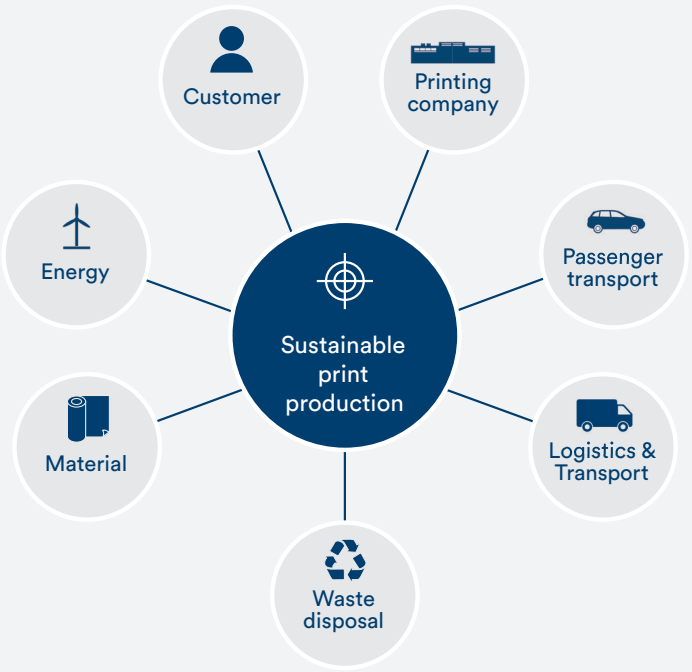
TOGETHER FOR THE ENVIRONMENT

In spring 2020, the editorial team of an international publishing house posed the question, of how optimal media, as one of the leading printing and logistics service providers for books and magazines, dealt with the issue of sustainability in the production of photo and art publications.
As a sales representative of optimal media, in this article I would like to present the factors that influence sustainable production: There is one crucial aspect to the issue of sustainability in the printing industry – that is the client himself.



Graphic: optimal media

optimal media regards sustainability in the printing industry, from an ecological perspective, as the responsible procurement of raw materials, consumables and operating materials, as well as reduction of the energy used, raw materials, production waste, CO_2 emissions and minimisation of water pollution. Good sustainability management strives for continuous improvement of the defined parameters, evaluates the current status and looks for solutions to further conserve resources or to compensate for CO_2 emissions.
Sustainability is therefore a process. optimal media has cemented this optimisation process firmly in its corporate structure and is certified according to ISO 14001, ISO 50001, ISO 9001 and FSC. As confirmed by regular evaluations, services and production processes meet globally recognised industrial standards. This is the part played by optimal media, as a media service provider, in terms of ecological aspects.
In addition, investment in the latest printing and finishing machines makes a significant contribution to waste reduction and energy saving and decisively improves the company‘s eco-balance.
optimal media is equipped with modern machinery, and heat recovery is an integral part of the production process. But the client also bears responsibility when planning the project, by questioning what is essential and what is wishful thinking. Often the printed products buyer is simply unaware of his influence on a sustainable production process.

But one thing must be clarified in advance: a completely emission-free process in the manufacturing industry, including the printing industry, is simply not feasible. The use of raw materials and energy cannot be avoided, but there are ways of using these resources carefully and sparingly.

Sustainability has fortunately become a central topic in our society. With measures to protect the environment, companies seeking to create added value can raise their profile and consumers can identify with them. In close cooperation between the client, the print service provider and the supplier, it is possible to achieve even the most demanding sustainability solutions. However, this requires a common understanding, which means accepting compromises. This could be the replacement of a cherished product feature with a sustainable alternative, the extended production and delivery time caused by limitations in the drying speed of mineral oil-free colours, or maybe a higher price.
Brands such as Closed and the Körber Foundation have made such compromises. They put their money where their mouth is and also accept a longer planning time to equip their printing projects with paper certifiably made from 100 per cent recycled paper. Customers should be able to recognise this commitment at first glance. The printing of certification logos, such as the FSC and Blauer Engel as a design element is one possibility. Visually, sustainability can be communicated by, for example, deliberately using paper with slightly darker shades instead of bright white recycled paper.

