

Environment sustainability

**Considerations for
the packaging industry**



Spotlight on packaging – the pressure on brands

In recent years, the packaging industry has found itself in the spotlight for a number of reasons. Its ubiquitous use of fossil fuel-based plastics, waste disposal strategies, habit of over packaging, and contributions to land and marine litter have seen the operating principles of the industry challenged.

Sustainability, defined by McKinsey, is the principle of producing goods and services while exacting minimal damage to the environment. As a core business principle, it is therefore likely to define the future state of the packaging industry as it endeavors to adapt and satisfy the demands of consumers, the global brand supply chains it supports, and importantly, the environment.

According to a 2020 study², 74% of consumers are now willing to pay more for sustainable packaging and 60% of European consumers⁴ actively seek out environmentally friendly packaging and make a point of recycling.

Consumers have also become more conscious of their packaging waste, which has been exacerbated by the acceleration of e-commerce in the recent Covid-19 pandemic creating the need to dispose more secondary packaging from the consumer's home directly.

Younger shoppers and millennials also have the environment and sustainability high on their agenda. If the packaging industry is to attract this generation as its future workforce, then its sustainability credentials require attention, and it is not unreasonable therefore to assume that the challenge is here to stay.

Notably, in contrast to business leaders assuming that building environmental sustainability into a business strategy will be a major issue and cost drain, the push for sustainability will undoubtedly create new markets and opportunities for the industry as it drives innovation and technological change to meet the needs of its next generation of employees and consumers.³



The brand perspective

Behind any global supply chain utilizing packaging to move goods from A to Z safely and securely sits the brand – the organization that seeks to drive commercial value from the sale of goods or services.

While packaging has often been the poor relation in the marketing mix of many consumer products companies – favoring advertising and digital marketing to globally promote their goods – the focus on the environmental credentials of their packaging choices has certainly made the headlines in recent years.

Alongside the regulatory updates that have been enacted, brands have been under considerable pressure both from non-government organizations (NGOs) such as **Greenpeace**, **World Wildlife Fund (WWF)**, **Friends of the Earth** and the **Ellen MacArthur Foundation**, as well as their customers who have been exposed to distressing images of discarded plastic waste, both on land and in the sea, harming the natural environment.

To protect their reputation and meet global legislative and consumer requirements, CPG brands are placing renewed emphasis on packaging design to shore up their corporate sustainability positions. They are seeking to deliver new sustainable packaging strategies to meet the needs of the circular economy, as well as off more sustainable products and packaging materials.

Examples include

Nestlé – Committed to improving the environmental performance of its packaging, Nestlé has signed up to the **Ellen MacArthur Foundation's** New Plastic Economy and supports the United Nations Global Compact 17 Sustainable Development Goals.



Danone – Has pledged to cut carbon emissions in its supply chain by 50% between 2015 and 2030 and to eliminate deforestation in its supply chain by 2024. It is also driving a new circular economy in packaging.



Unilever – With a commitment to making sustainable living commonplace, a key example of their packaging development work was communicated this year with oral care brands Signal, Pepsodent and Closeup recently announcing plans to convert their entire global toothpaste production to recyclable tubes by 2025.



Carrefour – Carrefour wants to reduce at source the amount of packaging placed on the market by, as a priority, eliminating the packaging that customers find the most irritating and by offering packaging-free sales models. The challenge for Carrefour is to make it easier for customers to adopt zero waste solutions. Goal: to save 10,000 tonnes of packaging placed on the market by 2025 (cumulative from 2017). Carrefour also seeks to develop reusable, recyclable or compostable packaging: when it is impossible to remove packaging or reuse it, Carrefour wishes to guarantee the effective recyclability or compostability of product packaging, in line with national recycling processes. Goal: 100% reusable, recyclable or compostable packaging by 2025 for Carrefour brands.



The legislation wave

As awareness of the sustainability challenges facing the planet has escalated, a range of government policies and regulations around the world have taken shape to drive society and business forward. A wave of new legislation is beginning to challenge most industries and markets as governments seek to meet long term climate and environment commitments.

Asia



A very different regulatory picture is observed in Asia. With China having displaced the United States as the largest global packaging market, Asia remains a high growth market and the use of packaging continues to soar. However, so does the ecological burden for countries with significant leakage of packaging materials into the environment, often due to the lack of effective waste collection and recycling systems at scale.

