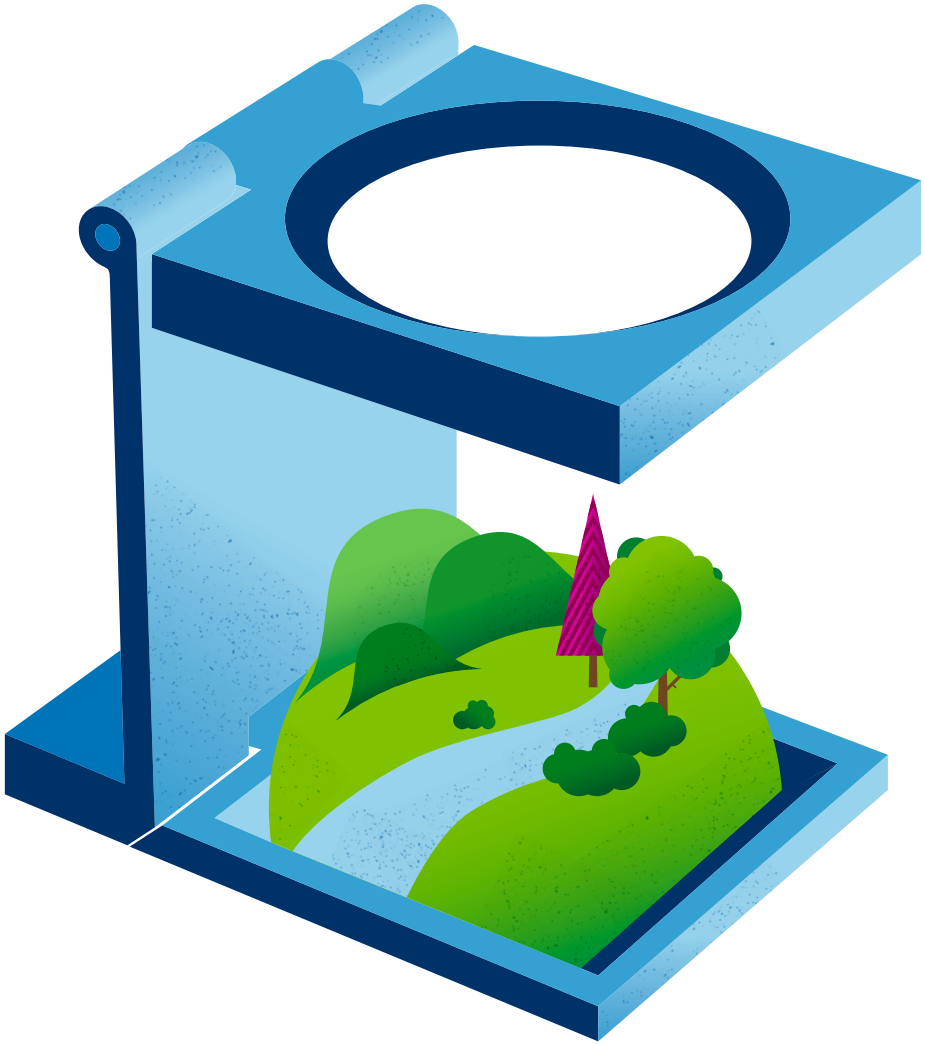


MOHN MEDIA

2015 ENVIRONMENTAL COMPANY PROFILE

Mohn Media

MOHN MEDIA

2015 ENVIRONMENTAL
COMPANY PROFILE

CONTENTS

EDITORIAL

Dear Readers,

The 2015 Environmental Company Profile marks an anniversary for us: These company profiles have now been delivering information on our environmental efforts and the measures we take to reduce the amount of resources we consume and the emissions we produce for 25 years now. So come take a little journey through time with us: This issue will offer an overview of what our work has focused on up until this point as well as the results we have achieved.

We are certain now that our decision years ago to consistently design our processes in a way that conserves resources and optimizes energy usage was the right one. Efficient use of our resources has allowed us to continually reduce environmental pollution while at the same time lowering costs.

This is crucial since for a long time now a company's success is no longer measured solely on the basis of financial considerations. In addition to social and economic aspects, environmental protection has emerged as a key factor. Our environmental performance has become an important criterion in customer loyalty. This combination of economics and environmental concerns is the foundation of future-oriented and responsible management.

The results of this company profile do us proud and continue to drive us to keep following the path we have forged in the future. As they have done over the past 25 years, many internal and external partners will help us along the way. In doing so they are contributing to us being able to achieve our ambitious goals. We would like to take this opportunity to express our utmost thanks to them for their assistance.

We now invite you to get your own impression of our environmental management. For further information, please do not hesitate to contact our environmental department.

How It All Started...

We incorporated environmental aspects into our corporate decision-making and processes in the early 1990s with numerous different measures – quickly producing our first Environmental Company Profile.

The Club of Rome began calling for environmental pollution to be avoided in its "Limits to Growth" report in the early 1970s, and by the 1980s issues like deforestation, acid rain and the hole in the ozone layer had become the focus of political discussions. The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety was established in 1986, marking the start of environmental issues being considered under the purview of official policymaking in the Federal Republic of Germany. Environmental protection was naturally part of Mohn Media's (then called Mohndruck) corporate philosophy.

This then led to the Environment Initiative Group (Initiativkreis Umwelt) being founded in 1989, and later led to the Mohndruck Environmental Forum (Mohndruck-Umweltforum) and the Mohndruck Environmental Award (Mohndruck-Umweltpreis). Many of the measures we developed and pursued at the time incorporated our customers and suppliers as well. Various brochures with a wealth of information were available to anyone wanting to learn more about environmentally friendly print production.

NEW PATHS FOR THE ENVIRONMENT AND THE ECONOMY

It quickly became clear: Acting in a way that was environmentally responsible brings with it obvious economic advantages. Judicious use of natural resources and energy lowers costs and – applied in practice – is a unique selling point. In light of all this, in 1991 company executives decided to publish an annual environmental company profile in addition to the usual annual report. Its findings were intended to provide starting points on which to anchor Mohndruck's corporate policy with greater environmental focus. A project that was absolutely uncharted territory for our company – not just for the printing trade.

ENVIRONMENTAL PROTECTION INITIATIVE GROUP ESTABLISHED

- committee made up of employees and external experts
- reports directly to the chair of the executive board
- assists with, manages and monitors all environmental activities raises awareness of environmental issues, compiles proposals

ENVIRONMENTAL FORUM ESTABLISHED

- customers, employees, suppliers, academics and environmental organizations meet to share their expertise

1994

COMBINED HEAT AND POWER PLANT IMPLEMENTED

- the use of natural gas is made much more efficient by separately generating electricity, heat and cold
- CO_2 emissions 50% lower compared to emissions from the national grid

1992

FIRST ENVIRONMENTAL REPORT

- collection, presentation and analysis of operational processes and their environmental consequences

ENVIRONMENTAL GUIDELINES

- all employees obligated to act in an environmentally responsible way

Federal Minister for the Environment Klaus Töpfer at the block-type thermal power station groundbreaking

EMPLOYEE SUGGESTION SYSTEM

- the environmental protection aspect is taken into consideration when reviewing recommendations

ADDITIONAL ANALYSIS OF PAPER TYPES USED

- for fiber composition and bleach processes

MEMBER OF B.A.U.M. E.V.

- the German Environmental Management Association (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management) joins economic, environmental and social issues

START OF CONSTRUCTION ON THE BLOCK-TYPE THERMAL POWER STATION

- our block-type thermal power station supplies our production facilities with electricity, heat and cold in a highly efficient manner

1991

INITIATIVE '91

- informational brochure for all employees
- serves to anchor environmental thinking into all areas of the company

ENVIRONMENTAL BROCHURE (UMWELTBROSCHÜRE)

- employee magazine with information on in-house measures
- raises awareness of environmental issues
- encourages environmentally conscious behavior – including outside the company

TWO BDI FIRST PRIZE AWARDS

- The Federation of German Industries (BDI) presents awards for integrating environmental protection into corporate management and environmental communication

MOHNDRUCK ENVIRONMENTAL AWARD

- first awarded in 1991
- aim is to foster environmental thinking in the university sphere
- awarded to students with outstanding thesis projects on environmental challenges faced by the print industry

1996

EMAS CERTIFICATION

- the European Union's EMAS (Eco-Management and Audit Scheme) is a system for sustainable environmental management
- EMAS was employed by Mohn Media in 2007 to integrate quality and environmental management

1997

CERTIFIED ENVIRONMENTAL MANAGEMENT

- environmental management certified under DIN ISO 14001 (see page 14)

2003

FSC® CERTIFICATION

- first time a major printing company was certified in accordance with the FSC's Chain of Custody criteria (see page 16)

2005

GLOBAL 100 ECO-TECH AWARD

- award on the occasion of EXPO 2005 in Japan for promoting responsible forest management
- the prize money was presented to the chair of the German FSC working group in 2006

Combining the environment with economic concerns

The economical, effective use of natural resources remains a key topic of focus for us today. Climate change as well as the growing costs of energy and raw materials continue to present major challenges for us. That is why we take both environmental and financial aspects into account in all our investments into production – out of a sense of responsibility to our employees and our environment.