Closed Newspaper printed on recycled paper

Magazine Spurensuchen

Photos: optimal media

Recycled paper with a grey tone and paper with a low proportion of optical brighteners have already made it into the top paper charts. They symbolise the topic of sustainability in a purely visual way. The data preparation is already adapted to the particular paper quality in such a way that very good printing results can also be achieved here. But with the renunciation of shrink-wrapping for the sake of sustainability, the end consumer, in particular, should accept that he may no longer be able to purchase the product in completely „virgin“ form: Theoretically, it could be browsed by third parties; in the worst case scenario, the unprotected product may even show slight transport damage. The acceptance of such compromises requires a rethink on the part of the buying public. As a general rule, it is more sustainable to laminate a book or magazine with foil on the cover than to dispose of it because of external defects. For those who can do without foil wrapping but not the protection of the product, the following solutions are suggested: wrapping the product in an environmentally friendly outer carton can prevent damage in transit, while a banderole placed around the product protects it from unwanted peeks into its contents. Instead of shrink-wrapping, the product can be wrapped in recycled packing paper, for example – this combines transport protection and sealing, but is a comparatively expensive alternative.

However, it is above all the considerations which go beyond the decision for a particular grade of paper that ensure a consistently sustainable product.
Are clients and consumers already prepared to make compromises that by definition require a different awareness of price and quality? And shouldn‘t it be part of the job of a printing company‘s sales staff to advise their customers comprehensively on sustainability? I think that in future the topic of sustainability will find an audience among all buyers of printing services. That is why I would like to point out some interesting possibilities that give a print product a valuable and yet sustainable character.

High-quality and sustainable: The Siegertypen design studio used a paper banderole with greetings for its own edition of the Stuttgart Hutzelmännlein.

Photo: Siegertypen

The substrate as the basis for a sustainable product

The demands that clients, producers and buyers place on a photo magazine or art book, for example, are particularly high in terms of quality. Razor-sharp details, clear contrast, the finest graduations in the modulation range, brilliant colours and the widest possible colour spectrum require perfect coordination of litho, substrate and printing technology. In my opinion, this top quality performance also lends itself to sustainable production.

When it comes to the choice of substrate, the use of paper from demonstrably sustainable forestry is a prerequisite for the environmentally conscious client. The most common certificates are FSC and PEFC, which are available for almost all types of paper – from uncoated to coated materials. FSC and PEFC provide good and reliable control systems for wood-based materials and are thus an important tool for supply chain monitoring.

In terms of climate-damaging emissions, virgin fibre paper plants perform very well, as they often use biofuel to generate energy and heat. However, according to the Federal Environment Agency, recycled paper has a better ecological balance in terms of water and energy consumption. Recycled paper requires about 60 per cent less energy and a significantly smaller amount of water for production than paper made from virgin fibre. However, this is counterbalanced by the higher cost of the deinking process, which also causes CO_2 emissions. As a rule of thumb, the higher the whiteness of the recycled paper, the greater the effort required for fibre cleaning, which in turn involves a higher input of energy, water and chemicals. A balanced coexistence of virgin fibre and recycled paper makes ecological sense.

