

Sustainable production printing. Greener strategies for profitable applications.



Executive summary

This guide is a resource to help you run more environmentally sustainable production operations. It describes some of the best opportunities to reduce environmental impact while driving business results and growth. And it calls out the advantages of working with Xerox people, equipment and systems to establish green, growth-oriented systems and processes.

The guide takes an application-focused approach to environmental sustainability. It covers six applications that are transformed by digital printing and related services. Each delivers profit and growth opportunities for print providers, improved business results for their customers and a greener solution than traditional approaches. The six applications are:

For each application, the guide provides:

- Background on the application and the green benefits delivered
- Xerox solutions that provide environmental advantages



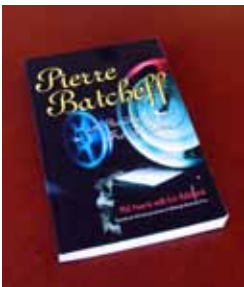
Transactional-promotional documents



Photo publishing



Packaging



Books and manuals



Collateral



Direct mail

Xerox sustainability overview

It's important for you to understand your needs for environmental sustainability so you can meet your overall business goals. By knowing how to evaluate your own green opportunities and being aware of the environmental attributes and advantages of Xerox offerings, your team can contribute to increased sustainability at your print shop.

Companies like yours increasingly see environmental sustainability as a must-have capability. In a pre-recession survey of 800 printers by Reed Business Research and co-sponsored by Day International/Flint Group and Xerox, **75 percent of print providers said customer attention to sustainable print was on the rise.**

Indeed, an increasing number of requests for proposals seek environmentally responsible paper, production and distribution options. You need to provide environmentally responsible offerings simply to be considered for many of today's jobs.

Of course, production facilities have many other reasons for seeking environmentally responsible solutions—including meeting regulatory requirements. Benefits of green initiatives can include reduced costs, a safer and more comfortable work environment, positioning as a concerned and responsible community citizen, and differentiation in the marketplace. Your motivations can be purely

business focused, or they can be part of a commitment to sustaining the environment for future generations that need not show return on investment.

Like you, your customer may seek green products and services for a range of reasons. According to a survey by member-based PRIMIR (Print Industries Market Information and Research Organization), print buyers can be placed into four categories:

- **Laggards** (40 percent) don't see sustainability as their problem; need prompting
- **Just-Emerging Awareness** (30 percent) are not sure where to begin
- **Enlightened Green** (25 percent) recognize cost benefits and are prepared to act
- **Ultra Green** (5 percent) are committed to green solutions

A strong track record

Xerox has a long history of commitment to running a successful business that sustains the environment for future generations. We've run a leadership environmental program since the early 1960s and have been recognized externally by organizations such as the FTSE4Good index and Domini 400 Social Index, and, in 2008, Xerox Corporation became the first technology company to be named a Performance Track Corporate Leader by the U.S. Environmental Protection Agency, one of only five companies ever recognized under this program.

One easily grasped measure of our commitment is our membership in the Environmental Protection Agency's Climate Leaders Program, which requires us to report annually on progress towards our stated goals for reducing greenhouse gas emissions.

"Xerox takes a comprehensive approach to mitigating the effects of climate change. Through efforts that span a decade, we have achieved significant reductions in energy usage across several phases of the product life cycle. As a charter partner of the U.S. EPA's ENERGY STAR program, Xerox has launched products that meet the requirements of this program and save energy at customer sites," notes Patricia A. Calkins, Vice President, Environment, Health, Safety and Sustainability. She adds, "Our remanufacturing program, through parts reuse, avoids energy expenditures associated with building new parts. Our commitment to the Climate Leaders program pledges Xerox to go beyond these accomplishments to seek opportunities to reduce energy consumption and associated greenhouse gas emissions company-wide."

Busting sustainability myths

Not everyone embraces environmental sustainability. Among the myths that have gained traction in popular culture are these:

Myth: Green is difficult and costly.

For years people have assumed that greener printing practices and technology were a luxury that was not worth the hassle or cost. Recycled papers were a little more expensive and didn't always run in every piece of equipment. Saving energy meant compromising on speed or functionality. And in the offset world, green inks weren't always the most vibrant or long-lasting.

Today, digital is changing the dynamic. No longer do you have to sacrifice performance. There are paper options with recycled content that run through any type of Xerox production press. There are far fewer toxic chemicals involved with the process of digital compared to offset. Furthermore, the short-run and print-on-demand model has lower environmental impact by definition, because there's little or no waste.

More good news: according to a recent survey of a broad range of consumers and business decision-makers, most people are willing to pay a slight premium, 5 to 10%, for green products and services. So if your print shop is looking to go green, you not only have excellent choices in the digital space, but you can also enhance your bottom line with new offerings and higher value pricing.

Myth: Being green is just a fad.

Even with customers demanding green services, some graphic communications providers may view sustainability as a fad. Indeed, the environmental movement has many trappings of popular fads, including celebrity endorsements, enthusiasm and hype so widespread that a new term, "greenwashing," was invented to describe it.