2013


ZERTIFIKAT

Mohn Media Mohndruck GmbH
Probind Mohn Media Binding GmbH
Print Service Gütersloh GmbH
Fernwärme Gütersloh GmbH
Energiemanagementsystem
gemäß DIN EN ISO 50001 : 2011

CERTIFIED ENERGY MANAGEMENT

- Energy management certified under DIN ISO 50001
- forms the third pillar of the integrated management system at Mohn Media (see pages 14-15)

2014

SEDEX DATABASE AND SMETA AUDIT

- Sedex (Suppliers Ethical Data Exchange) is an internationally recognized database
- encapsulates companies' test reports on health and environmental protection, working conditions and ethical business practices
- based on the SMETA audit (Sedex Members Ethical Trade Audit)
- the final report attests to Mohn Media being "outstanding in environmental issues" and "an exemplary company when it comes to social responsibility"

2008

PEFC CERTIFICATION

- the Programme for the Endorsement of Forest Certification Schemes (PEFC) stands for sustainable forest management and timber industry studies, similar to the FSC

INTEGRATED MANAGEMENT SYSTEM

- quality management and environmental management are consolidated
- one advantage: uniform utilization and central documentation management

2009

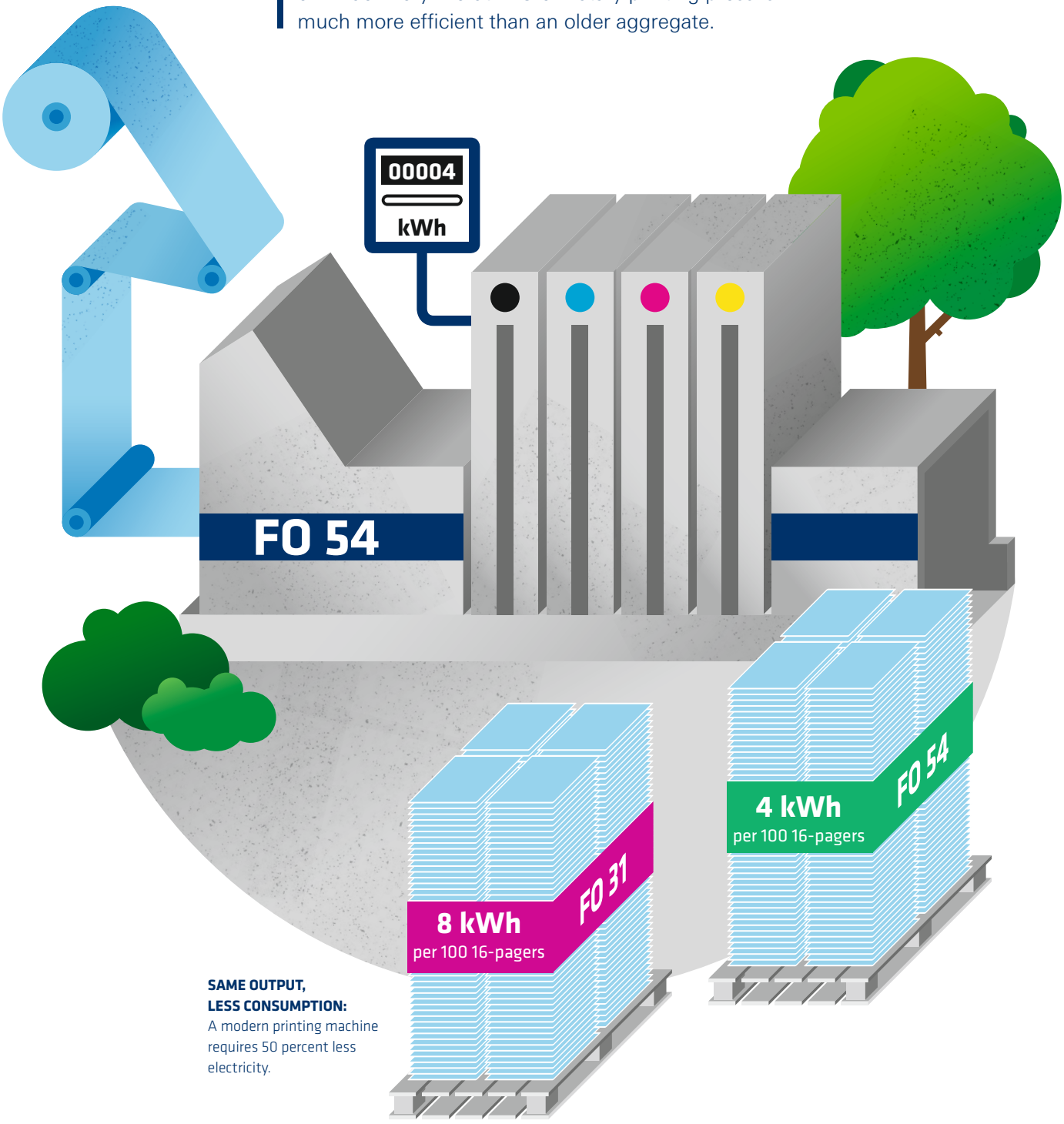
PRINTING & MEDIA AWARD

- Named "Most Environmentally Conscious Company of the Year"

CO_2-COMPENSATED PRODUCTION

- at our customers' request, unavoidable CO_2 emissions are calculated and compensated for through certificates for reducing emissions from recognized climate protection projects

WITH ECONOMICAL ENGINES, extensive paper web processing and precise control systems, highly modern machinery like our FO 54 rotary printing press is much more efficient than an older aggregate.



SAME OUTPUT, LESS CONSUMPTION: A modern printing machine requires 50 percent less electricity.

MODERN MACHINERY PROTECTS RESOURCES

Holistic Investments

A production volume like Mohn Media's necessarily leads to consequences for the environment. That is why for years we have aimed to limit our environmental impact to an unavoidable minimum. Taking environmental aspects into account when investing helps us do this.

For modernizations or new investments, environmental performance as well as financial and qualitative considerations help us decide in favor of or against a piece of machinery. This means that we take particular consideration of low gas and electricity consumption when selecting printing presses, as well as limited or even no use of isopropanol in the fountain solution.

NATURAL GAS

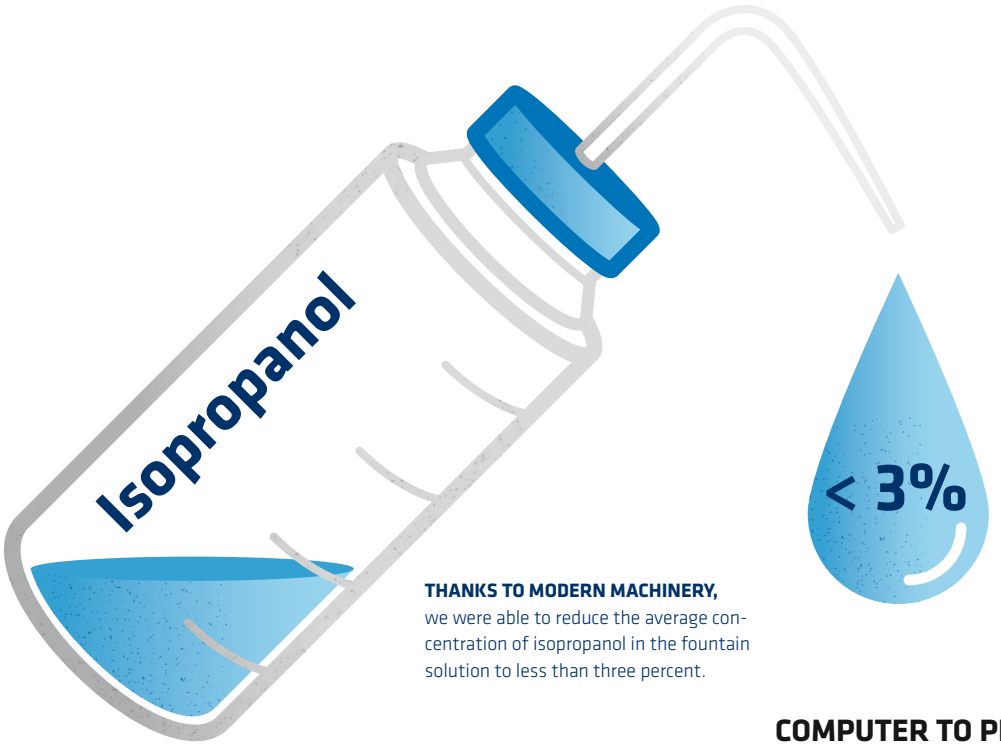
Our gas consumption has consistently decreased over the past several years. This is mainly due to optimized heat recovery when drying printed paper webs during offset printing: The organic solvents released during the drying process are burned, and the thermal energy released is piped back through a heat exchange for continued use in the drying process or used in some other way. Using solvents as an energy supply means we have a lower demand for natural gas as a primary energy source, thereby reducing our CO_2 emissions.

In 2014 and 2015, the incinerators in the drying units of three older rotary printing presses (FO 37, FO 41 and FO 48) were replaced with more effective aggregates. This saves nearly 45 percent on gas per machine. Newer printing presses, such as the FO 54 or FO 55, have already proved to be highly efficient pieces of equipment.

