



# MOHN MEDIA

2016 ENVIRONMENTAL COMPANY PROFILE

## FACTS AND FIGURES

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# Dear Readers,

How efficiently do we use resources? How sustainably do we deal with resources? Our Environmental Company Profiles provide answers to these and other questions, the current edition of which we present here. As in previous years, we invite you to get an impression of how we are working on improving our environmental impact.

If we take wood consumption as an important criterion of a successful business: Using fresh wood in our products continued to decrease in the 2016 financial year as we were able to increase the proportion of recycled paper. Furthermore, more than 90 percent of the paper used by us in the 2016 financial year was certified according to sustainability criteria.

The indicators that are probably the most important in relation to the environment are based on energy use and the resulting emissions. We cover more than 90 percent of our energy requirements via our in-house high-efficiency block-type thermal power

station that is operated by natural gas - the cleanest fossil primary energy source available. At the same time, however, part of our electricity consumption had to be covered via the public grid in 2016, which, among other things, led to a slight increase in the greenhouse effect.

Those are just a few examples that show the following: We have made further progress in terms of operating in an economical and eco-friendly way – but we are also aware of the fact that we need to work on our processes on an ongoing basis. You can see in this environmental company profile where we currently stand. This year's profile once again provides a clear update of important facts and figures. Should you have any further questions, please contact our environmental department team.

# The Environmental Company Profile

As a supplement to and continuation of the detailed Environmental Company Profile we presented for the 2015 financial year, we are presenting environmentally relevant facts and figures for the 2016 financial year here in summary form.

The **total number of printed products made** in the 2016 financial year rose by 4.7 percent to 5.1 billion items in comparison with the previous year. This number includes almost three billion printed brochures (+2.7 percent), 1.4 billion Action Print products (+12 percent), as well as 602 million copies of magazines and catalogs (+7.3 percent). The number of books made was approaching the level of the previous year with 30.6 million items, production of telephone books decreased by 2.2 percent to 43.7 billion copies. The total printed paper surface area decreased by 2.5 percent to 14.16 billion square meters, reaching the level of financial year 2014 once more.

## RAW, AUXILIARY AND OPERATING MATERIALS

The total volume of **raw materials** used amounted to 559,283 tons (+1.3 percent) in total. Most of this – some 94.6 percent – consisted of paper and cardboard. The proportion of recycling paper for processed printing paper continued to increase, amounting to 39 percent or 203,823 (+2.1 percent). This increase is a success of Mohn Media's validation according to RAL eco-label 195 "Printed products", which was carried out in December 2015. 11,344 tons (+2.2 percent) were consumed for inks and varnishes. Our prepress made 338,120 aluminum printing plates for this (+3.1 percent). 18,910.8 tons of packaging material were required for packaging and shipping.

The end products are made from printed sheets of paper in further processing. The total quantity of **auxiliary materials** required for this in the form of gluing, binding and cover materials amounted to 2,867.1 tons (+3.9 percent). In terms of materials used, the largest quantities consisted of 1,514.8 tons of glue (-0.2 percent) and 1,018.64 tons of silicone oils (-2.7 percent) that are applied for better processing on the paper web. 54.2 tons of metal wire was required for binding magazines and brochures.

The **operating materials** used in the printed process are not part of the finished product, and without it, manufacturing would not be possible. A total of 3,079.3 tons was used (-14.2 percent). Chemicals required for water treatment represented the largest proportion of this with 1,295.3 tons, despite a significant decrease of 493.2 tons. The second largest group of operating materials comprised dampening solution additives and isopropanol, consumption of which fell by 5.6 percent. Hazardous operating materials decreased by 18 percent to 2,439 tons. The 338,120 aluminum printing plates used weighed a total of 544.8 tons (+4.8 percent). Mohn Media's water requirements are covered by an in-house supply system with water well and treatment plants at the Gütersloh site. The fresh water that is conveyed and treated is used to operate the printing system and in our energy system as coolant, and to supply heat and cold. The quantity consumed amounted to 255,174 cubic meters (-21.6 percent).