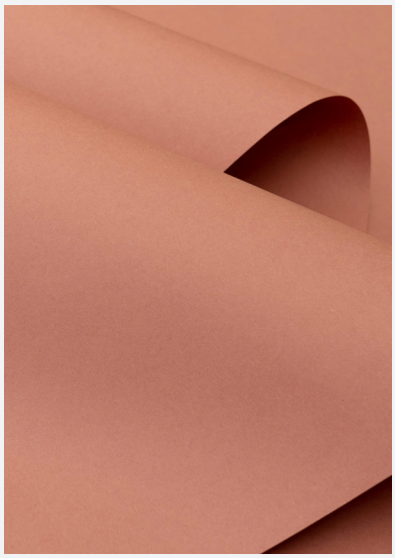
Recycled papers have long since caught up in terms of quality. They are available with low to high whiteness, with different surfaces – from coated to uncoated – with and without residues of ink particles in the material. All of them, however, have very good printing, folding and embossing properties. For the demanding printing of photo magazines or art books, the bright white recycled paper grade is definitely an alternative to uncoated papers made from virgin fibre. It can also be archived for at least 200 years.

Under the ‚Enviro' brand, there are various recycled papers – from uncoated to silk matt coated and with different whiteness

Photo: Inapa Deutschland

It is advisable that the client and the printer take the origin of the paper into consideration and favour paper from regional plants to paper with extensive transportation. Sales-adapted print runs, optimised print formats and the choice of a qualitatively justifiable minimum grammage of paper contribute to a resource-conscious use of paper. Paper production and transport to the print service provider account for 60 to 80 per cent of CO_2 emissions, depending on the print run. The sheet format for offset printing should be so chosen that the maximum number of individual pages can be placed on the sheet and there is correspondingly little paper waste due to trimming. For longer runs and larger volumes, it is worth buying format-adapted products cut-to-size, instead of standard-format stock. However, this requires project planning on the part of the client that allows for a longer paper delivery time.

Cover materials made from recycled material or those that are already made entirely from natural materials are interesting for book cover production. Winter & Company, for example, processes selected sustainable raw materials, especially recycled raw materials from post-industrial and post-consumer waste, into new cover materials in the ‚Winter WRUP-Cycling' upcycling process. One of these is the new cover material Wibalin® Recycled, which was released in several colours at the beginning of 2020 – a through-dyed paper made from 40 per cent post-consumer waste and 60 per cent post-industrial waste. This significantly reduces the use of new resources.



Wibalin ® Recycled

Photos: Winter & Company

Climate-neutral printing should become a matter of course

Photo: optimal media

In addition to the consumption of forestry and chemical products, emissions of various kinds are released during the printing process. These include CO_2 emissions as well as paper dust, ozone, ink and powder particles, and waste heat from the operation of the printing and processing equipment. First and foremost, the printing service provider must endeavour to reduce these emissions to a minimum.

LE-UV printing technology fulfills a large part of the requirements for avoiding and reducing emissions. The extensive elimination of dusting powder and protective varnish, reduced waste and lower ink consumption than with conventional offset printing make a significant contribution to the reduction of emissions and raw material consumption.
However, the binder of the ink for LE-UV technology is based on synthetically produced substances, for example polyester. These inks cross-link on the substrate surface to form a plastic film and are unsuitable for the deinking process. In the interest of sustainability, ink manufacturers such as Siegwerk have developed solutions for deinking in the recycling process without having to give up the advantages of the LE-UV process. These inks can be compared in their deinking properties with mineral oil-based offset inks for conventional offset printing.