Sustainability, however, is by definition key to human survival. It's about doing things in a way that's efficient and repeatable using as few resources as possible. That's just good business. It doesn't have to be a marketing strategy or even a feel-good initiative. It's really about keeping your costs down.

From the graphic communications provider's perspective, a recent survey of marketers by industry publications *Environmental Leader* and *MediaBuyerPlanner* found that most businesses view green marketing as a staple, not a fad. Some 33 percent said green marketing was more effective than normal marketing, with just 7 percent saying it was less effective. A whopping 82 percent said they expected to spend more on green marketing in the future. Being green may seem like a fad, but saving money is always in style. And sustainable practices help you do just that.

Myth: Electronic distribution is greener than print.

A common assumption these days is that electronic distribution is greener than print. The facts are less conclusive.

Make no mistake, printing has an impact on the environment, as do most industrial processes. The paper industry is the second largest user of electricity in the United States, using 75 billion kilowatt-hours of electricity in 2006, according to a report by PRIMIR. However, the electronic alternatives are not far behind. Data centers and servers used 61 billion kilowatt-hours that year. Since the use of data centers is projected to double in five years, it will soon overtake paper production, if it hasn't already.

Consider also that paper is made from a renewable resource, and that more than half of U.S. paper is recycled, according to the U.S. Environmental Protection Agency. In comparison, electronic communications rely on computers, cell phones and batteries that contain heavy metals. According to the U.S. Environmental Protection Agency, 82 percent of these devices end up in landfills, adding solid waste—and in some cases hazardous materials—to the environment.

Of course, these are just a few of the factors that go into sustainability comparisons. Industrial processes have environmental consequences, and people can choose to participate in them in more—or less—environmentally responsible ways.

This guide offers counsel on how to help you improve your business with environmentally responsible practices.

Xerox advantages

As a leader in digital printing, Xerox delivers business and environmental advantages for every aspect of your print operation—from online ordering and powerful workflow systems to nontoxic materials and automated finishing.

Best-in-class digital production equipment—Xerox® presses provide the high image quality, color consistency, fast production speeds and exceptional reliability that make printing profitable. The Xerox® line offers one of the industry's broadest selections of cut-sheet and continuous feed digital presses and printers, from light-production to mid- and full-production models, enabling print providers to scale for optimal reliability and profitability as volume grows. Light-production models offer an affordable entry point and easy operations while delivering the quality, consistency and reliability required for high-impact collateral and custom photo books. Mid- and full-production models run faster, offer more inline finishing options, print on a wider range of substrates and page sizes, offer inline calibration to achieve color accuracy and consistency even in automated operations,

and are well suited for transpromo applications as well as books and manuals. Xerox® iGen3® and iGen4® presses offer the industry's largest page sizes (14.33" x 22.5") to accommodate more multi-up possibilities—excellent for photo publishing, direct mail and packaging applications.

Powerful Xerox® FreeFlow® workflow systems—Xerox offers a range of software to meet every transactional workflow need, including distribution of print and electronic documents from a single system. Among the FreeFlow offerings is Xerox® VIPP®, which has more installations than any other transactional variable information solution. Xerox® FreeFlow systems meet open industry standards to enable data imports from nearly any system. They enable the highly automated, error-free production that is this application's modus operandi.

FreeFlow Web Services online ordering—Give your clients the ability to save time and minimize paperwork with online order submission and ticketing.

Non-toxic Xerox toners and toner containers—Many offset presses and some digital presses use volatile organic compound (VOC) solvents that require an eye-wash station nearby and management of solvent waste drums. In contrast, Xerox® toners and containers are not broadly regulated as hazardous waste, nor do they use any VOC solvents. And Xerox® toner has a transfer efficiency rate of nearly 100 percent, limiting waste and clean-up requirements.

Inline finishing and insertion—Xerox offers a wide range of Xerox® and partner products to automate finishing and insertion to save time and money.



Transactional-promotional documents

Transactional-promotional communications—transpromo for short—provides a significant opportunity in a large, growing market. In North America, full-color page output is projected to grow by 154 percent annually from 2007 to 2015, when nearly 40 billion pages will be produced, according to market-research firm Caslon, Inc.

Transpromo communications serve two missions. Like transactional documents, they present data from financial and other transactions in the form of an invoice, statement or report. But unlike traditional transactional communications, they also incorporate marketing messages that are targeted to be relevant to the recipient.

Therein lies their key contribution to environmental sustainability—and to your bottom line. By combining two documents that have been traditionally produced and mailed independently of one another, transpromo cuts print and mail volume, thereby reducing production and postage costs, paper usage and delivery-related carbon emissions.

Transpromo also delivers business results. Transactional documents are opened and read at least once by 95 percent of recipients, according to market-research firm InfoTrends.