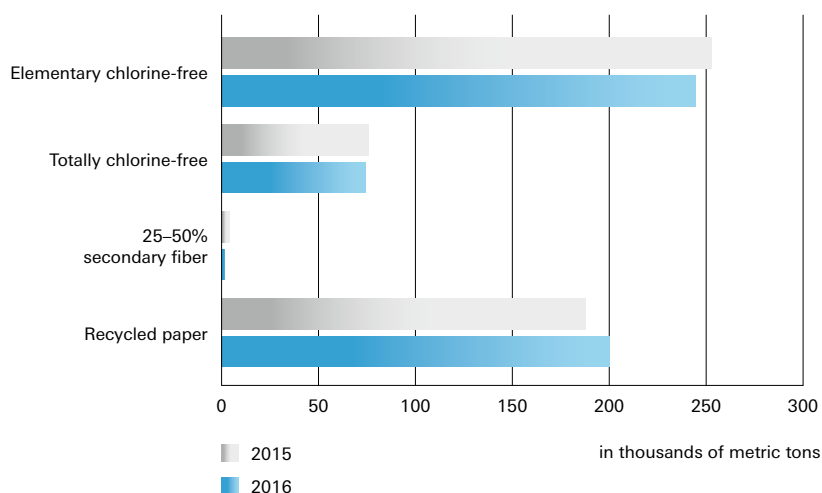
## ENERGY USE, AIR EMISSIONS, WASTE MATERIAL

**Energy consumption** decreased overall. Electricity consumption dropped slightly to 121.7 million kilowatt hours (-1.9 percent). 112.5 million kilowatt hours of these were generated in-house by our block-type thermal power station using gas-powered cooling, heat and power system. An additional 9.2 million kilowatt hours (+3.3 percent) were purchased from the public grid. Direct natural gas use also continued to decrease in drying and thermal afterburning units and was at 5.5 million cubic meters (-7.2 percent). Company vehicle fuel use decreased by 18.8 percent to 152.1 tons, pallet truck gas consumption by 1.9 percent to 83.8 tons.

The increase in **air emissions** in the financial year 2016 was predominantly caused by purchasing electricity from the electricity grid in Germany, and lower sales of hot and cold water to other Bertelsmann companies. As a result of this, the rates of increase vary for individual air contaminants. Output of the greenhouse gas carbon dioxide rose by 5 percent to 150,064 tons, sulfur dioxide by 9.6 percent to 11.65 tons.

In total, printing production created 84,855.08 tons of **waste material** for recycling and disposal (-700.7 tons) in 2016. Of this, some 99.2 percent was successfully recycled, only 714.1 tons had to be disposed of. Thanks to the lower fresh water consumption, the amount of waste water decreased by 21.1 percent to 103,293 cubic meters, which was able to be sent to the public sewer system in Gütersloh due to lower soiling rates for offset printing.

### PAPER USE BY BLEACHING METHOD



## FACTS AND FIGURES

# The company balance sheet

As usual, our company balance sheet clearly shows how many products we have made in the 2016 financial year, the quantities of raw, auxiliary and operating materials as well as energy required for this, and what emissions and waste were generated in the process. The previous year's figures are also shown for comparison.

INPUT	2015	2016	CHANGE IN %
<b>Raw materials (t)</b>	<b>552,025.23</b>	<b>559,283.2</b>	<b>1.3</b>
Copying paper	63.07	74.10	17.4
Sheet paper	37,592.13	36,441.73	-3.0
Reel paper	486,031.99	487,590.02	0.3
Cardboard	4,204.03	4,836.05	15.0
Covering material/Laminate	79.13	86.58	9.4
Packaging/Shipping	12,958.02	18,910.78	45.9
Ink/Varnish	11,096.88	11,344.00	2.2
<b>Auxiliary materials (t)</b>	<b>2,759.07</b>	<b>2,867.15</b>	<b>3.9</b>
Glue	1,517.48	1,514.85	-0.2
Fabric	92.30	81.52	-11.7
Stamping foil	1.51	1.39	-7.7
Metals/Wire	54.47	54.20	-0.5
Underlay sheets	2.11	2.01	-4.7
Backliners/Crepe	40.24	48.36	20.2
Silicone	1,047.11	1,018.64	-2.7
Other	3.85	146.17	++