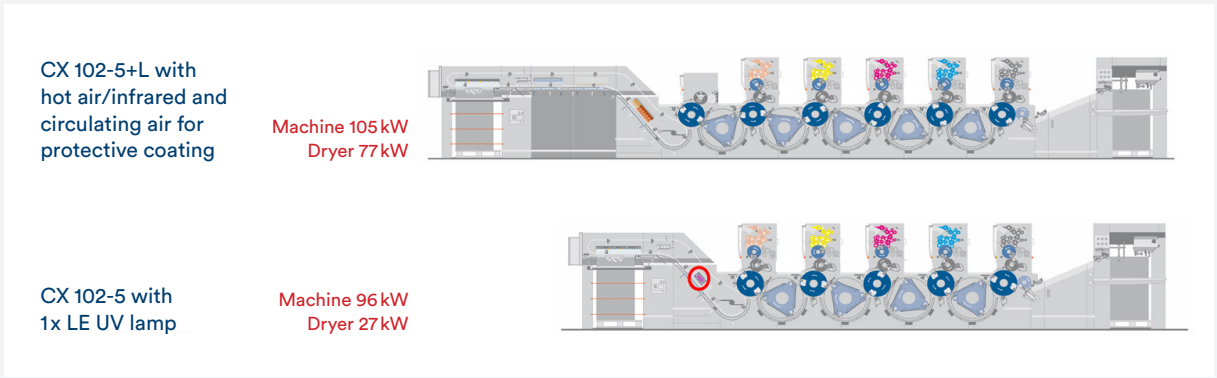
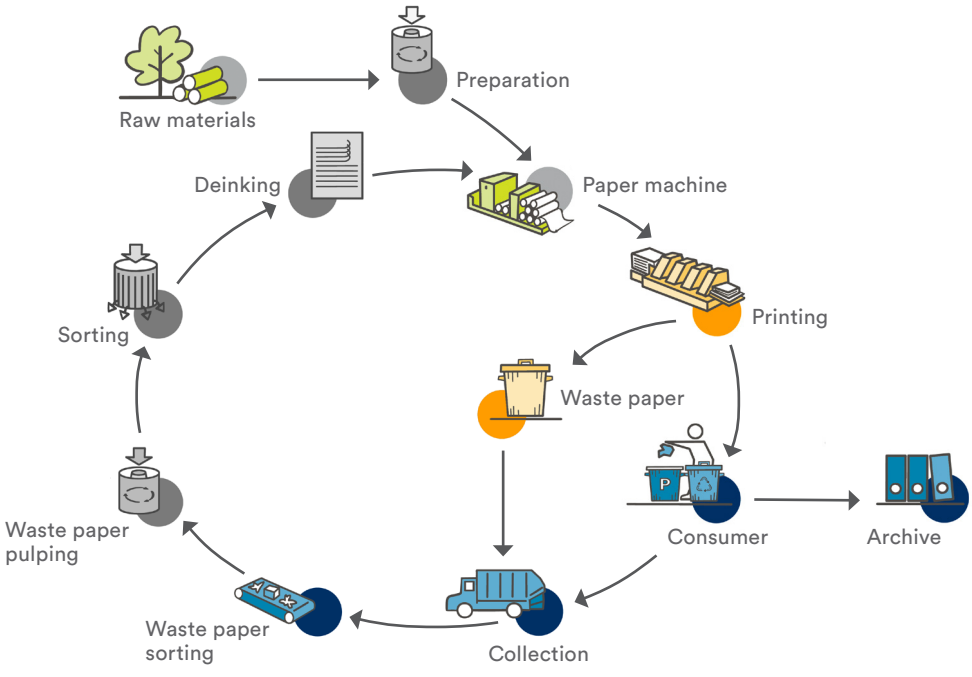


Photo source: Heidelberger Druckmaschinen AG | Speedmaster XL 106 with DryStar LE UV and UV LED | Conventional offset printing vs. LE-UV

But not only UV-curing ink systems and UV varnishes lead to poorer separability of the ink particles from the substrate due to the process. Printed matter produced using the flexographic printing process and that printed with water-soluble inks in digital printing, are also among the products that are difficult to deink, because they colour the water used in the recycling process, as well as paper composites, such as film-laminated papers. Although the capacity for deinking would be sufficient for significantly larger quantities, unfortunately, only about 5 per cent of the residual paper ever enters the deinking process. And this is mainly sorted graphic paper from commercial paper waste. Especially for the reprocessing of the waste paper into graphic paper, a high purity of the paper is desired without disturbing dirt particles. For this reason, print service providers should make their waste paper available to the paper processing department in sorted form. Suitable grades can then be deinked without any problems.

