse effect** – the latter resulting from the combustion processes in power stations, heating units and production facilities, as well as from the transportation of people and goods. **Summer smog potential** represents the toxic impact of ground-level ozone, which comes about through the emissions of volatile organic hydrocarbons such as methane and isopropanol. **Acidification potential** represents the harmful effects of sulfur dioxide and nitrogen oxide emissions on soil and bodies of water, and **eutrophication potential** represents the threat that overfertilization poses for our ecosystem. **Water consumption** is another of these key figures.

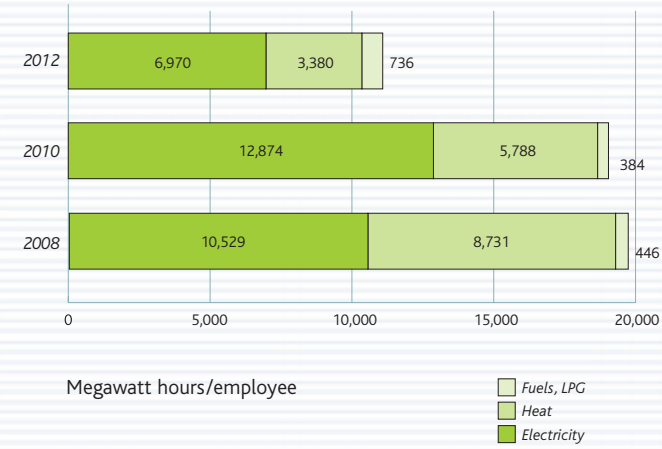
In keeping with the substantial decreases registered in the environmental balance sheet in the absolute values for input and output, the key figures also show significant changes in comparison with previous reporting periods. The absolute values for energy consumption show a marked decrease in the consumption of power and heating energy. This decrease can primarily be attributed to the disincorporation of print works from the arvato Print segment.

In contrast, increases were registered in the energy used for the company vehicle fleet; this change is mainly due to the

Energy consumption



Energy consumption per employee



Key environmental figures per employee	2008	2010	2012	Dimensions	Change in percent
1. Greenhouse effect	12.62	9.63	5.82	t CO_2 equivalent/employee	-39.,6
2. Summer smog	5.73	4.60	1.13	kg ethylene equivalent/employee	-75.5
3. Acidification	26.89	24.22	12.75	kg SO_2 equivalent/employee	-47.3
4. Eutrophication	2.64	2.27	1.59	kg PO_4 equivalent/employee	-29.9
5. Energy requirements	22,242.9	19,045.5	11,086.4	kWh/employee	-41.8
6. Water requirements	27.35	27.65	15.55	m^3/employee	-43.8

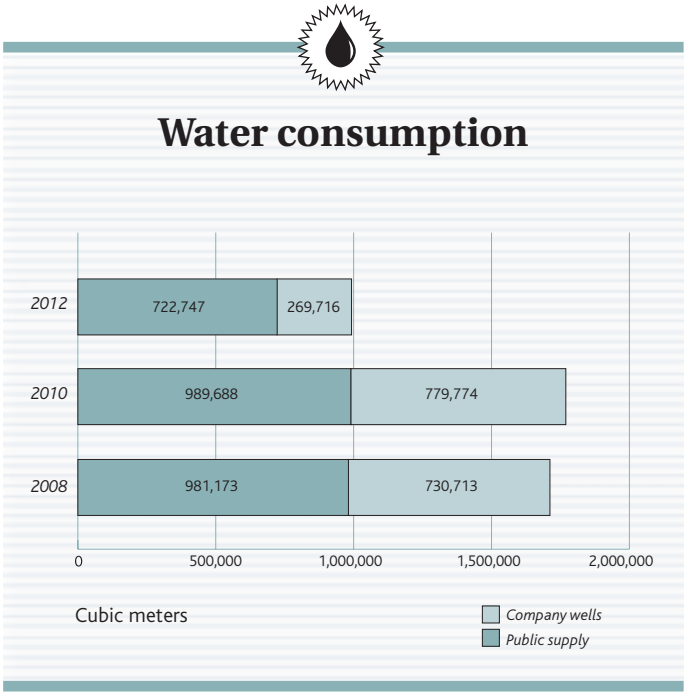
fact that this was the first time vehicle data could be directly assessed from a centrally managed list.