That's a much better rate than alternatives for delivering marketing promotions, such as direct mail and e-mail. Further, transpromo messages can be precisely personalized to each recipient based upon data in the transactional database to make them highly relevant.

For example, a financial institution that knows the interest rate on their customers' mortgages can make a refinancing offer automatically any time the interest differential tops 1 percent—a benchmark for reaping refinancing benefits. Many studies have shown that more relevant messaging drives higher response rates, more sales and greater customer loyalty.

Environmental advantages

Here are some other ways to derive green benefits from transpromo communications:

Electronic job ordering and submission; paperless workflow and soft proofing—These processes reduce paper usage, and associated costs, while boosting efficiency.

Optimized page real estate—Designs that make the most of the available space can reduce paper volume. Costs can also be saved with clearer designs that reduce call center volume from confused customers.

Green paper choices—Offer recycled paper or paper with chain-of-custody certification designating it has been produced in a supply chain optimized for environmental sustainability. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI).

Some customers are willing to pay extra to include a chain-of-custody logo on their printed materials.

Duplex printing—Cut paper usage and associated costs by as much as half.

A solution that uses less paper—Imagine a single software module that can generate both paper-based and paperless transactional documents. Xerox® FreeFlow VIPP Pro Publisher makes it possible, saving steps and paper.

Xerox advantages

Xerox invented the first laser printer in 1972 to service the transactional print market, and has brought many leadership print and workflow products to the market since. The experience and market knowledge the company has gained over the years are among the advantages Xerox brings.

Transactional print stream versatility—Xerox printers and presses run natively with all of the major transactional data streams, including legacy LCDS/metacode and IPDS, as well as the more modern PDF and PostScript solutions. Unlike competitors who support transactional data streams only in their highest volume models, Xerox supports transactional printing in a wide range of speed and volume bands, to match solutions more closely to customer needs.

Dynamic document composition—Xerox® FreeFlow VI Suite offers dynamic document composition, which speeds production by storing static elements of a job at the printer where they merge with variable elements on the fly. In contrast, non-optimized data streams, such as straight PostScript or PDF, create large files, which drain resources and can take hours to process and print. Xerox® FreeFlow VIPP Pro workflow even outperforms optimized PS/VPS data streams, which use less efficient ways to cache reusable job elements.

One-pass, highlight- or full-color digital printing—This eliminates the need for offset printed shells and/or promotional inserts, as letterhead and promotional messaging can be incorporated in the same print file. Thus it eliminates chemical-intensive offset processes, the need to store and manage inventory—including the energy and cost required to run a warehouse—and obsolescence waste.



Photo publishing

In the last decade, digital cameras swept into the marketplace, overtaking film cameras as the leading technology for the world's picture taking and forever transforming photo processing—and photo printing as well.

Film-processing revenues peaked in 2005, displaced by rapidly growing demand for digitally printed specialty photo products, such as books, calendars, and greeting and trading cards. Market-research firm InfoTrends projects revenue generated from these products will more than double by 2013, achieving a 22 percent compound annual growth rate to surpass \$2.5 billion. It's one of the largest growth opportunities for digital color printing.

The market's transformation also has significant environmental implications. Film processing uses hazardous chemicals in its developer and fixer solutions and cleaning agents. Disposing of them is expensive and risks release of toxic materials into the environment. Digital photography totally bypasses these steps, eliminating the use of hazardous chemicals and the associated costs and risks.

In the interests of full disclosure, digital photography introduces its own environmental concerns, such as the generation of new, heavy-metal-laden e-waste from discarded cameras and photographic products. Image processors and print providers can help mitigate this vulnerability by encouraging customers to use e-waste recycling centers.

The fact remains that for photo image processing operations, digital photo specialty products eliminate many of the hazardous chemicals required for film processing. They also offer the market's best growth opportunities, and they can be very profitable. According to a Photo Marketing Association (PMA) report, profit from a single photo book can easily equal that of 400 four-by-six-inch prints.

Environmental advantages

The fundamental environmental advantage to digital printing of photo products is the elimination of toxic chemicals in film processing. Perhaps out of loyalty to the industry's film processing legacy, many photo processors limit green marketing, which may be a missed opportunity. Here are some of the other ways digitally printed photo products can deliver environmental benefits:

Electronic job creation, ordering and submission—These processes reduce the need for paper outputs (and associated costs) while boosting efficiency. They also eliminate the need for customers to drive to processing centers to drop off film and for any additional transportation to off-site labs.

Green paper choices—Offer high quality recycled paper or paper with chain-of-custody certification designating it has been produced in a supply chain optimized for environmental sustainability. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI). Some customers are willing to pay extra for a chain-of-custody logo on their photo products.

Paperless workflow and soft proofing—These processes reduce paper usage, and associated costs, while boosting efficiency.

Two-sided printing—Cut paper usage and associated costs by as much as half, while providing the magazine-like quality and layout that many customers prefer.

Distribute-then-print—Minimize environmental impact by distributing electronically to your nearest print center or partner.