ELECTRICITY

The lion's share of the electricity we consume goes to web-fed offset printing. Investments in new machinery or modernizing existing facilities is another source of major potential for conserving energy and reducing greenhouse gas emissions in the process. Comparing the electricity consumed by a modern printing press (FO 54, year of manufacture 2012) and an older unit (FO 31, year of manufacture 1993) when producing 1,000 DIN A4 16-page volumes makes this clear: While the FO 31 uses eight kilowatt hours to print this, the FO 54 needs only half (i.e. four kilowatt-hours) to perform the same task.

Conclusion: Despite the nominally higher amount of electricity consumed – 468,120 kilowatt-hours for the FO 54 compared to 132,930 kilowatt-hours for the FO 31 – a modern machine has a much higher product output, making its performance much more powerful and efficient. The advantages here from the use of more economical engines, larger web widths and more precise control systems really pay off – for the company and for the environment.



THANKS TO MODERN MACHINERY, we were able to reduce the average concentration of isopropanol in the fountain solution to less than three percent.

ISOPROPANOL

The use of water in offset printing prevents printing inks from adhering to the non-image areas of the print form. The composition of the water, in particular the temperature and degree of hardness, has a major impact on print quality. Additives are added to the dampening solution to reduce the surface tension of the water and ensure uniform distribution across the print form. It was primarily isopropanol (IPA) that has been over the years – often in concentrations exceeding the levels necessary for printing. As a volatile solvent, however, IPA poses environmental risks since it contributes to the accumulation of summer smog.

Because of this, new dampening solution additives have been developed. Together with modern measurement and control instruments, they enable offset printing to be done with a significantly reduced amount of alcohol or even none at all. By increasingly replacing outmoded machinery through modern and completely alcohol-free aggregates over the past several years, we have now succeeded in reducing the average IPA concentration to under three percent. The German Federal Imission Control Act (Bundesimmissionsschutzgesetz) sets forth a maximum isopropanol content of eight percent in fountain solution.

COMPUTER TO PLATE

In the mid-1990s Mohn Media introduced computer to plate technology (CtP), gradually doing away with the traditional process of producing printing plates. Instead of copying image and text information to the printing plate photographically using a film, the printing information is now transmitted digitally. This brought along with it higher quality and more stable processes, laying the foundations for greater cost effectiveness. At the same time, this digitalization significantly reduced the environmental impacts that had been caused by manufacturing printing plates.

The changeover meant doing away with several process steps, such as exposure. This also led to the conservation of a number of resources, including photographic chemicals, water and electricity used for exposure and development as well as films, adhesives and cleaning agents used for manual assembly. In particular, doing away with photographic film led to significant environmental relief: The film was coated with high-quality silver and mining it required a great deal of energy to be expended.

And further developments in printing plate technology have reduced our environmental impact: Thermal plates provide especially high level of press stability thanks to their special coating. All of this has made printing volumes of up to a million copies possible with just one set of plates. The result: Production of only a small number of plates is needed for large print runs, which not only leads to lower levels of aluminum consumption, but also significantly reduces the amount of energy and chemicals used when processing plates.

OUR KEY INDICATOR SYSTEM

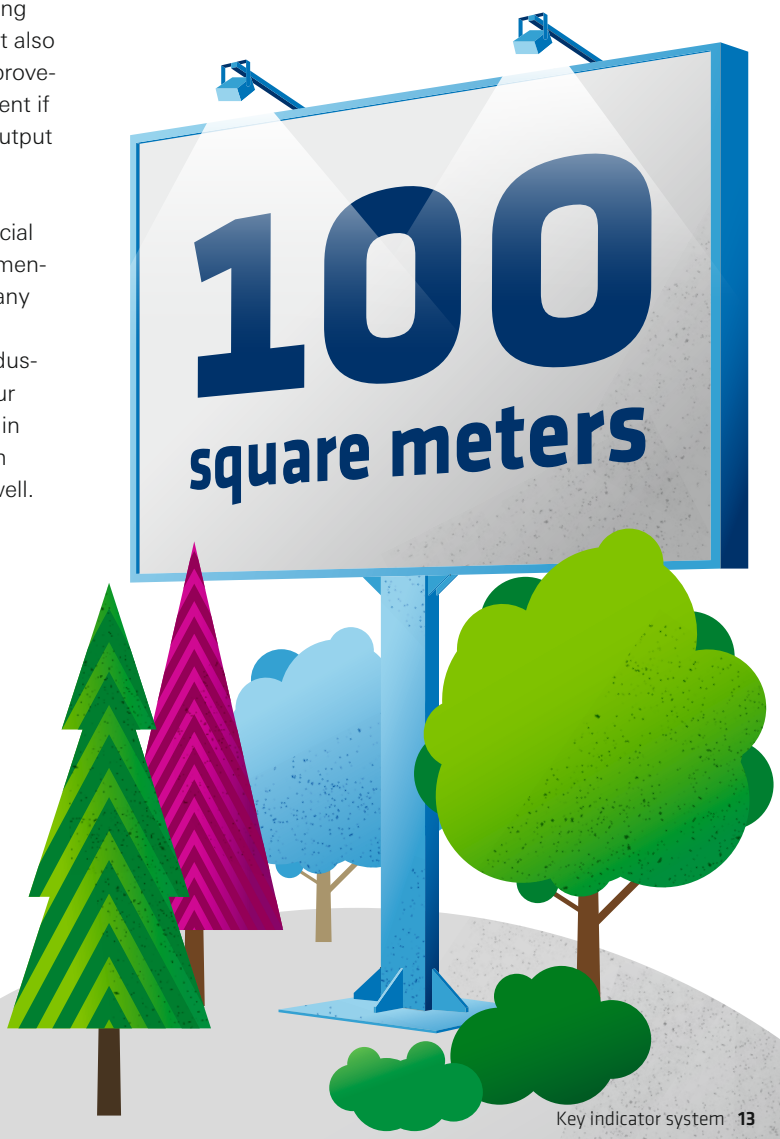
Comparable in the Long Term

Our Environmental Company Profile for the 1992/1993 financial year was yet another milestone, but it also highlighted the weak points of the profile system being used at the time. The findings could not be compared over multiple years.

Mohn Media's initial Environmental Company Profiles examined material and energy flows solely on the basis of absolute figures. However, this was due to fluctuations in production, which make statements on actual environmental performance over time impossible. A reduction in energy consumed alone is no indicator of how effective measures for conserving energy really are – production performance must also be taken into account. This is because a real improvement in environmental performance is only present if energy consumption is reduced while product output remains at the same level or even increases.

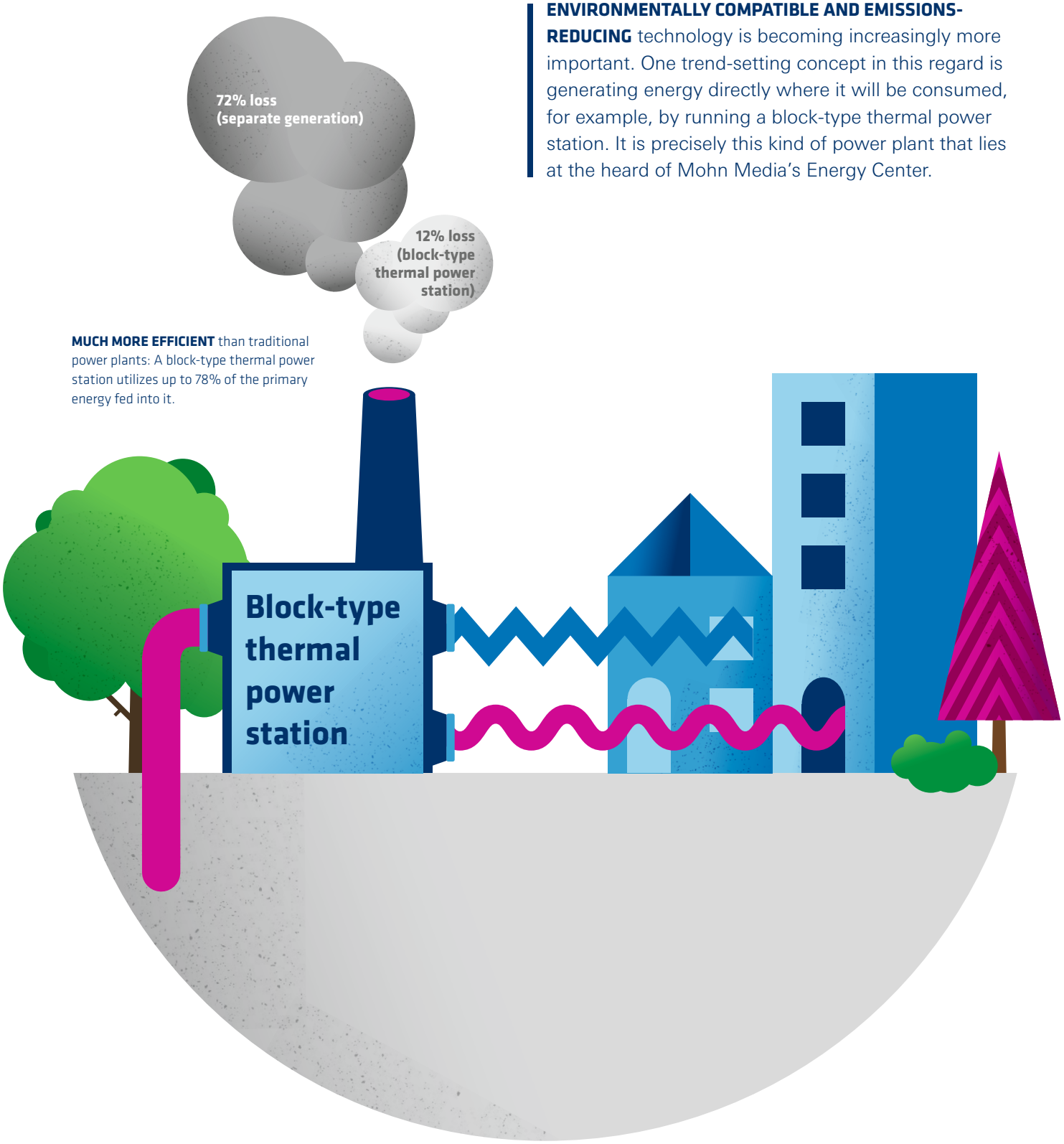
That is why, beginning with the 1993/1994 financial year, we expanded the reporting on our environmental performance using the Environmental Company Profile to include an indicator system specially designed for the requirements of the printing industry. In order to be able to assess and compare our environmental impact regardless of fluctuations in production, figures have since been presented in relation to the surface area of printed paper as well.