<b>Total operating materials (t)</b>	<b>3,589.14</b>	<b>3,079.35</b>	<b>-14.2</b>
<b>Operating materials minus hazardous materials (t)</b>	<b>615.35</b>	<b>640.35</b>	<b>4.06</b>
Cleaning agents	25.97	24.31	-6.4
Lubricants	9.12	9.77	7.2
Other	4.83	7.40	53.0
Auxiliary printing materials	8.12	8.48	4.4
Printing plates	519.72	544.84	4.8
Offset blankets	25.95	22.24	-14.3
Offset blanket washing fleece	21.64	23.31	7.7

<b>Hazardous operating materials (t)</b>	<b>2,973.79</b>	<b>2,438.99</b>	<b>-18.0</b>
Water treatment	1,788.57	1,295.35	-27.6
Developers	40.95	31.95	-22.0
Cleaning agents	366.51	377.20	2.9
Isopropanol/Dampening solution additive	777.77	734.49	-5.6

<b>Energy/Transport</b>			
Electricity (in millions of kWh)	124.06	121.71	-1.9
Natural gas (in millions of m <sup>3</sup> )	5.88	5.46	-7.2
Fuels (t)	187.41	152.10	-18.8
Propellant gas (t)	85.44	83.82	-1.9

<b>Fresh water (m<sup>3</sup>)</b>	<b>325,548</b>	<b>255,174</b>	<b>-21.6</b>
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<b>OUTPUT</b>	<b>2015</b>	<b>2016</b>	<b>CHANGE IN %</b>
<b>Products (in millions)</b>			
Books	34.10	30.57	-10.3
Magazines/Catalogs	561.32	602.10	7.3
Action Print	1,280.77	1,434.02	12.0
Brochures	2,900.08	2,977.28	2.7
Telephone directories	44.71	43.72	-2.2
Printed surface area (in billions of m <sup>2</sup> )	14.5	14.16	-2.5

<b>Accumulated waste (t)</b>			
Waste for recycling	84,744.38	84,086.65	-0.8
of which hazardous waste for recycling	69.68	54.33	-22.0
Hazardous waste for disposal	741.68	714.10	-3.7

<b>Waste water (m<sup>3</sup>)</b>	<b>130,862</b>	<b>103,293</b>	<b>-21.1</b>
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<b>Air emissions (t)</b>			
CO <sub>2</sub>	142,887.37	150,063.70	5.0
CO	71.16	73.99	4.0
SO <sub>2</sub>	10.63	11.65	9.6
NO <sub>x</sub>	167.09	176.56	5.7
Particulate matter	3.79	3.84	1.3
CH <sub>4</sub>	240.04	250.32	4.3
NMVOC	13.22	13.76	4.0
Total HC	253.27	264.08	4.3

# Eco-Controlling 2016

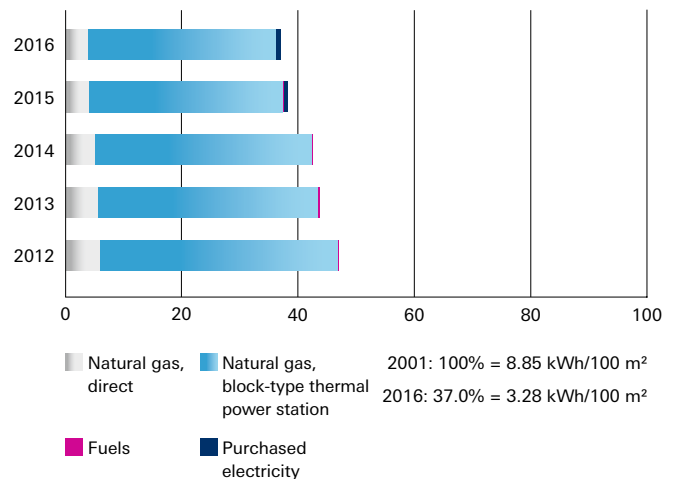
In Eco-Controlling, production, consumption and emissions figures are contrasted in a five-year comparison as a continuation of our company balance sheet.