On-demand production—Orders can be placed in the precise quantities needed, avoiding the warehousing and associated energy costs and waste required with other print technologies.

Non-toxic glues—These are available for most binding techniques, eliminating the need for ventilation of toxic fumes and waste management issues.

As your company considers the role of sustainability in your operation and marketing, there are two important questions to ask yourself:

- How committed are we to environmental sustainability?
- Do we pursue green marketing for our company or products?
If not, is there any potential in this approach?



Xerox advantages

Xerox and its business partners offer complete solutions for photo specialty products businesses, including the printing and finishing technology, the order and workflow systems, and business development tools and services to help the business succeed. Xerographic digital printers and presses in general—and Xerox® devices in particular—employ a wider range of automated image controls than liquid ink printers, enabling them to run unattended for long stretches, minimizing press operator time. Such automation is critical to large-volume production.

Industry-leading image quality—Not surprisingly, image quality is the main consideration for photographic output devices, and Xerox delivers industry-leading digital image quality in every speed and volume band. Digital image quality is excellent and widely accepted and even preferred for many applications, such as photo books, which benefit from two-sided printing on book- and magazine-like or unique paper stocks. Xerox digital image quality, in particular, has received independent recognition on numerous occasions. In the Digital Imaging Marketing Association's Annual Digital Printer Shoot-Out at the 2009 Photo Marketing Association (PMA) Show, Xerox swept the top image quality awards in all three digital press categories: 71+ ppm (Xerox® iGen4® Press), 41–70 ppm (Xerox 700 Digital Color Press) and 20–40 ppm (Xerox DocuColor® 242 Digital Color Printer series).

In 2009 the iGen4 press has also been cited in independent research by the SpencerLab Digital Color Laboratory for having the top photographic quality among digital presses and closely approximating traditional photographic wet chemical processing.

A range of photo-industry-specific paper stocks—Deliver both competitive and environmental advantages. Among the choices: Xerox® EverFlat™ paper enables books to lay perfectly flat for optimal presentation; pre-scored greeting cards save time; transfer paper for printing on fabric; magnets; vinyl; and FSC (Forest Stewardship Council)-certified stocks assure environmentally sound chain of custody.

Independent of the photo processing business—While HP or Kodak might sell you a digital press, they'll also compete with you for the same customers through their Kodak Gallery or HP Snapfish. Our business model relies on our customers to produce the print volume that grows your business and your revenues. We focus on providing world-class print engines and photo publishing solutions that enable your individual success.

Non-toxic Xerox® toners and toner containers—Film processing requires hazardous chemicals that require special handling and disposal. In contrast, Xerox® toners and containers are not broadly regulated as hazardous waste, nor do they use any VOC solvents. And Xerox® toner has a transfer efficiency rate of nearly 100 percent, limiting waste and cleanup requirements.

Powerful photo-specific processing features—FreeFlow workflow systems provide a number of photo-specific features to help providers reduce operator steps as part of an automated photo-processing workflow. The FreeFlow Photo Automation Tool has more than 50 templates for common photo specialty jobs, automatically applying color management and a range of job ticketing parameters for fast and easy submission. The FreeFlow Server supports native JPEG printing for automatically laying out and producing a range of popular print and book sizes without any composition software. An automatic image enhancement (AIE) feature automatically adjusts exposure, contrast, color, sharpness, and shadow detail to improve photo image quality.

Wealth of expert partners—Xerox solutions are designed as open architecture, industry-standard systems to incorporate best-of-breed components from many expert partners. Choices begins with Xerox® presses offering Xerox, EFI® and Creo® print servers/controllers. Additional partners provide leadership in-store kiosks, web-based, desktop and outsourced photo production creation and ordering systems, and a range of binding, scoring and finishing options.

Packaging

Digitally printed packaging is an emerging application that is in an early adopter phase. First movers can still gain powerful advantages in a worldwide market that is expected to grow from \$580 million in 2005 to \$6 billion by 2015, according to Pira International.

Digital printing is surprisingly well suited to many packaging applications.

Digital printing delivers a sweet set of competitive, cost and environmental advantages when compared to traditional package printing technologies (offset, gravure, letterpress and screen). Production can use the just-in-time, print-on-demand approach to eliminate or reduce warehousing and associated cost, energy requirements and waste from obsolescence. With shortened setup requirements and automated makeready, short runs are typically less expensive on digital presses. And variable-data printing can bring new value through personalization and customization for regional versioning, novelty items and for meeting pharmaceutical and healthcare needs for individual and custom-made packaging.

A further green advantage: replacing offset printing eliminates use of the many chemicals required in the printing and press cleaning processes.