This means they are not reliant on the weight and format of the paper used and each figure refers to 100 square meters of surface area printed. The indicators for the 2015 financial year start on page 26.



COMPARABLE OVER TIME: The reference value for our environmental indicators is independent of fluctuations in production.

ENVIRONMENTALLY COMPATIBLE AND EMISSIONS-REDUCING technology is becoming increasingly more important. One trend-setting concept in this regard is generating energy directly where it will be consumed, for example, by running a block-type thermal power station. It is precisely this kind of power plant that lies at the heard of Mohn Media's Energy Center.



MUCH MORE EFFICIENT than traditional power plants: A block-type thermal power station utilizes up to 78% of the primary energy fed into it.

POWER GENERATION THAT CONSERVES RESOURCES

Combined Heat and Power

A block-type thermal power station generates power while at the same time using the resulting heat, which is why it is sometimes referred to as combined heat and power or a combined heat and power plant. This means it utilizes the primary energy used much more efficiently than separate generation of the different forms of energy. The proximity between the place of generation and use also reduced additional network loss.

In the early 1990s Mohn Media decided to redesign its energy supply on-site and to do so as efficiently as possible. Until that point, heat was supplied through local boiler plants where the thermal energy needed was generated with high losses due to the low annual consumption rates (i.e. the ratio of usable heat generated to fuel energy used).

Refrigerant energy was supplied by electrically powered compression refrigeration machines that at the time were still run using refrigerants containing chlorofluorocarbons. The energy demand was covered by regional energy suppliers.

THE MOHN MEDIA ENERGY CENTER

The Mohn Media Energy Center began operating in 1994. The European Union and German Federal Ministry for the Environment and Reactor Safety had funded the project and analyzed its efficacy in terms of the reductions in emissions being sought in a final report.

However, the Energy Center not only ensures an in-house energy supply, but also supplies adjacent Bertelsmann subsidiaries and neighboring companies with electricity and district heating. This has allowed outmoded and inefficient facilities in the companies being supplied to be replaced.

Another goal was to reduce greenhouse gas emissions. The Energy Center uses natural gas as its primary energy source, which is associated with significantly lower pollutant emissions compared to coal and crude oil. As a result, the energy generation process here only emits around half the quantity of CO_2 compared to the electricity mix in place in Germany.

THE ENERGY CENTER provides Mohn Media with electricity, heat and cold.

The technology used in the power plant is based on a modern combined cycle power plant using gas and steam turbine processes. This process involves separating waste heat, which is in turn used to supply district heating internally and externally, as described. The thermal energy is used for process and space heating as well as for refrigeration using absorption chilling. The result: energy supplied much more efficiently with lower greenhouse gas emissions.

INTEGRATED MANAGEMENT SYSTEM

Holistic Management

Acting sustainably also means taking as holistic a view as possible of our processes as well as input and output. That is why we have had an integrated management system (IMS) in place for years now, comprising the areas of quality, the environment and energy.

Our IMS was launched in 2008 when we consolidated the existing quality management and environmental management systems in accordance with ISO 9001 and ISO 14001, respectively. We incorporated energy management pursuant to ISO 50001 in 2013 and expanded the IMS accordingly.

QUALITY MANAGEMENT

The first attempts to represent our company's processes in a structured way were made in 1993. Mohn Media had grown to become Europe's leading printing company – an expanding enterprise with increasing complexity and interdependence of internal processes. Its operational organization, which involved a great deal still being done "on demand" with responsibilities not clearly defined, no longer met the requirements for this.

The executive board introduced a quality management system to rectify these deficits. In addition to clear guidelines for properly performing activities, it also includes a system for preventing and handling errors. After the first external evaluation, it was certified in 1994 in accordance with ISO 9001.

ENVIRONMENTAL MANAGEMENT

Production on the scale undertaken by Mohn Media brings with it a special responsibility to the environment. Along with using large quantities of paper – we print more than 500,000 metric tons annually – examples of environmental consideration include the use and disposal of chemicals as well as emissions.

We have been documenting how we have been meeting this responsibility since the early 1990s – often going beyond the levels legally required. In 1992 we recorded waste amounts, material consumption and emission figures and published Mohndruck's first ecological report and environmental guidelines. In 1997, the company's environmental management was reviewed and certified for the first time in accordance with ISO 14001.

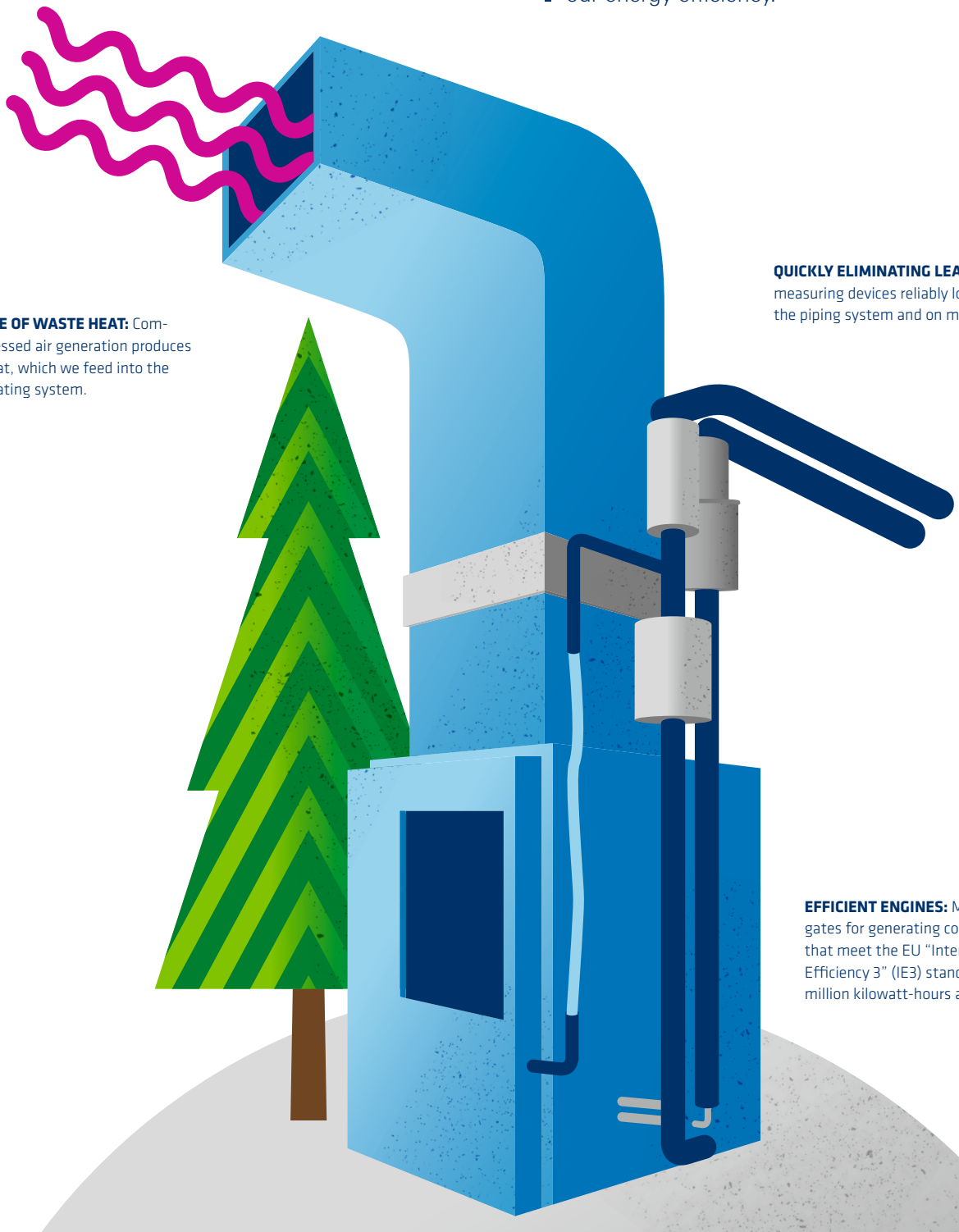
ENERGY MANAGEMENT

High energy consumption pollutes the environment and results in high costs. On this basis, we are working persistently on further reducing our energy consumption. In 1994, we established our own combined heat and power unit, which to this day is generating the energy required by production in an environmentally sustainable way. It is highly efficient in its use of primary energy and its greenhouse gas emissions are 50 percent lower compared to the German national electricity mix.