For many years now, Mohn Media's indicator system has enabled us to compare the most important environmental data for our production, separately from any annual fluctuations in production. For this reason, we correlate nine environmental parameters - energy requirements, greenhouse effect, over-fertilization, acidification, summer smog, water consumption, the amount of residual and hazardous materials, paper waste, wood consumption - on a standardized surface area of 100 square meters of surface area of printed paper in each case (for more accurate explanations of individual environmental parameters, please see the comprehensive Environmental Company Profile 2015 p. 24–27)

We have set the numbers from the 2001 financial year to the 100 percent value to show a consistent connection. In this way, we can visualize the respective indicator over the past five years and see the effect of the measures and improvements in question.

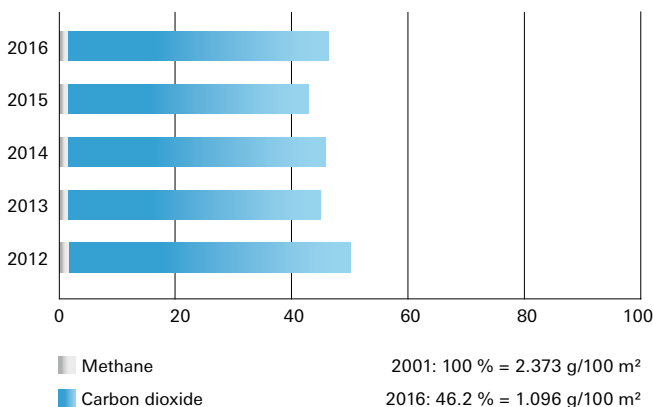
## ENERGY CONSUMPTION

in kWh



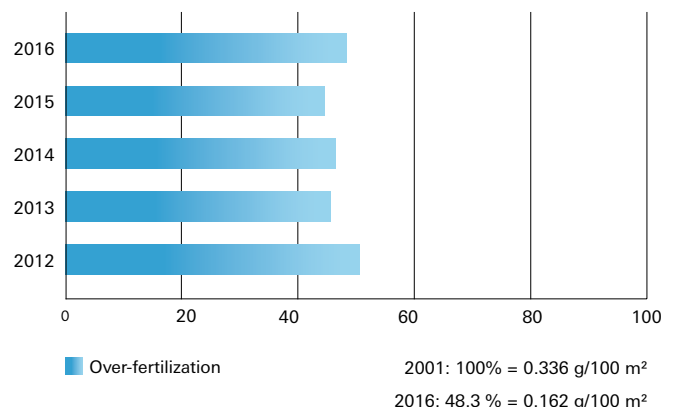
## GREENHOUSE EFFECT

in g CO<sub>2</sub> equivalents



## OVERFERTILIZATION

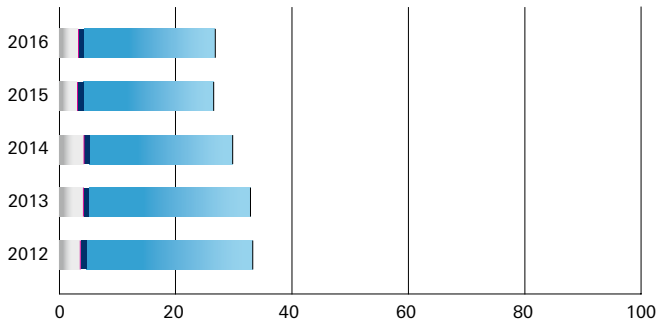
in g PO<sub>4</sub> equivalents





## SUMMER SMOG

in g ethylene equivalents

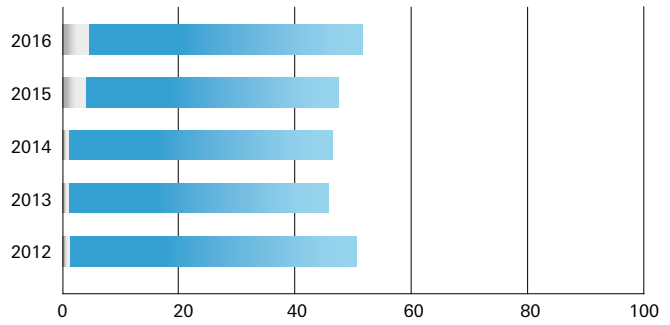


Methane  
 Carbon monoxide  
 Acetone  
 Sulfur dioxide  
 Isopropanol

2001: 100% = 1.694 g/100 m<sup>2</sup>  
 2016: 25.23% = 0.427 g/100 m<sup>2</sup>