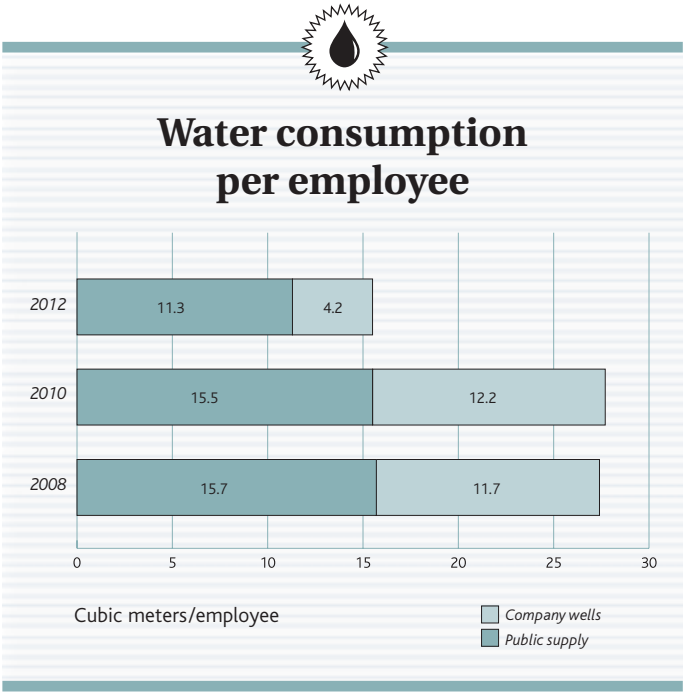
Energy consumption – calculated per employee – showed a reduction of 6,973 kilowatt hours compared with the previous reporting period, corresponding to a 38.6 percent decrease.

Total water consumption also showed a substantial decrease. The same trend can be seen in our key figures per employee. While maintaining an almost constant number of employees, arvato records reduction rates of nearly 44 percent in this category.

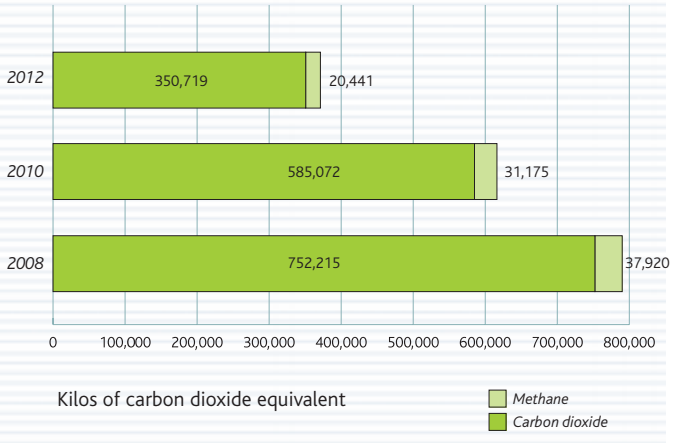
The key figures related to air emissions show a development similar to that in the reduction in energy usage. In the case of the greenhouse effect, this amounts to a reduction of 3.82 tons (-39.6 percent), down to 5.82 tons of CO_2 equivalent per employee.The changes to the corporate structure are most clearly reflected in the key figure for summer smog potential. This value is dominated both by isopropanol, a solvent generally added to the dampening solution used in offset printing, and by acetone, a solvent used in production processes. If the amounts of solvents used in these areas are reduced, and if isopropanol is gradually replaced by less toxic additives for environmental and workplace protection reasons, then the summer smog potential shows a correspondingly strong decline. In the year 2012, the measure of ethylene equivalents fell by more than 222 tons, to 72 tons (-75.5 percent). When calculated per employee, this represents a decrease of 4.6 kilograms, to 1.1 kilograms.

The key figures for acidification and eutrophication show the same trend – though not as pronounced. The number of kilograms of sulfate equivalents produced per employee fell by 51 percent during the reporting period, and the phosphate equivalents fell by nearly 43 percent.