In 2013, our IMS was expanded by a DIN ISO 50001-compliant energy management system. An energy team comprising employees from every department was formed on the basis of an energy policy put forth by company executives. They were tasked with defining strategic and operational energy objectives and achieving them through clearly defined measures. Controlling continuously evaluates the success of these measures using environmental performance indicators.

EFFICIENT COMPRESSED AIR GENERATION

Compressed air irreplaceable in offset printing and is used to a large extent. It is a highly cost-intensive form of energy. This makes clear how we have used optimized processes to increase our energy efficiency.



USE OF WASTE HEAT: Compressed air generation produces heat, which we feed into the heating system.

QUICKLY ELIMINATING LEAKS: Ultrasonic measuring devices reliably locate leaks in the piping system and on machines.

EFFICIENT ENGINES: Modern aggregates for generating compressed air that meet the EU "International Efficiency 3" (IE3) standard save 1.2 million kilowatt-hours annually.

SUSTAINABLE FOREST MANAGEMENT

Partnership with the FSC

The globally rising need for wood – as a raw material in paper production among other things – continues to lead to uncontrolled logging and deforestation. That's why is so important to produce paper responsibly. In order to encourage this, we are working together with organizations including the Forest Stewardship Council® (FSC®).

Mohn Media has been certified according to the criteria of Chain of Custody (CoC) since 2003. This made us one of the first major printing companies to have integrated rigorous and sound advice from customers regarding paper from responsible forest management into its processes. We have since been working on further developing the FSC in the paper sector. For example, we are a founding member of the FSC Print and Paper Task Force, which was established together with the FSC working group for Germany and WWF Germany.

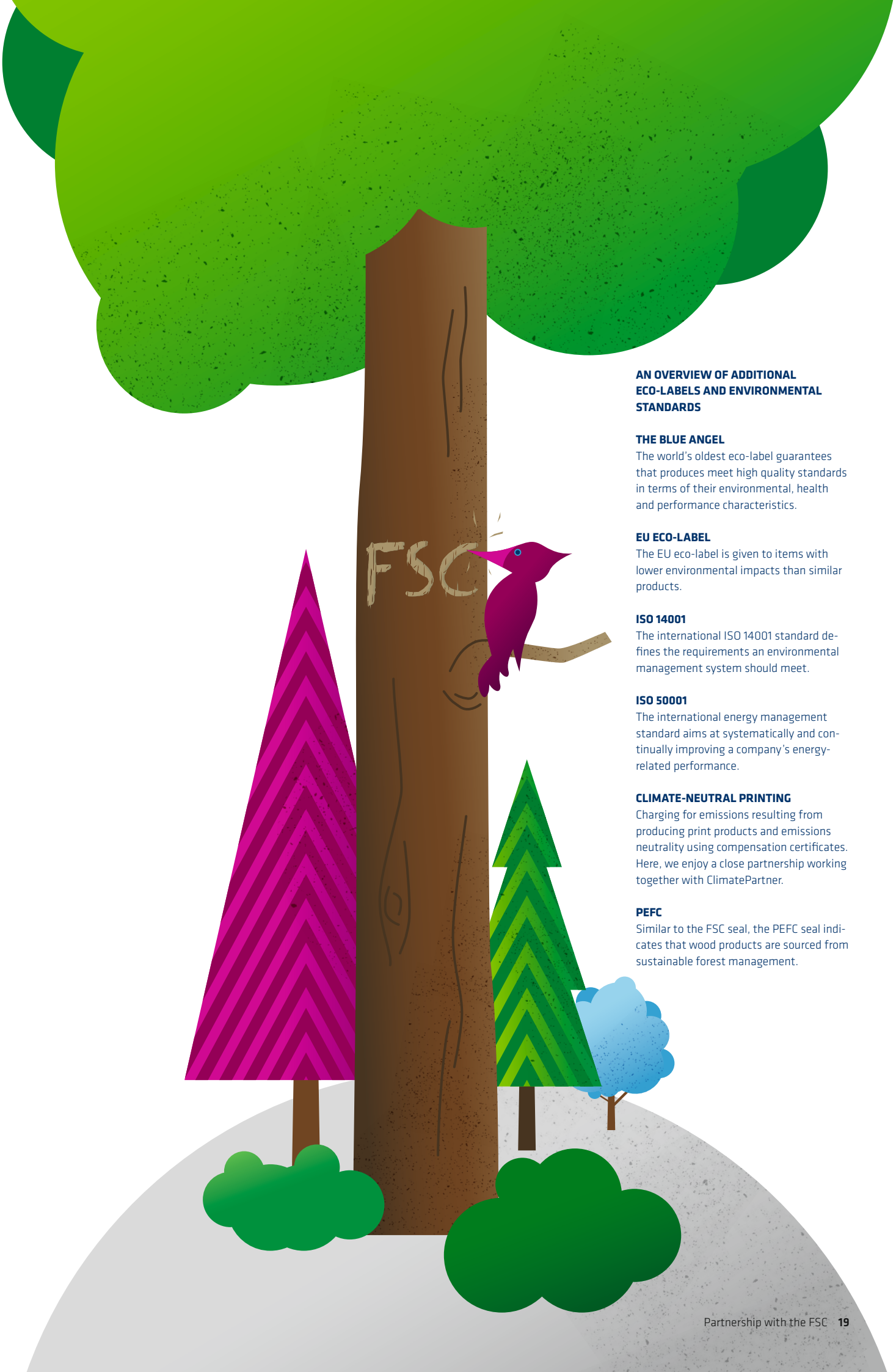
As shown, the key elements that make up our involvement are advising our customers and properly meeting CoC standards. If a customer wishes us to use FSC paper, we are obligated as a certified company to document the flow of goods fully and to ensure that no uncertified materials are added. Mohn Media clearly marks order documents and certified materials. This helps in identifying certified paper and preventing any confusion. In this way, our customers can be sure that their orders have been printed on the paper they want.

FSC
www.fsc.org
FSC® C011124

Das Zeichen für verantwortungsvolle Waldwirtschaft

THE FSC

The Forest Stewardship Council (FSC) is an international non-profit organization founded in 1993. WWF, Greenpeace, NABU, Robin Wood, social organizations, interest groups representing indigenous peoples, trade unions and numerous different companies support the FSC in its goal of contributing to the improvement of forestry management. The FSC seal is a globally recognized symbol for wood products sourced from certified and responsibly managed forestry. Maintenance of the FSC standard in certified companies is reviewed annually.



AN OVERVIEW OF ADDITIONAL ECO-LABELS AND ENVIRONMENTAL STANDARDS

THE BLUE ANGEL

The world's oldest eco-label guarantees that produces meet high quality standards in terms of their environmental, health and performance characteristics.

EU ECO-LABEL

The EU eco-label is given to items with lower environmental impacts than similar products.

ISO 14001

The international ISO 14001 standard defines the requirements an environmental management system should meet.

ISO 50001

The international energy management standard aims at systematically and continually improving a company's energy-related performance.

CLIMATE-NEUTRAL PRINTING

Charging for emissions resulting from producing print products and emissions neutrality using compensation certificates. Here, we enjoy a close partnership working together with ClimatePartner.

PEFC

Similar to the FSC seal, the PEFC seal indicates that wood products are sourced from sustainable forest management.

The Environmental Company Profile

The 2015 Environmental Company Profile celebrates the 25th annual profile in a row – and of course presents a detailed overview of our environmental impact during this anniversary year. A comparison of our consumption of material and energy and the resulting products and emissions with those of previous years indicates the areas in which we have achieved additional improvements as well as areas that could stand to be optimized.

The **production quantity** increased in comparison with the previous year by 2.6 percent to 14.53 billion square meters of printed surface area. Numerically speaking, the largest order groups here were leaflets, brochures and Action Print (4.18 billion copies) as well as magazines and catalogs (561.3 million copies). In addition, just under 35 million blue books and 44.7 million telephone directories were produced.

RAW, AUXILIARY AND OPERATING MATERIALS

Increased production also requires increased **consumption of raw materials**. A total of 552,025 metric tons of raw materials were used (+1.7 percent). Nearly 95 percent of this is printing paper, of which 88 percent was sourced from certified sustainable forestry or produced using recycled fibers. Conversely, this means that only twelve percent of printed paper lacks a sustainability label that meets Blue Angel, FSC or PEFC criteria.

The use of inks and varnishes has increased to 11,097 metric tons (+8.4 percent). The use of additional production materials such as cardboards, covering materials and shipping material was further reduced.