## ACIDIFICATION

in g SO<sub>2</sub> equivalents

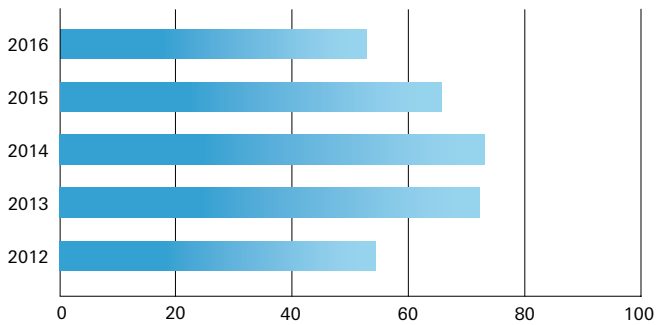


Sulfur dioxide  
 Nitrogen oxide

2001: 100% = 1.85 g/100 m<sup>2</sup>  
 2016: 51.9% = 0.96 g/100 m<sup>2</sup>

## WATER CONSUMPTION

in l/100 m<sup>2</sup>

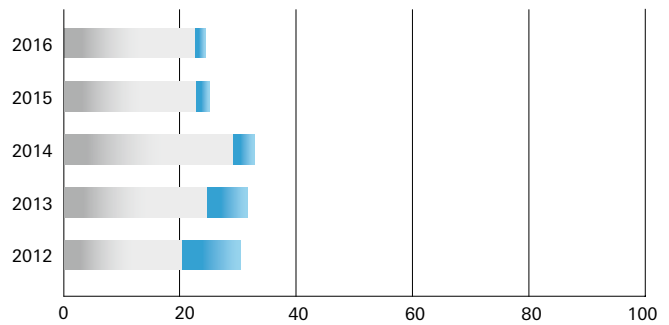


Fresh water

2001: 100% = 3.42 l/100 m<sup>2</sup>  
 2016: 52.6% = 1.80 l/100 m<sup>2</sup>

## WASTE AND HAZARDOUS MATERIALS

in g/100 m<sup>2</sup>

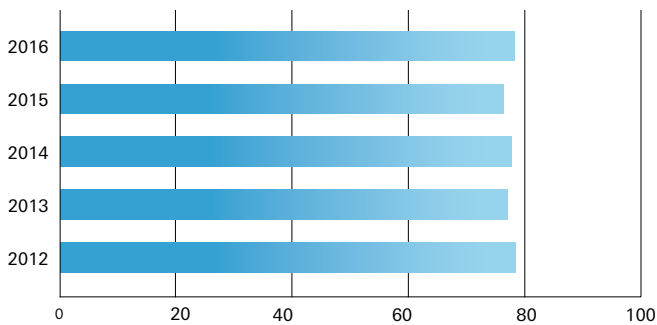


Hazardous waste for disposal  
 Hazardous waste for recycling

2001: 100% = 22.37 g/100 m<sup>2</sup>  
 2016: 24.3% = 5.43 g/100 m<sup>2</sup>

## PAPER WASTE

in g/100 m<sup>2</sup>

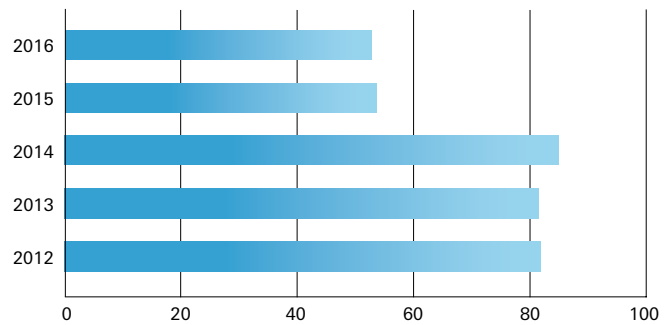


Paper waste

2001: 100% = 724.49 g/100 m<sup>2</sup>  
 2016: 78.2% = 566.80 g/100 m<sup>2</sup>

## WOOD CONSUMPTION

in kg/100 m<sup>2</sup>



Wood consumption

2001: 100% = 8.26 kg/100 m<sup>2</sup>  
 2016: 52.7% = 4.35 kg/100 m<sup>2</sup>

# Comparison of financial years

	2012	2013	2014	2015	2016
<b>Products (in millions of units)</b>	<b>3,499.7</b>	<b>4,443.0</b>	<b>4,551.0</b>	<b>4,858.1</b>	<b>5,087.7</b>
Books	34.8	40.1	30.4	34.1	30.6
Magazines/Catalogs	577.2	558.0	571.0	561.3	602.1
Action Print	1,250.0	1,172.6	1,200.1	1,280.8	1,434.0
Brochures	1,551.6	2,603.7	2,643.1	2,900.1	2,977.3
Telephone directories	72.4	68.6	48.5	44.7	43.7
Sum of printed surface (in billions of m <sup>2</sup> )	13.3	14.1	14.2	14.5	14.2