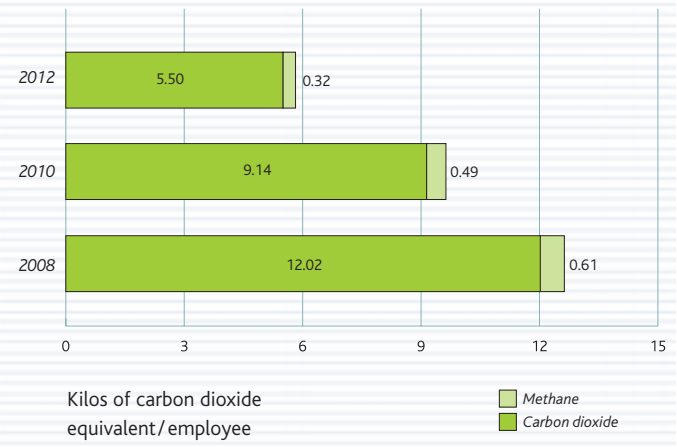




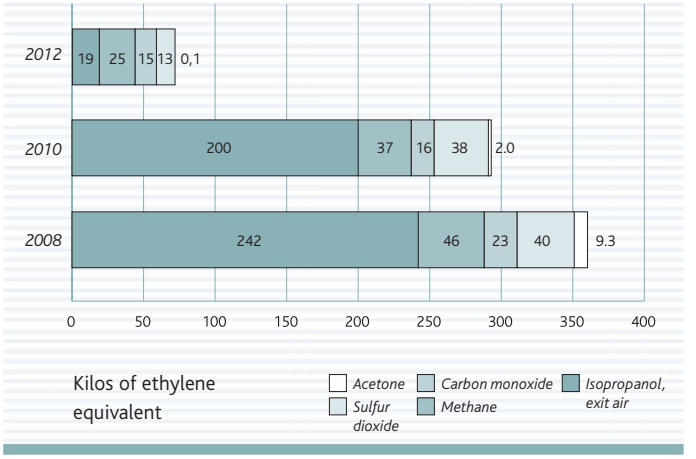
Greenhouse effect



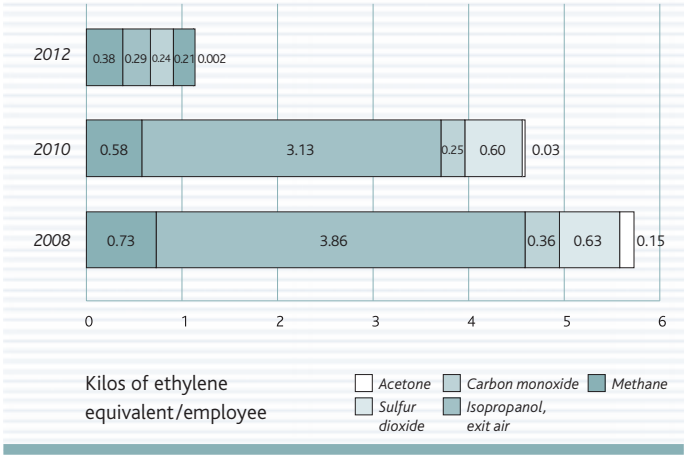
Greenhouse effect per employee



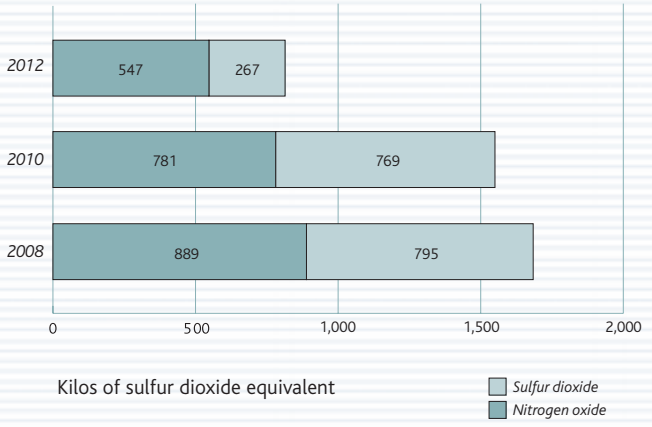
Summer smog potential



Summer smog potential per employee

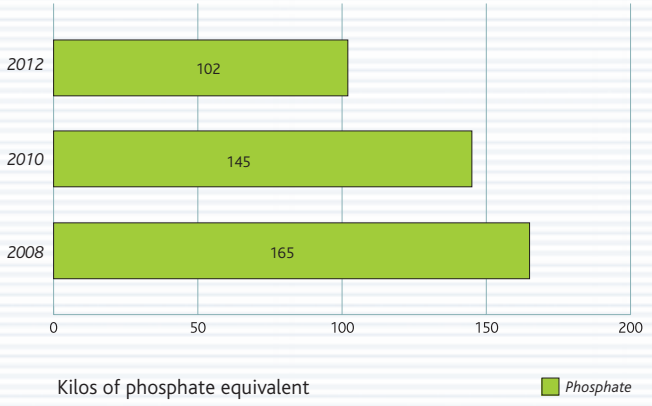


Acidification potential

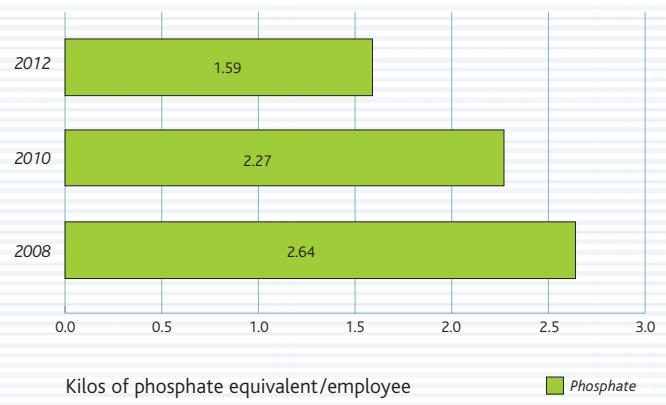


Acidification potential per employee

Eutrophication potential



Eutrophication potential per employee



Environmental Guidelines

The Environmental Guidelines provide a framework for all arvato enterprises. A systematic approach to environmental reporting throughout the company ensures consistent implementation and documentation.

Responsibility

It is central to the philosophy of arvato AG that every employee should feel responsible for protecting the environment as well as for seeking to promote the company's economic success. To that end, we make every effort to promote and expand further training for our personnel. We commit ourselves and our employees to act in an environmentally responsible way, and not simply to comply with environmental laws and guidelines. One of our responsibilities is to introduce and maintain an effective environmental management system in every relevant division of the company.

Future orientation

arvato AG complies with social norms and values and respects the personhood of every one of our employees. We keep our employees and the interested public informed about the environmental impacts associated with our activities, including those of individual sites. We attach great importance to the sustainable development of our businesses. This includes analyzing and assessing any aspect that may be relevant to the environment before we introduce new products and processes. We are therefore able to offer our customers innovative technologies

and customized solutions in all of our areas of activity, without losing sight of our high standards for environmental protection.