The quantity of **auxiliary materials** used for printing – for example, binding materials, silicones and adhesives – increased by 2.2 percent to 2,759 metric tons, which is primarily attributable to increased consumption of adhesives and binding materials. The use of silicone oils and emulsions, which are needed to improve paper web processing during postpress, has decreased further to 1,047 metric tons.

The third material group in the printing process comprises **operating materials**. These include printing plates, cleaning agents, solvents and lubricants, to name the most important items. Unlike raw and auxiliary materials, they are not part of the finished printed product. Nevertheless, without them printing and processing would not be possible. Despite the increased production quantity, 10.6 percent less operating materials were used than in 2014 – although the quantity of aluminum printing plates increased by 7.2 percent. At 1,789 metric tons, salts, lyes and acids make up the lion's share of operating materials used to recycle our well water into process water and dampening solution. The quantity used was reduced by 20.8 percent to 469 metric tons. Water consumption was 325,548 cubic meters (-8.1 percent).

Electricity consumption increased to 124.1 million kilowatt hours. The electricity demand was covered by in-house generation through the combined heat and power plant and to a lesser extent through grid electricity purchased from the utilities services in Gütersloh.

The direct use of natural gas in the drying and thermal afterburning units was reduced from 7.2 to 5.9 million cubic meters by shutting down an old printing line and commissioning the new, energy-optimized FO 56 offset printing press. The approximately 40 company vehicles – company cars, company fire

department vehicles, delivery trucks, and commuter shuttles – consumed a total of 187.4 metric tons of fuel (+3.3 percent), while the gas-operated forklift trucks used for in-house site goods transport consumed 85.4 metric tons of propellant gas.

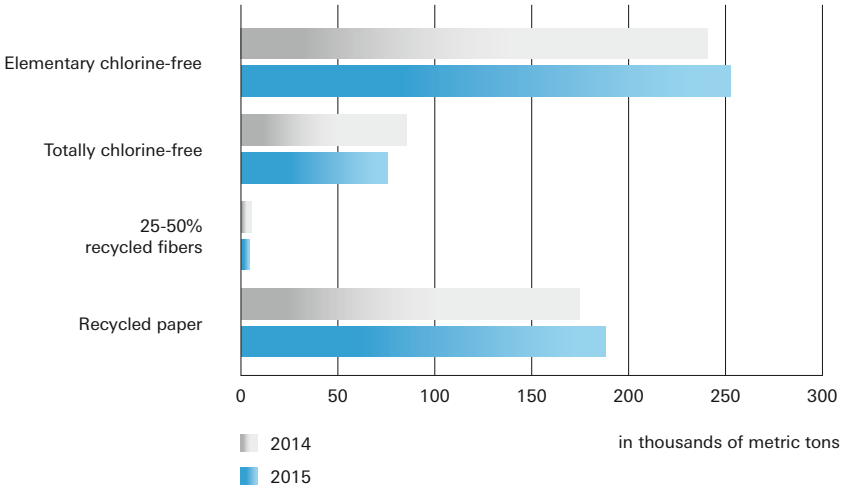
The **air emissions** reflect the energy sources used. By purchasing electricity from the German grid, the proportions of different pollutant emissions also changed. Together with the reduced consumption of the natural gas used directly for production and despite the increased consumption of electricity and fuel, emissions were reduced by 3.7 percent for carbon dioxide (a greenhouse gas). Compare this reduction to a clear increase in emissions of sulfur dioxide (a pollutant gas) and particulate matter pollution. Tripling the amount of sulfur dioxide to 10.6 metric tons and the increase in particulate matter by 1.2 metric tons from the relatively low amount of 3.8 metric tons are largely due to purchasing electricity from the national network. 43.6 percent of electricity in 2015 was provided by coal-fired power stations with correspondingly high amounts of sulfur dioxide and particulate matter.

In terms of **business travel**, a total distance of 495,769 kilometers were covered by air (-9 percent) and 245,234 by train (-8 percent). The total number of kilometers covered by rental car also fell.

Of a total amount of 85,556 metric tons of **waste**, 84,814 metric tons (99.1 percent) were reused. The lion's share of that – 94.7 percent – was recycled. Only 0.9 percent was disposed of as hazardous materials in hazardous waste incinerators. That amount is nearly 20 percent less than in the previous year. The amount of waste requiring special monitoring for recycling and disposal was 811.6 metric tons (-27.1 percent).

Waste water from the offset printing process had only a low level of pollution such that it could be released into the city of Gütersloh's sewage treatment plant without any pre-treatment needed. The total amount fell by 5.5 percent to 13,862 cubic meters.

PAPER USE BY BLEACHING METHOD



FACTS AND FIGURES

The Company Balance Sheet

How many products did we produce in the 2015 financial year, and what amounts of raw, auxiliary and operating materials as well as energy did we require for that? What kinds of waste and emissions were created in the process? When compared to the previous year, our company balance sheet provides an informational overview in absolute figures.

INPUT	2014	2015	CHANGE IN %
Raw materials (t)	**542,553.96**	**552,025.23**	**1.7**
Copying paper	75.79	63.07	-16.8
Sheet paper	35,987.72	37,592.13	4.5
Reel paper	478,143.57	486,031.99	1.6
Cardboard	4,517.50	4,204.03	-6.9
Covering material/laminate	110.32	79.13	-28.3
Packaging/shipping	13,481.02	12,958.02	-3.9
Ink/varnish	10,238.05	11,096.88	8.4

Auxiliary materials (t)	**2,699.27**	**2,759.07**	**2.2**
Glue	1,416.70	1,517.48	7.1
Fabric	35.56	92.30	159.6
Stamping foil	2.17	1.51	-30.6
Metals/wire	39.72	54.47	37.1
Underlay sheets	2.25	2.11	-6.2
Backliners/crepe	48.57	40.24	-17.2
Silicone	1,150.07	1,047.11	-9.0
Other	4.22	3.85	-8.8

Total operating materials (t)	**4,016.19**	**3,589.14**	**-10.6**

Operating materials minus hazardous materials (t)	**607.07**	**615.35**	**1.4**
Cleaning agents	34.67	25.97	-25.1
Lubricants	33.05	9.12	-72.4
Other	5.10	4.83	-5.2
Diverse printing materials	19.97	8.12	-59.3
Printing plates	472.08	519.72	10.1
Offset blankets	21.51	25.95	20.6
Wash fleece	20.68	21.64	4.6

Hazardous operating materials (t)	**3,409.12**	**2,973.79**	**-12.8**
Water treatment	2,257.40	1,788.57	-20.8
Developers	38.70	40.95	5.8
Cleaning agents	348.36	366.51	5.2
Isopropanol/dampening solution additive	764.67	777.77	1.7

Energy/Transport			
Electricity (kWh million)	118.70	124.06	4.5
Natural gas (m^3 million)	7.22	5.88	-18.6
Fuels (t)	181.39	187.41	3.3
Propellant gas (t)	79.88	85.44	7.0

Fresh water (m^3)	**354,353**	**325,548**	**-8.1**

OUTPUT	**2014**	**2015**	**CHANGE IN %**
Products (in millions)			
Books	30.40	34.10	12.1
Magazines/catalogs	571.04	561.32	-1.7
Action Print	1,200.07	1,280.77	6.7
Brochures	2,643.06	2,900.08	9.7
Telephone directories	48.49	44.71	-7.8
Printed surface (in billions of m^2)	14.18	14.53	2.5

Accumulated waste (t)			
Waste for recycling	83,085.29	84,744.38	2.0
of which hazardous waste for recycling	114.40	69.68	-39.1
Hazardous waste for disposal	922.10	741.68	-19.6

Wastewater (m^3)	**144,677**	**130,862**	**-9.5**

Air emissions (t)			
CO_2	148,419.72	142,887.37	-3.7
CO	72.57	71.16	-1.9
SO_2	2.60	10.63	309.0
NO_x	170.11	167.09	-1.8
Dust	2.64	3.79	43.7
CH_4	253.12	240.04	-5.2
NMVOC	13.55	13.22	-2.4
Total HC	266.66	253.27	-5.0

KEY ENVIRONMENTAL INDICATORS

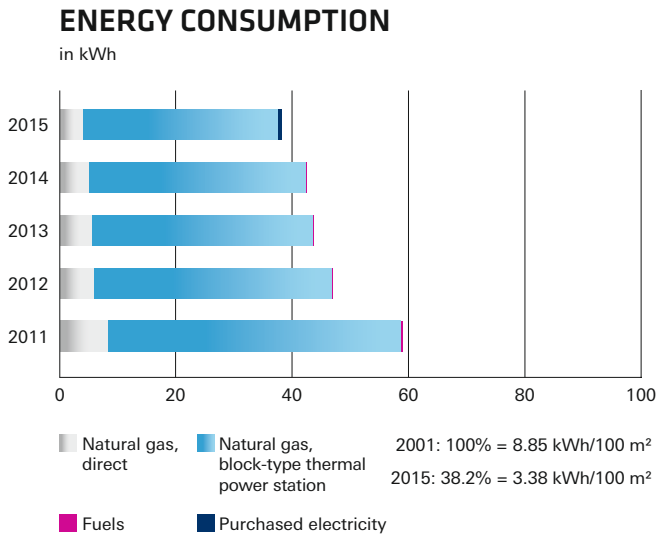
Eco-controlling 2015

Energy and water consumption, demand for wood and paper waste quantities – our eco-controlling takes a detailed look at our environmental impact over a period of several years.