<b>Raw materials (t)</b>	<b>491,805.22</b>	<b>519,808.46</b>	<b>542,553.96</b>	<b>552,025.23</b>	<b>559,283.21</b>
Cut-size paper	6718	63.75	75.79	63.07	74.07
Sheet paper	37,383.63	33,456.40	35,987.72	37,592.11	36,441.73
Reel paper	429,556.42	458,600.02	478,143.57	486,031.99	487,590.02
Cardboard	4,799.38	4,515.60	4,517.50	4,204.03	4,836.05
Covering material/Laminate	93.69	93.39	110.32	79.13	86.58
Packaging/Shipping	11,089.08	12,757.22	13,481.02	12,958.02	18,910.78
Ink/Varnish	8,815.85	10,322.07	10,238.05	11,096.88	11,343.98
<b>Auxiliary material (t)</b>	<b>2,852.59</b>	<b>2,809.02</b>	<b>2,699.27</b>	<b>2,759.07</b>	<b>2,867.15</b>
Adhesives	1,439.15	1,449.74	1,416.70	1,517.48	1,514.85
Cloth	26.70	22.42	35.56	92.30	81.52
Stamping foil	1.19	1.57	2.17	1.51	1.39
Metals/Wire	65.28	39.44	39.72	54.47	54.20
Underlay sheets	2.19	1.93	2.25	2.11	2.01
Backliners/Crepe	50.37	50.39	48.57	40.24	48.36
Silicone	1,261.67	1,240.07	1,150.07	1,047.11	1,018.64
Other	6.05	3.47	4.22	3.85	146.17
<b>Operating material (t)</b>	<b>580.90</b>	<b>595.47</b>	<b>607.07</b>	<b>615.35</b>	<b>645.35</b>
Cleaning agents	33.93	38.34	34.67	25.97	24.31
Lubricants	9.88	10.36	33.05	9.12	9.77
Other	4.83	4.77	5.10	4.83	7.40
Diverse printing materials	19.93	19.51	19.97	8.12	8.48
Printing plates	467.55	479.52	472.08	519.72	544.84
Offset blankets	23.17	23.41	21.51	25.95	22.24
Wash fleece	21.61	19.56	20.68	21.64	23.31
<b>Fresh water (m<sup>3</sup>)</b>	<b>247,116</b>	<b>348,447</b>	<b>354,353</b>	<b>325,548</b>	<b>255,174</b>