Environmental advantages

Packaging accounts for as much as one-third of solid waste in U.S. municipal landfills, according to the Environmental Protection Agency, making it a visible target of green activism. Today's environmentally preferred packaging uses minimal materials, which are recycled or made in environmentally responsible ways, and which are biodegradable and easily recycled or reused so they aren't dumped in landfills. Digitally printed packaging plays well with green packaging strategies to meet growing demand. Among its environmentally sustainable qualities are these:

Eliminate varnish—Varnish is required for offset printing and adds cost and, in the case of UV varnish, an environmental hazard, small amounts of ozone that need to be ventilated. Offset ink takes 24 hours to dry and harden, so it needs a coat of varnish for mechanical handling and to seal the surface of the inks, preventing bleeding and smear onto the back side of the next sheet in the stack. In contrast, digitally printed pieces have a dry and hard surface immediately, with low risk of scratching and color setoff, making varnish necessary only to achieve visual effects.

Non-toxic glues—These are available for most binding techniques, eliminating the need for ventilation of toxic fumes and waste management issues.

Electronic job ordering and submission, paperless workflow, and soft proofing—These processes reduce paper usage and associated costs while boosting efficiency.

Green paper choices—These include paper and board that is recycled or has chain-of-custody certification designating it has been produced in a supply chain optimized for environmental sustainability. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI). Some customers are willing to pay extra for green paper and board.

On-demand production—Orders can be placed in the precise quantities needed, avoiding the warehousing and associated energy costs and waste required with other print technologies.

Distribute-then-print—Minimize environmental impact by distributing electronically to your newest print center or partner.

Xerox advantages

Xerox has developed the iGen3 and iGen4 presses with dozens of applications in mind, including packaging, and has built partnerships with packaging leaders to provide complete end-to-end solutions. Packaging remains a priority in research and development and industry alliances. In addition to printing and workflow systems, Xerox also offers business development resources to help customers succeed.

Versatile digital presses—The Xerox iGen3 and iGen4 presses were developed with straight paper paths, enabling them to print on the thicker stocks and board required for packaging applications. These presses provide the high image quality, fast production speeds and exceptional reliability that make package printing profitable. They enable cost-effective short runs for packaging, giving them cost advantages for low-volume products and prototyping. In addition, their dry toner reduces or eliminates the need for varnish, which protects wet inks from scratching or smearing onto adjacent sheets in a stack.

Pre-cut paper and board—Xerox offers paper and board that is pre-cut for use with the iGen3 and iGen4 presses to save time by eliminating the cutting step from production.

Wealth of expert partners—Partners provide a range of software, coating and converting systems and services for developing complete, end-to-end, packaging solutions.

Inline coating—Xerox presses are designed to support inline coating and varnishing systems from partners automating processes to save time and money. Plus, Xerox is the only digital press manufacturer that offers aqueous coating inline. The coating is water-based, and inline production saves resources and requires a smaller footprint.



Books and manuals

The book publishing supply chain is undergoing a dramatic disruption today that makes book pages the top growth application for monochrome digital printing.

For years, offset printed books have dominated book production. In the trade book segment alone today, about 2.3 billion trade books are sold each year in the U.S., accounting for about 500 billion offset pages. That is beginning to change, however. Caslon projects that the number of digitally printed book pages in the United States will grow from about 80 billion in 2008 to more than 140 billion in 2015, including about 20 billion new color pages.

Digital printing addresses many of the inefficiencies—and from an environmental perspective, deficiencies—in modern book publishing, which has one of the most wasteful business models of any industry. **Roughly 30–40 percent of the books that are printed and shipped each year are returned unsold to the publisher or destroyed outright.**



- Non-publishing industry applications such as just-in-time product manuals and college course packs—which assemble articles from multiple sources into a single, course-specific package—are ideal digital print applications.
- E-readers are viewed as a threat to offset printing, but less so for digital. As more people download book files rather than buy printed books, publishers will increasingly have difficulty predicting first-run volumes. The print-on demand model offers an effective solution for coping with this uncertainty.

Environmental advantages

Digital printing offers the potential to eliminate the traditional book publishing supply chain's wasteful practices of returning and destroying unsold books. In-store book manufacturing solutions also eliminate transportation energy expenditures from the supply chain, potentially optimizing environmental sustainability in book manufacturing. Xerox is a member of the Book Industry Environmental Council (www.bookcouncil.org), which is trying to green book publishing. Here's a closer look at the specific green advantages of digital book manufacturing.

On-demand production—Printing to fulfill orders eliminates tremendous amounts of costly waste. Rather than making educated guesses about how many books to print, POD enables books to be printed after they're ordered. Roughly 30 percent of books produced in traditional processes are destroyed or returned. Thus, energy and cost associated with returning books can also be eliminated.

Digital book printing's main applications today are in:

- Areas in the lifecycle of the book supply chain where cost-effective, small-quantity printing brings efficiencies, including speculative manuscripts, proofs and review copies, and bringing out-of-print books back to life. In addition, some worthy titles with small audiences can be published profitably, expanding the publisher's title list.
- Self-publishing, personal publishing and creation of personalized photo books have boomed, generally from web-based storefronts.