The largest share of paper fed into the paper cycle is made up of printed products from households that cannot be sorted by printing process or finishing. However, this paper waste is separated into defined types of waste paper. For example, brown and grey cardboard are separated from the paper waste. In addition, the waste paper is sorted into dark and light grades as well as into paper or cardboard containing plastic components. Thus, unsuitable waste paper does not enter the deinking process, but is processed into papers with medium whiteness or cardboard and corrugated board. From an environmental point of view, it is much more efficient to recycle paper waste into recovered paper than to burn it for generating energy, despite the high cost of pre-sorting.

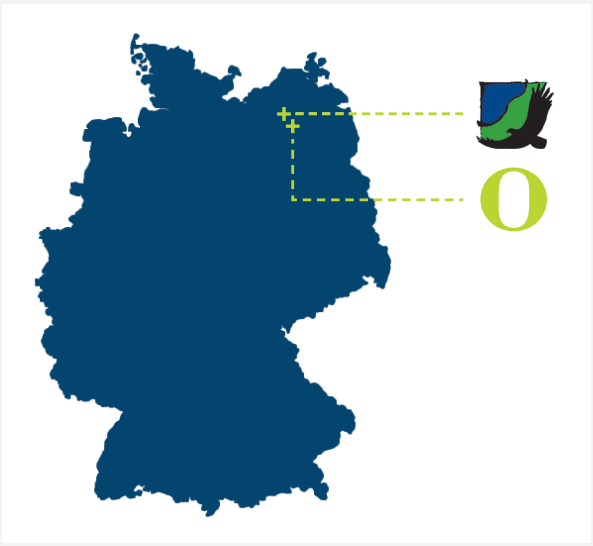
Loss-free recycling is not possible with paper: Mechanical impact shorten the paper fibre during each recycling phase until the fibre is so short that it is washed out together with colour particles and fillers. As a result, the paper mass decreases. The loss of fibres is replenished by adding fresh fibres. A paper fibre can pass through the recycling process about five to seven times before it is finally washed out.



Recycling cycle

Graphic: optimal media

The motto in the production process is avoidance and reduction of emissions and raw materials. However, this alone is not enough for a sustainable production process. The remaining emissions are unavoidable but can be compensated for through climate protection projects.
The calculation of the environmental balance is based on the carbon footprint, whereby environmental impacts of all kinds, whether at sea, on land or in the air are converted into CO_2 equivalents. There are calculation programmes for the determination of such CO_2 emissions, that determine and monetise them for specific orders. As a guideline, the client can assume approximately one to two percent of the contract value. Climate protection projects can be freely selected worldwide and even according to the climate protection focus.
For this purpose, optimal media cooperates with ClimatePartner and thus enables emission compensation in connection with the support of freely selected climate protection projects that exist worldwide. In addition, optimal media provides a nature conservation project in cooperation with the Nossentiner / Schwinzer Heide Nature Park, in order to do something for the environment in the direct vicinity of the production plant. There, where emissions are generated. For selected forest areas, a partial replacement of the existing pine tree population is carried out and the targeted reforestation to a mixed deciduous forest is achieved. For this purpose, seedlings from particularly hardy old trees are used. By labelling the printed products with the partner logo and awarding a certificate to the client, this project offers a transparent alternative to the usual providers of offset projects.



Nature Park Nossentiner / Schwinzer Heide and optimal media

Climatically stable deciduous mixed forest

Organic inks and varnishes are standard

Organic inks are state of the art when it comes to sustainable printing. They differ from conventional printing inks in the proportion of the binder made from renewable raw materials. While conventional printing inks only have a small proportion, the mineral oil content of the organic ink binder is almost completely replaced by renewable raw materials in the form of vegetable oils. This prevents the further use of fossil raw materials and the associated CO_2 emissions. Oils from tree resins are well-suited binders for deinkability. Unfortunately, this does not apply to all binders made from renewable raw materials. Soya bean oil, for example, cannot be deinked because it cross-links on the paper surface. Moreover, it comes mainly from South America, where large areas of tropical rainforest are often

cleared for its cultivation.
The ink manufacturer is therefore advised to take a close look at its supply chain and exclude oils of concern. Through their purchasing decisions, printers can rely on sustainable products and reduce ink consumption as far as possible. This can be achieved through defined process standards and the associated presettings, which make it possible to achieve predictable and reproducible print results with minimum material input. Print documents should therefore not exceed an ink coverage of 300 per cent when printed together. Clients who are colour confident and decisive in print matching at the press are already making an important contribution to avoiding waste and reducing consumables.