Working together with customers and suppliers

The standards for the behavior of our employees internally also apply to our relationships with customers and suppliers. We work with them to solve problems in a way that is economically successful as well as environmentally friendly. We also select contractual partners and suppliers in accordance with our company's environmental standards. Environmentally relevant aspects are taking on ever greater importance in the advice we offer our customers.

Prevention

The goal of corporate management is to optimize the use of raw materials, energy and water in our activities, and to minimize the resulting environmental impacts in the form of air emissions, wastewater contamination and waste materials. Moreover, the management of arvato AG and all of its affiliated companies are making every effort to prevent accident-related emissions. If such an event should occur, however, our employees have been prepared to deal with it, and rules of conduct are in place to ensure that any damage results in only minimal environmental impacts.

Transparency and dialogue

Cooperation with government agencies and relevant groups in society is a regular part of the work of arvato AG and its member companies. Today and in the future, we will make sure that our work is transparent and will discuss it openly with our partners. This willingness to engage in dialogue is an integral part of our corporate philosophy. In addition, we offer all of our member companies the opportunity for a review of their environmental activities and services under a neutral certification arrangement.

Binding nature and updating of these guidelines

These guidelines are binding for all employees of arvato AG and of its member companies. If portions of these guidelines should no longer be adequate or applicable, the parties involved are to reformulate them as necessary in the context of the regular review.