Unlike offset, which requires longer print runs to achieve economies of scale, digital printing can be profitable for quantities as low as a single book. By cost-effectively printing in only the quantity needed, digital eliminates the waste in traditional publishing. Distribute-and-print networks with book production in warehouses and stores also can reduce distribution costs and energy requirements.



Distribute-then-print—Minimize cost and environmental impact for physical distribution. Today, small-footprint book production systems can be found in stores and libraries, expanding the number of available titles in a location, and eliminating all waste and distribution from the supply chain, resulting in significant cost savings and revenue opportunities. Other distribute-and-print solutions include having production systems in warehouses and networks of regional printers, for producing books nearest the point of need.

Electronic job ordering and submission; paperless workflow and soft proofing—These processes reduce paper usage, and associated costs, while boosting efficiency.

Green paper choices—Recycled paper or paper with chain-of-custody certification (designating it has been produced in a supply chain optimized for environmental sustainability) are popular choices for books in every industry. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI). Some customers are willing to pay extra for a chain-of-custody logo or other green certification on their printed books.

Xerox advantages

Xerox has long developed and supplied leadership digital printing and workflow systems and has long established partnerships with industry-leading software and finishing suppliers to provide complete end-to-end book manufacturing solutions. We also offer business development resources to help our customers succeed.

Powerful monochrome and full-color print engines—Xerox offers one of the industry's broadest selections of digital presses and printers, delivering excellent image quality and registration, and outstanding reliability for optimal uptime and productivity. Xerox® offerings include high-speed, continuous feed printers offering both monochrome and color output, and a range of color and monochrome cut-sheet printers and presses, including twin-engine perfecting models designed specifically for publishing applications. The monochrome Xerox Nuvera® printers and presses deliver benchmark halftone quality that compares favorably with offset. Xerox® iGen3 and iGen4 presses offer the industry's largest page sizes (14.33" x 22.5") to accommodate oversize book covers and dust jackets. Cut-sheet highlight color printers are also available.

Automated Xerox® FreeFlow workflow systems—Xerox® workflow solutions optimize the accuracy, efficiency and effectiveness of book-printing operations from ordering to preflight, file preparation, page imposition,

management, shipping and billing. These systems typically boost staff productivity by 25 to 30 percent. For example, Xerox® FreeFlow Process Manager® is a server that can automate entire pre-processing and production workflows for multiple job types and automatically run them based upon conditionally processing of orders received from the web.

Flexible book-specific workflow features—FreeFlow MakeReady® provides for late-stage editing, including book-specific features for imposition, registration, skew/despeckle and tight integration with Xerox scanners for creating electronic files from old books. It also offers copyright management software for clearing rights and making royalty payments to include copyrighted materials in school course packs and other collections. Xerox® systems permit automated integration of offset or digital color pages with monochrome. Xerox also offers a solution tailored specifically for producing teacher's editions of school textbooks, a system for in-store production of books, and a range of features that automate book creation to save time and money.

Publishing-specific paper stocks—For publishers who are committed to manufacturing with green choices, we offer Xerox® EverFlat paper, which enables books to lay perfectly flat for optimal presentation, and FSC (Forest Stewardship Council) certified stocks, which assure environmentally sound chain of custody.

Direct mail

Direct mail and collateral are hands-down the two largest volume opportunities for digital color printing. Projections from Caslon, Inc., for North America call for 128 percent growth in direct mail page volume from 2007 to 2015, to about 80 billion pages. That's nearly the same volume as the top application, collateral, and twice as big as the next largest application, transpromo.

Direct mail's staying power has everything to do with performance. As the number of marketing messages we're exposed to on a daily basis grows seemingly exponentially, standing out in the crowd has become more challenging. One solution is to avoid the crowd by going direct, and today more than half of annual U.S. ad expenditures are for direct marketing, according to the Direct Marketing Association.

Electronic media, such as e-mail, personalized web sites (PURLs), and mobile and social media, have brought new life to direct marketing, with no- to low-cost distribution regardless of volume.

Yet direct mail continues to be a medium of choice. One reason is that old-school print campaigns generally outperform electronic media. The Direct Marketing Association's 2008 Response Rate Report found catalog response rates at 2.24 percent and direct mail at 2.15 percent, while e-mail was less than .5 percent. Consumers, too, express an overwhelming preference—in the 3:1 range in a number of surveys—for receiving their marketing in direct mail over other alternatives. Three out of four consumers say direct mail has influenced them to buy something—more than for any other medium, according to a 2009 ExactTarget survey reported on www.printinthemix.com.

Electronic media have their advantages, too. E-mail's cost per order, at \$3.88, is five times lower than direct mail's \$19.90, according to the DMA's 2007 Response Rate Report. And the best direct marketing results consistently

come from campaigns that blend print and electronic media, with a print component helping to drive traffic to the desired electronic destination.