Our indicator system provides us with the opportunity to analyze and compare our environmental impact regardless of fluctuations in production (see page 13): These indicators are each based on 100 square meters of surface area of printed paper. The comparison year for percentages – i.e. the year in which the value was 100 percent – is 2001. This allows us to document the long-term change and efficacy of our eco-controlling with a transparent and consistent reference value.

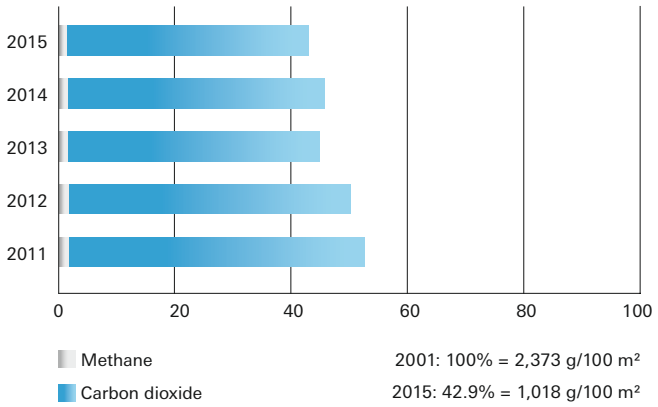
One of the most important indicators is **energy consumption**. Despite the increased production quantity compared to the previous year, the indicator for energy consumption fell by more than ten percent, amounting to 3.38 kilowatt hours per 100 square meters of surface area of printed paper. This is another impressive indication of the energy efficiency of our highly modern fleet of machines.

We have been operating our own natural-gas powered gas turbine block-type thermal power station since 1993, which allows us to generate our own energy supply for electricity, heat and cold. Any electricity and heating generated above what we require to run our own facilities is metered out to neighboring Bertelsmann Group and other companies, which helps strengthen the balance of emissions in Gütersloh. This reporting year's printing volumes, which increased by a further 2.5 percent, marked the first time in years we were unable to cover the total electricity required through our Energy Center alone. We had to purchase 7.7 million kilowatt hours from the German grid.



GREENHOUSE EFFECT

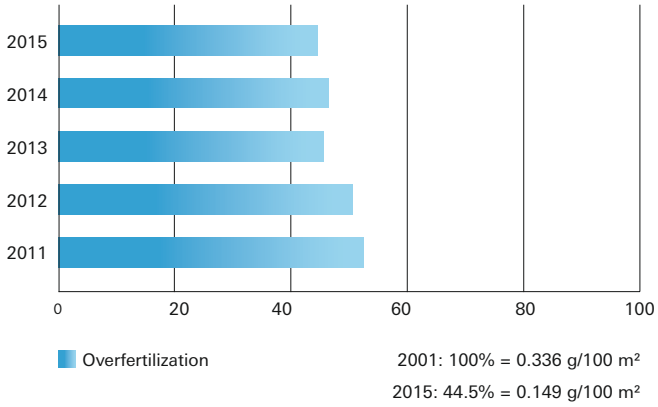
in g CO_2 equivalents



In 2015, the total **greenhouse effect** amounted to 1.02 kilograms of CO_2 equivalents, 6.1 percent less than in 2014 yet still 43 percent of the annual amount from 2001. The figures for **overfertilization** and the formation of ground-level ozone (summer smog) paint a similar picture. Emissions of nitrogen oxides and phosphorous compounds into the air caused by energy consumption can be traced back to high levels of overfertilization of bodies of water and soil. The consistent use of modern emissions technology has reduced the figures for the Energy Center, company transport and company cars below the statutory threshold levels. The overfertilization potential reached 0.15 grams per 100 square meters, making it 4.5 percent lower than the previous year.

OVERFERTILIZATION

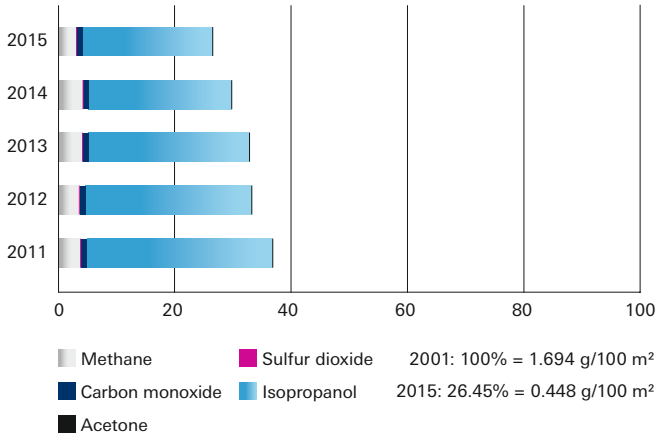
in g PO_4 equivalents



The **summer smog potential** denotes the formation and harmful effects of the ground-level ozone formed by incineration processes and emissions from transport. This includes air emissions of volatile organic hydrocarbons such as methane, acetone and isopropanol, which is used as a dampening solution additive during the printing process. When hazardous inorganic gases like carbon monoxide and sulfur dioxide are exposed to solar energy, the result is poisonous ozone for flora, fauna and people alike. The figures (based on printed surface area) fell by 2.2 percent to 0.45 grams.

SUMMER SMOG

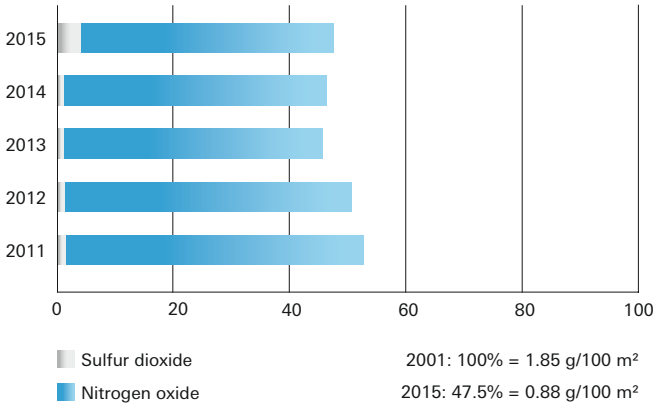
in g ethylene equivalents



The result of purchasing electricity from the public grid and the associated mix of suppliers at 43.6 percent electricity from lignite-fired and coal-fired power stations, the figures for the **acidification** indicator increased during the 2015 financial year. The amount

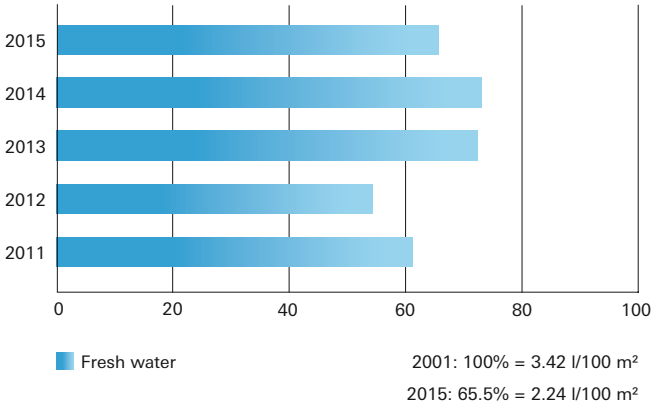
ACIDIFICATION

in g SO^2 equivalents



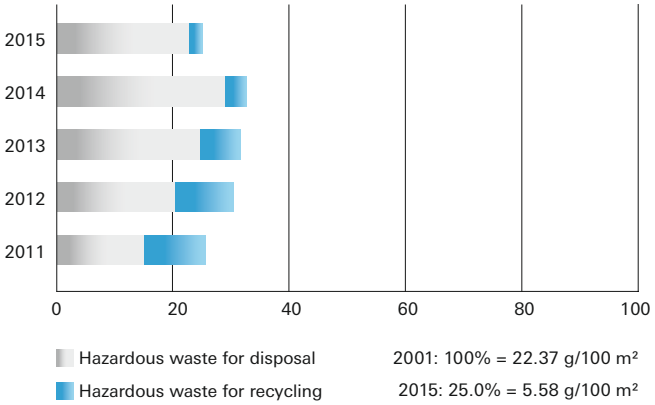
WATER CONSUMPTION

in l/100 m²



WASTE AND HAZARDOUS MATERIALS

in g/100 m²



of sulfur in coal-fired power meant the figure increased by 1.1 percent to a (still low) amount of 0.88 grams per 100 square meters of printed surface area.

The indicators presented above denote the energy consumed and the air emissions caused largely by this. In addition, **water consumption** and waste generated represent important indicators. At 2.24 liters per 100 square meters of printed surface area, water consumption is nearly ten percent lower than in 2014. The freshwater used in our production process is sourced from in-house facilities for extraction and processing at the Gütersloh site. Depending on how clean it is, the extracted groundwater is processed to be used as cooling water, dampening solution and sanitary water, as well as room humidification in the Energy Center. The waste water produced from the offset printing process and processing has a low level of pollution and can be released into the public canal network together with sanitary water without any extensive processing.