Summary

In the future, too, the activities of arvato AG and its member companies will be characterized by constant efforts to enhance climate protection within the company. Environmental protection and the sustainable use of all resources will continue to play an important role in our conversations and negotiations with customers and suppliers. In this context, we make every effort to encourage our partners to work toward sustainable protection for our environment. Our commitment to protecting the resources on which all of our lives depend goes far beyond what is required by law. This is not only in keeping with our vision of sustainable development, but reflects society's growing awareness that we want to leave the earth to future generations in a livable condition.

Glossary

a

Acidification potential
Describes the degree of acidification of soil and bodies of water. Also known as »acid rain.« Calculated in SO_2 equivalents.

c

Carbon dioxide (CO_2)
Gas produced by the complete combustion of fossil fuels (gas, oil, coal, etc.). A key cause of the greenhouse effect.

Carbon footprint
The amount of carbon dioxide equivalents that a person, company or country produces during a particular period.

Carbon monoxide (CO)
Colorless, toxic gas created by incomplete combustion.

e

Environmental guidelines
An organization's overarching environmental goals and principles for action.

Environmental management system
Voluntary instrument of preventive environmental protection used to systematically document and avoid environmental impacts at a company.

Eutrophication potential
Excessive concentration of chemical nutrients in soil and bodies of water, caused by such things as phosphates and nitrogen oxides (NO_x). Calculated in phosphate (PO_4) equivalents.

g

Global Reporting Initiative (GRI)
A joint initiative set up in 1997 by the U.S. nongovernmental organization Coalition for Environmentally Responsible Economies and the environmental program of the United Nations. Its objective is to improve the quality and precision of sustainability reporting.

Greenhouse effect
Describes the excessive warming of lower levels of the atmosphere by combustion processes employed by humans. It is primarily caused by the release of carbon dioxide (CO_2) from fossil sources and substances from the group of volatile organic compounds (VOC). Calculated in CO_2 equivalents.

Greenhouse Gas Protocol
A tool for calculating and managing and/or reducing greenhouse gas emissions.

k

kWh
Kilowatt hour; 1,000 kWh equals 1 megawatt hour (MWh).

Kyoto Protocol
Sets binding targets for reducing greenhouse gas emissions in the industrialized countries.

n

Nitrogen oxides (NO_x)
Arise primarily from combustion processes through the oxidation of atmospheric nitrogen, a cause of »acidification« and »eutrophication.«

s

Sulfur dioxide (SO_2)
Produced during the combustion of sulfuric fuels, particularly coal. Harmful to human health and vegetation, plays a role in acidification (»acid rain«).

Summer smog potential
Describes the formation of ground-level ozone through the chemical reaction of nitrogen oxides (NO_x) and volatile organic compounds in the air that are exposed to heat and solar energy. Calculated in ethylene equivalents.

v

VOC (volatile organic compounds)
A cause of »summer smog«; some of these compounds contribute to the »greenhouse effect.«

Production credits

Publisher: arvato AG, An der Autobahn 22,
D-33333 Gütersloh, www.arvato.com

Project manager: Sonja Groß

Editing: Lars Lenhardt, Medienfabrik Gütersloh GmbH,
Sonja Groß, arvato AG

Art direction: Petra Nienstedt, Medienfabrik Gütersloh GmbH

Scientific consultant: Dr. Achim Schorb, ifeu –
Institute for Energy and Environmental Research, Heidelberg

Press date: February 28, 2014

Production: Medienfabrik Gütersloh GmbH

About this report
This report provides information about the environmental activities of the arvato group. Unless otherwise specified, the information relates to the group as a whole. Reproduction in whole or in part is permitted only with the express permission of arvato AG.

The reporting period is from January 31, 2012, the press date of the previous report, to February 28, 2014. Further information about corporate responsibility at arvato is available on the Internet. The next environmental report will be published during the first quarter of 2016.

The Environmental Report is also available in German, French and Spanish. It was printed on recycled paper.

Contact / Ordering the report
Phone: +49 5241 80-3408, E-mail: begreen@arvato.de
Website: cr.arvato.com