The cross-media approach also can bring production efficiencies—one set of personalization rules can apply across all print and electronic media, and results can be tracked in a single dashboard. In addition, personalized direct mail that is made highly relevant to each recipient generates better response rates than less personalized or static solicitations. So it can match traditional campaign results with fewer pieces—especially when complemented by electronic media—lowering cost and environmental impact.

Environmental advantages

Assigning green attributes to a medium that is popularly known as “junk mail” begs credulity for many consumers. But digital printing can contribute to greener, results-driven direct marketing. Here are some of the ways digital printing systems contribute to environmental sustainability in direct mail.

Electronic job ordering and submission, paperless workflow and soft proofing—These processes reduce paper usage, and associated costs, while boosting efficiency.

Green paper choices—Offer recycled paper or paper with chain-of-custody certification designating it has been produced in a supply chain optimized for environmental sustainability. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the

Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI). Some customers are willing to pay extra to include a chain-of-custody logo on their direct mail pieces.

Tighter mailing lists—More rigorous list scrubbing can reduce duplicate and erroneous addresses to reduce the size and number of wasteful returns in any mailing. Digital, variable information printing also enables each piece's content to be highly relevant to the recipient, boosting response rates and enabling smaller mailings to match the results of larger, less targeted campaigns.

Cost-effective, short-run testing—Short print runs are far more affordable on digital presses than on offset, so offers can be tested endlessly to small groups, helping marketers hone messaging to optimize results and better control print volumes.

Personalized, just-in-time catalogs and fulfillment—Digital, variable information printing enables marketers to personalize catalogs and fulfillment pieces to include only the information the target needs.

Cross-media campaigns—Integrating direct mail with electronic media generally boosts response rates, while providing another means to control mail volume by shifting volumes among the various media.

One-pass, highlight- or full-color digital printing—This eliminates the need for offset printed shells, as letterhead and body copy can be incorporated in the same print file. Thus it eliminates the environmental impacts



of offset processes, the need to store and manage inventory—including the energy and cost required to run a warehouse—and obsolescence waste.

Direct marketing web portals—For organizations with networks of retailers, agents or dealers, a web-to-print portal can offer direct marketing materials that retain organizational branding while enabling local personalization. This approach can boost response rates and help control print volumes.

Xerox advantages

As a pioneer of digital, variable information printing, Xerox has a rich history of contributing to improved business results from direct mail. Over the years, Xerox has developed its digital print engines and workflow systems with an eye toward making direct marketing ever more relevant to

recipients and more productive for marketers. Many of today's direct marketing offerings from Xerox are benchmark in the industry. We also offer business development resources to help our customers succeed.

Leadership in cross-marketing software—Software from Xerox's stand-alone business unit, XMPie®, is the only system on the market that enables a single set of personalization rules to serve as the logic for creating pieces in all media, saving time and money. XMPie is a scalable solution, with offerings ranging from a single user to an enterprise-wide system. Leading features include image personalization, a dashboard for real-time results tracking, automatic creation of response URLs supporting recipient referrals and application programming interfaces for integrating XMPie with other open systems.

Specialty media—Xerox offers a wide range of media, including specialty stocks that can bring a campaign to life. These include magnets, a range of pre-perfed and pre-scored stocks, and DocuCard®, for use as ID or loyalty group cards.

Packaging solutions—For campaigns with multidimensional elements, Xerox provides complete, end-to-end solutions for static and personalized packaging.

Wealth of expert partners—Partners provide a range of best-of-breed software, coating, finishing, binding, insertion and mailing systems and services for developing complete, end-to-end production solutions. Partner products are pre-qualified to run seamlessly with Xerox® equipment.

Collateral

Rare is the printing company that doesn't produce marketing collateral.

Organizational literature for promoting products and services—such as brochures, sell sheets, posters, catalogs and calendars—have long been a staple print application for graphic communications companies of all sizes. As high quality digital color presses came online in the last decade, collateral volume has been shifting to them from offset.

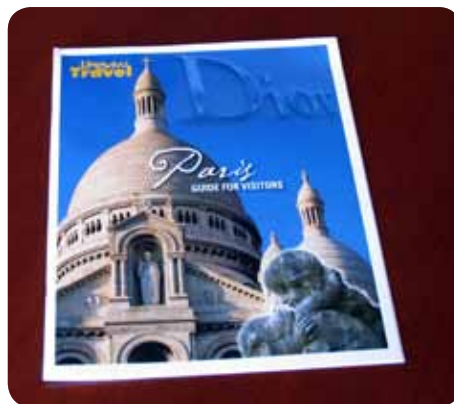
Today, collateral is the single largest opportunity for digital printing—and one of the fastest growing, too. According to market-research firm Caslon, Inc., digital color printing of collateral in North America will grow by 147 percent from 2007 to 2015 to reach more than 80 billion pages. And it won't stop there—by 2020, volume is expected to reach 255 billion pages annually.