	2012	2013	2014	2015	2016
<b>Hazardous materials (t)</b>	<b>2,698.39</b>	<b>2,704.73</b>	<b>3,409.12</b>	<b>2,973.79</b>	<b>2,438.99</b>
Water treatment	1,573.75	1,528.14	2,257.40	1,788.57	1,295.35
Developers/Fixing agents	36.41	38.25	38.70	40.95	31.95
Cleaning agents	328.24	347.22	348.36	366.51	377.20
Isopropanol/Dampening solution additive	759.99	791.12	764.67	777.77	734.49

<b>Energy consumption</b>					
Electricity (kWh million)	123.88	129.50	118.70	124.06	121.71
Natural gas (m <sup>3</sup> million)	7.83	7.93	7.22	5.88	5.46
Fuels (t)	213.99	165.82	181.39	187.41	152.10
Propellant gas (t)	76.05	80.76	79.88	85.44	83.82

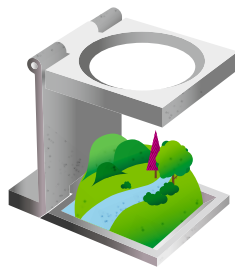
<b>Waste for recycling (t)</b>					
<b>79,125.86</b>	<b>82,515.33</b>	<b>83,085.29</b>	<b>84,744.38</b>	<b>84,086.65</b>	
Paper/cardboard	75,495.84	78,590.17	79,151.10	80,344.34	80,265.03
Wood	1,550.52	1,808.82	2,886.16	1,814.62	958.99
Printing plates	471.74	461.65	459.12	534.51	535.79
Scrap	260.14	340.09	235.10	699.50	802.85
Other	1,347.63	1,314.61	353.82	1,351.42	1,523.99

<b>Hazardous waste for recycling (t)</b>					
<b>300.75</b>	<b>220.64</b>	<b>114.40</b>	<b>69.68</b>	<b>54.33</b>	
Solvent/washing liquid	93.10	137.20	89.90	0.00	0.00
Lead-acid batteries/electronic waste	8.33	1.76	16.53	5.17	6.00
Glue/adhesive	4.32	4.29	3.78	5.27	5.53
Other	195.00	77.40	7.97	59.25	42.80

<b>Hazardous waste for disposal (t)</b>					
<b>605.63</b>	<b>776.28</b>	<b>922.10</b>	<b>741.68</b>	<b>714.10</b>	
Developers/Fixing agents	40.70	36.49	35.24	36.14	31.96
Waste ink	3.87	125.07	135.39	142.78	147.02
Solvent/washing liquid	507.90	556.93	601.12	521.09	501.16
Acids/lyes/bases	0.00	0.35	16.27	0.35	0.00
Hazardous materials packaging	43.24	47.06	46.02	31.57	26.03
Resources containing oils/non-chlorinated oils	9.39	9.46	55.81	0.00	0.00
Other	0.54	0.93	28.48	9.75	7.92

<b>Waste water (m<sup>3</sup>)</b>					
<b>100,611</b>	<b>142,606</b>	<b>144,677</b>	<b>130,862</b>	<b>103,293</b>	

<b>Air emissions (t)</b>					
CO <sub>2</sub>	152,812	145,024	148,420	142,887	150,064
CO	75.56	72.25	72.57	71.16	73.99
SO <sub>2</sub>	2.89	2.72	2.60	10.63	11.65
NO <sub>x</sub>	173.95	166.25	170.11	167.09	176.56
Particulate matter	2.32	2.25	2.64	3.79	3.84
CH <sub>4</sub>	260.69	245.06	253.12	240.04	250.32
NM VOC	13.95	13.47	13.55	13.22	13.76
Total HC	274.64	258.53	266.66	253.27	264.08



**Title**

2016 Environmental Company Profile

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