Finishing does not always have to be high gloss

Especially in the production of books, art catalogues, high-quality magazines and business reports, the client and consumer or target group attach great importance to finishes. Those who think sustainably know that a product can be enhanced not only with high-gloss effects and hot foil stamping. There are very interesting and sustainable alternatives available. Blind embossing, for example, which is available in single and multi-level, high and deep embossing, is an elegant alternative to hot foil stamping; and the title label, which is glued into a prepared deep embossed area, can visually enhance a book title. Colour cuts with water-based inks are also a sustainable alternative and immediately catch the eye. Die-cut elements can create very beautiful effects. Filigree or tapered elements can be trimmed out by laser cutting.

Book cover with deep embossing and integrated banderole

Laser cut

Title label on linen cover

Photos: optimal media

From biodegradable foils to green shipping

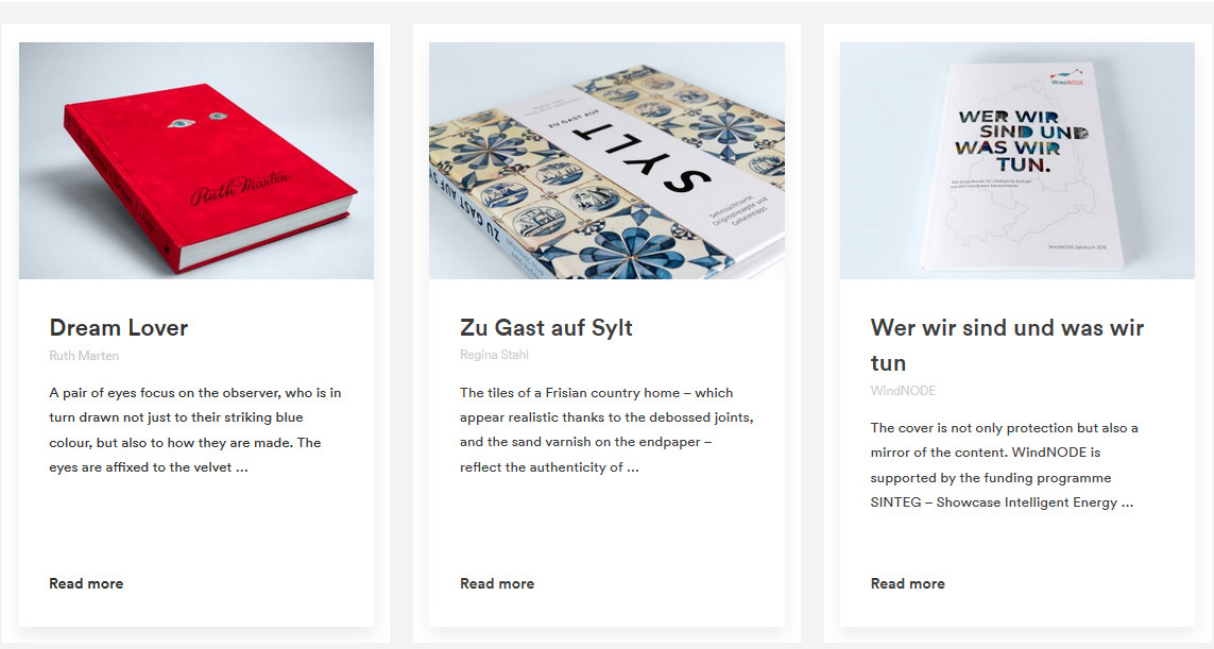
There are alternatives to plastic film, but currently no compostable film that can be used as shrink film. One possibility, for example, is films with a 65 to 100 per cent content of renewable raw materials such as corn flour or potato starch. They are recyclable and theoretically compostable. Theoretically, because the requirements for industrial compostability have not yet been met. For example, biodegradable film currently takes longer than the prescribed six months for at least 90 per cent of the material to decompose. Because of this long decaying time, plastics made from biomaterial are also proving unsuitable for both domestic and industrial composting. Since there is still no separate collection of recyclables for the composting of bio-plastics, they should be put in the residual waste; and not in the yellow bag or even in