The shift is happening because digital printing delivers a long list of compelling benefits that make it impossible to ignore. These include 24/7 ordering and fulfillment, increased automation in production and order tracking, faster turnarounds, streamlined version control for more up-to-date content, and less warehousing and waste, reducing impact on the environment. Costs are often lower as well, especially when offset waste from obsolete collateral is figured in.

Most digital collateral production today begins with an online repository of digital assets. Customers order jobs on web storefronts that are tightly integrated with highly automated, near touchless digital production systems. This helps keep production costs low, while automated color management and tracking systems ensure top quality. It's a classic just-in-time, print-on demand model, with orders placed in the quantities needed, reducing or eliminating warehousing.

Many additional digital capabilities can enhance these systems. Distributing orders electronically for printing nearest the point of need can reduce transportation costs, accelerate delivery and further reduce environmental impact. Personalization and customization can enable networks of dealers, agents and retail locations to tailor collateral, while maintaining the central organization's branding consistency. Personalization can also enable salespeople to provide collateral that is personalized to each recipient, for example, to include only the information that is relevant to the prospect's interests.

These systems are transforming the way collateral is produced and distributed, while boosting sales by ensuring that brochures and product literature with the right content are in the right hands at the right time.



Environmental advantages

Collateral represents one of the richest opportunities not only for capturing significant page volume with digital presses, but for reducing the environmental impact of collateral, as well. The primary advantages derive from just-in-time printing, which reduces or eliminates warehouse and waste. Here's a deeper look at the environmental advantages of digitally printed collateral.

Electronic job ordering and submission, paperless workflow and soft proofing—These processes reduce paper usage and associated costs while boosting efficiency.

Green paper choices—Offer recycled paper or paper with chain-of-custody certification designating that it has been produced in a supply chain that adheres to internationally recognized standards for sustainable forestry management. Organizations that certify chain of custody include the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI). Some customers are willing to pay extra to include a chain-of-custody logo on their printed materials.



Just-in-time, on-demand production—

Producing print jobs to precisely fill order quantities reduces or eliminates inventory management and warehousing—and the associated costs—obsolescence, waste and energy expenditures—that would be required with other print technologies.

Distribute-then-print—Minimize environmental impact by distributing electronically to your newest print center or partner.

Xerox advantages

All the Xerox advantages found on page 5 apply to printers producing collateral. High image quality. Color consistency. Exceptional reliability.

What's more, working in cooperation with partners, Xerox offers end-to-end solutions that automate ordering and production, maintain optimal quality, integrate with

offset workflow, and meet every folding, trimming and finishing requirement for collateral of all sizes.

We also offer business development resources to help our customers succeed in the competitive business of printing collateral.

What else can you do?

Print operations that are serious about achieving greater environmental sustainability, thereby reducing waste and cutting costs, can do more than develop greener applications. Improving the overall sustainability of your operations can improve the environment, improve your standing in the eyes of consumers and colleagues, and, most important, help you do business more efficiently and more profitably.

Such efforts should start with a plan, modeled much like a business plan. The plan should comprehend your operation's environmental impact and establish timetables for achieving various goals for recycling, reducing waste, reuse, carbon footprint reduction and other categories. A staff member should be made responsible for tracking progress. Some larger companies have a full-time sustainability officer.

Here are some ways you can improve your operations' sustainability:

Consider ISO 14001 certification—This international standard specifies requirements for an environmental management system addressing areas an organization has control over and can influence. For more information, visit www.iso14000-iso14001-environmental-management.com.

Give your operations a green design or makeover—Cut your energy costs and optimize comfort and safety by installing energy-efficient lighting systems, improving your insulation, sealing your windows and exhaust units, and upgrading your humidity controls and thermostats. Reuse heat given off by your printing equipment by redistributing heated air to other parts of the building.

Choose greener papers—By selecting stocks that are FSC or SFI certified, you can feel better about the materials you print. And your clients can promote

their environmental consciousness. No longer are you sacrificing quality, brightness or machinability with environmentally responsible paper options. And if you want to go one step further, look for mills that use wind energy in their production process.

Monitor VOC (volatile organic compound) emission levels—Monitoring and making efforts to reduce VOC emissions is a smart business practice that maintains the safest possible environment for your employees and your community. In some areas, it's a regulatory requirement. For a few thousand dollars, an engineering firm can test your plant, identify your higher-risk VOCs and offer recommendations on improving your situation.

Establish policies that reduce energy consumption—For example, power down equipment when not in use.

Become a Sustainable Green Printing Partner—This organization is committed to creating and implementing green print practices. Visit sgppartnership.org for more information.

Looking ahead

Xerox will continue to do its part to foster sustainability in the company and among its customers, as it has since the 1960s.

Developing green solutions remains among the top priorities in Xerox research and development. We have researched ways to generate green power from the sun and deep lake water. And we have targeted our products and supplies with efforts to eliminate toxic materials, enable recycling and reduce waste.

And increasingly, we are helping our customers develop green practices. We hope this guide will be a useful tool in that endeavor.



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