In terms of a circular flow economy that is as extensive as possible, our company's waste balance focuses on the greatest possible levels of recycling and the lowest possible levels of disposal. In line with this, less than just one percent of all waste was categorized as "requiring special monitoring," of which 8.6 percent (69.7 metric tons) could be sent for recycling. At a total of 811.4 metric tons, the amount of **hazardous material** for recycling and disposal was much lower than in the previous year: In terms of the surface area of paper processed, the figure was 5.6 grams per 100 square meters. Overall, 84,814 metric tons of waste material was recycled for its content or energy. At 80,344 metric tons, the largest share of these reusable materials were paper and cardboard, which were used for paper recycling.

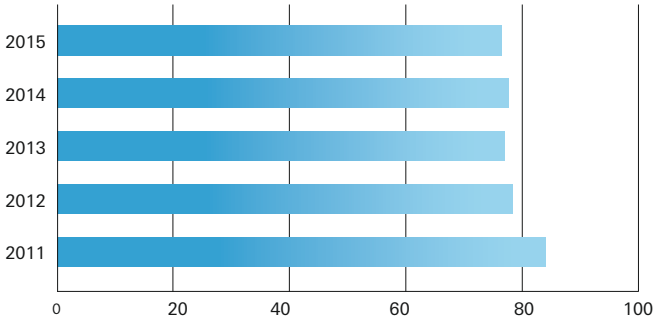
While the indicators currently being reported generally represent typical parameters for manufacturing companies, the indicators for paper waste and wood consumption are used solely for the printing process. The **amount of paper waste** denotes the ratio of

purchased and processed printing paper to the quantity of paper waste for use as paper recycling. We were able to reduce this rate by a further percentage point, totally 553 grams per 100 square meters of printed surface area.

The **wood consumption** indicator ultimately describes the percentage of recycled fiber in the printing paper we used, documenting our sustainable use of wood resources. However, opportunities to influence a printing company are tightly limited since the contractor makes decisions as to the paper to be used. The wood consumption indicator has improved by 0.43 percent compared to the previous year, amounting to an average consumption of fresh wood of 6.98 kilograms of in terms of the printed surface area of paper.

PAPER WASTE

in g/100 m²

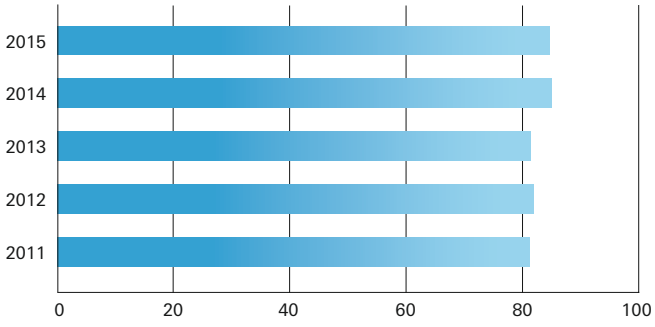


Paper waste

2001: 100% = 724.49 g/100 m²
2015: 76.3% = 552.91 g/100 m²

WOOD CONSUMPTION

in kg/100 m²



Wood consumption

2001: 100% = 8.26 g/100 m²
2015: 84.5% = 6.98 kg/100 m²

Comparison of Financial Years

	2011	2012	2013	2014	2015
Products (in millions of units)	**3,013.7**	**3,499.7**	**4,443.0**	**4,551.0**	**4,858.1**
Books	37.0	34.8	40.1	30.4	34.1
Magazines/catalogs	570.2	577.2	558.0	571.0	561.3
Action Print	1,271.8	1,250.0	1,172.6	1,200.1	1,280.8
Brochures	1,043.6	1,551.6	2,603.7	2,643.1	2,900.1
Telephone directories	74.6	72.4	68.6	48.5	44.7
Sum of printed surface (in billions of m^2)	12.9	13.3	14.1	14.2	14.5

Raw materials (t)	**478,750.57**	**491,805.22**	**519,808.46**	**542,553.96**	**552,025.23**
Copying paper	67.48	67.18	63.75	75.79	63.07
Cut-size paper	43,323.54	37,383.63	33,456.40	35,987.72	37,592.11
Reel paper	409,474.29	429,556.42	458,600.02	478,143.57	486,031.99
Cardboard	4,598.72	4,799.38	4,515.60	4,517.50	4,204.03
Covering material/laminate	133.10	93.69	93.39	110.32	79.13
Packaging/Shipping	12,345.70	11,089.08	12,757.22	13,481.02	12,958.02
Ink/varnish	8,787.44	8,815.85	10,322.07	10,238.05	11,096.88

Auxiliary material (t)	**3,038.71**	**2,852.59**	**2,809.02**	**2,699.27**	**2,759.07**
Adhesives	1,485.23	1,439.15	1,449.74	1,416.70	1,517.48
Cloth	6.93	26.70	22.42	35.56	92.30
Stamping foil	2.19	1.19	1.57	2.17	1.51
Metals/wire	75.20	65.28	39.44	39.72	54.47
Underlay sheets	2.29	2.19	1.93	2.25	2.11
Backliners/crepe	56.20	50.37	50.39	48.57	40.24
Silicone	1,381.08	1,261.67	1,240.07	1,150.07	1,047.11
Other	29.58	6.05	3.47	4.22	3.85

Operating material (t)	**570.32**	**580.90**	**595.47**	**607.07**	**615.35**
Cleaning agents	32.50	33.93	38.34	34.67	25.97
Lubricants	13.93	9.88	10.36	33.05	9.12
Other	4.70	4.83	4.77	5.10	4.83
Diverse printing materials	18.68	19.93	19.51	19.97	8.12
Printing plates	456.16	467.55	479.52	472.08	519.72
Offset blankets	20.40	23.17	23.41	21.51	25.95
Wash fleece	23.95	21.61	19.56	20.68	21.64

Fresh water (m^3)	**269,643**	**247,116**	**348,447**	**354,353**	**325,548**

	2011	2012	2013	2014	2015
Hazardous materials (t)	**2,500.29**	**2,698.39**	**2,704.73**	**3,409.12**	**2,973.79**
Water treatment	1,440.64	1,573.75	1,528.14	2,257.40	1,788.57
Developers/fixing agents	33.41	36.41	38.25	38.70	40.95
Cleaning agents	235.88	328.24	347.22	348.36	366.51
Isopropanol/dampening solution additive	790.36	759.99	791.12	764.67	777.77
Energy consumption					
Electricity (kWh million)	128.37	123.88	129.50	118.70	124.06
Natural gas (m^3 million)	9.18	7.83	7.93	7.22	5.88
Fuels (t)	220.10	213.99	165.82	181.39	187.41
Propellant gas (t)	76.45	76.05	80.76	79.88	85.44
Waste for recycling (t)	**82,015.18**	**79,125.86**	**82,515.33**	**83,085.29**	**84,744.38**
Paper/cardboard	78,414.09	75,495.84	78,590.17	79,151.10	80,344.34
Wood	1,490.87	1,550.52	1,808.82	2,886.16	1,814.62
Printing plates	465.09	471.74	461.65	459.12	534.51
Scrap	241.78	260.14	340.09	235.10	699.50
Other	1,403.35	1,347.63	1,314.61	353.82	1,351.42
Hazardous waste for recycling (t)	**306.16**	**300.75**	**220.64**	**114.40**	**69.68**
Developers/fixing agents	45.29	0.00	0.00	0.00	0.00
Solvent/washing liquid	50.00	93.10	137.20	89.90	0.00
Lead-acid batteries/electronic waste	18.14	8.33	1.76	16.53	5.17
Glue/adhesive	6.60	4.32	4.29	0.00	5.27
Other	186.13	195.00	77.40	7.97	59.25
Hazardous waste for disposal (t)	**431.72**	**605.63**	**776.28**	**922.10**	**741.68**
Developers/fixing agents		40.70	36.49	35.24	36.14
Waste ink	4.59	3.87	125.07	135.39	142.78
Solvent/washing liquid	383.87	507.90	556.93	601.12	521.09
Acids/lyes/bases	1.00	0.00	0.35	16.27	0.35
Hazardous materials packaging	31.35	43.24	47.06	46.02	31.57
Resources containing oils/non-chlorinated oils	9.69	9.39	9.46	55.81	0.00
Glue/adhesive				3.78	0.00
Other	1.23	0.54	0.93	28.48	9.75
Wastewater (m^3)	**110,427**	**100,611**	**142,606**	**144,677**	**130,862**
Air emissions (t)					
CO_2	155,335	152,812	145,024	148,420	142,887
CO	75.28	75.56	72.25	72.57	71.16
SO_2	3.15	2.89	2.72	2.60	10.63
NO_x	174.91	173.95	166.25	170.11	167.09
Particulate matter	2.71	2.32	2.25	2.64	3.79
CH_4	268.83	260.69	245.06	253.12	240.04
NMVOC	13.86	13.95	13.47	13.55	13.22
Total HC	282.69	274.64	258.53	266.66	253.27

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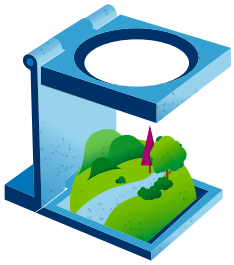

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