the bio bin, where they cause more harm than good. Alternatively, a product can be banded or wrapped in paper, which can lead to higher costs depending on the technical equipment. It goes without saying that the protective transport packaging should be made of recycled material for a consistently sustainable process.

Very few printers are able to handle all processing and finishing operations in-house. Transport between print shop and finisher or processor should not be underestimated and contributes to a negative CO_2 balance. It is therefore advisable to place orders where as many production steps as possible can be handled in-house within a company. In addition, longer production times, which may be caused by longer drying times of the organic inks, can be compensated for in some cases. optimal media is a fully integrated service provider and has a high vertical range of manufacture. Many processing and finishing options as well as extensive fulfilment activities are carried out internally, external goods are commissioned and shipped worldwide. Ideally, shipping is climate-neutral: Various shipping companies offer green solutions in which the calculated CO_2 emissions are costed and flow into climate protection projects.

Virtual product consultation

I recommend that clients of print products already seek advice and inspiration during their product development, both in terms of product features and sustainable production solutions. The optimal media website, for example, shows a large portfolio of product examples. Those who use this opportunity to gain first impressions help to minimise the shipping of product samples as well as personal traffic.



Photos: optimal media

I see it as the responsibility of sales personnel to inform and educate print buyers about sustainable production options, because ultimately decisions can only be made when all alternatives are known.

From my point of view, the answer to the introductory question of the article, how optimal media as a print shop deals with the topic of sustainability, can only be: Sustainable production is fully possible only in co-operation with the client. If service providers, clients and consumers are prepared to make compromises, if recycled paper is understood as a symbol of high quality, if products are convincing on the basis of their design and haptics instead of high-gloss finishing; and if all those involved deal consciously and moderately with resources, then the goal of sustainable production is a good deal closer.

In food packaging, for example, the trend is moving from aluminised films to coated papers. This looks like sustainable packaging, but is often a problematic material when it comes to recycling. So-called „filling stations“ where the consumer „taps“ the goods in the desired quantity himself are truly sustainable. And they contribute to sustainability on two fronts at once: the reduction or even avoidance of packaging waste as well as the conservation of resources through needs-based purchasing. In this way, supermarkets, for example, orient themselves to the needs of their customers and make an important contribution to environmental protection.

I am convinced that consumers of print products such as books and magazines will also make more conscious purchasing decisions in the future and that the idea of sustainability will increasingly come to the fore. If ecological awareness influences purchasing behaviour, we, as service providers, have a good chance of reducing the ecological footprint, because: Only together can we protect our environment!

In summary

+ Decide for recycled paper
+ Plan ahead
+ Choose a service provider with high vertical integration
+ Select Finishing alternatives without film and UV coating
+ Use raw materials such as ink and paper responsibly
+ Save transport routes
+ Opt for climate-neutral production
+ Go for climate-neutral shipping
+ Offer online product advice
+ Refrain from shrink-wrapping
+ Accept compromises (possibly higher price and alternative finishes)

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Picture material: Heidelberger Druckmaschinen AG, Inapa Deutschland GmbH, Winter & Company GmbH, INGEDE e.V., Designbüro Siegertypen, optimal media GmbH

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