Environmental legislation in Asia is sporadic but according to a recent McKinsey study⁵ consumer pressure for change in Asia is building. Consumers - particularly in China, India, and Indonesia - feel more strongly than most other emerging

economy consumers about sustainability problems and claim to have the highest willingness to pay for 'green solutions'. Their focus is centered around water and air pollution and less so around waste production, but they also perceive sustainable packaging to be a top priority for food-related products and are highly concerned about the environmental impact of packaging.

What we see around the globe is a range of emerging regulatory frameworks and drivers that will ultimately shape the packaging industry from a product and process perspective. Legislation brings about enforced change but the industry itself is also responding to the need.

United States



The US has enacted federal laws intended to address pollution control and remediation including the Clean Air Act, the Clean Water Act and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

The 2021 appointment of the Biden administration is expected to bring about legislation promoting more environmental responsibility and take the US back into the Paris Agreement, a legally binding international treaty on climate change.

Europe



In Europe, Vice President of the European Commission Frans Timmermans' 'Green Deal'⁴, is expected to be ratified and turned into legislation by the European Parliament in the coming year(s). Leading the EU Commission's work, Timmermans is seeking to enshrine climate-neutrality by 2050 into EU law with a target of 50% emissions reduction by 2030. The Commission is also currently reviewing the Packaging and Packaging Waste Directive with a view to all packaging in the EU market being required to be reusable or recyclable by 2030.

In addition to the momentum generated by the Green Deal, a number of EU Policies are also in place:

- **The Waste Framework Directive** is concerned with "measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use". Its premise is built around the concept of a zero-waste hierarchy.
- **The Paper and Packaging Waste Directive (PPWD)** intends to continuously improve the environmental performance of packaging and to facilitate the correct functioning of the EU Internal Market, thereby protecting the free circulation of packaging and packaged goods in all Member States.
- **Microplastics** The European Regulation for the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is legislating against intentionally added or unintentionally released microplastics. Some paper-based packaging may fall into this scope in their use of dispersion coatings.
- **Extended Producer Responsibility (EPR)** this regulation sees the producers of materials and substrates become financially liable for the end-of-life management of the products and packaging they produce, paying for recovery notes based on their annual production.
- **Single Use Plastics (SUP) Directive** this policy seeks to reduce marine litter by banning different single-use plastic products from use in the EU. These include cotton bud sticks, cutlery, plates, straws, stirrers, balloon sticks, as well as cups, food and beverage containers made of expanded polystyrene and all products made of oxo-degradable plastic.





Impact on the packaging converter

It's clear that if global brands want to live up to their promises, they will need to ensure that their entire supply chain, and their own operations, evolve toward carbon neutrality. This is where the pressure on the packaging converter begins.

Today's packaging printer converter is under tremendous pressure to deliver both sustainable packaging innovation and operate sustainably if it is to remain a trusted supplier to the consumer products and healthcare industries and remain legally compliant.

In response, the primary reaction of converters has been to address substrate innovation, where a number of key strategies - to Reduce, Reuse & Recycle - are being adopted:

1. **Plastics reduction** - light weighting plastic packaging to minimize resource use
2. **Replacement of fossil fuel-based plastics** (where possible)- replacement of the plastic packaging substrate entirely with either bio-based biodegradable or compostable materials or alternative renewable substrates (e.g., carton board)
3. **Simplification of plastic structures** - adoption of mono-material plastics in order to render the pack suitable for post-consumer recycling, e.g., combining HDPE and LDPE in a flexible packaging laminate to achieve the barrier, sealing and recycling performance required, rather than mixed plastics
4. **Increased post-consumer recycled (PCR) material** content - to offset the use of virgin plastics
5. **Coating innovation** - use of new water-based dispersion coatings to eliminate the use of plastic laminates in paper and carton board packaging
6. **Recycling schemes** - either in the factory itself or in a closed loop environment with customers. For example, extruders of plastic films for agricultural purposes often have a recycling scheme in place to collect the used material from the farmer post use, which is then processed into pellets to produce new films.
7. **Design for re-use**, whereby packaging is no longer seen as waste or as a recyclable item, but as an object that finds a second life after having served as packaging.

While many of these undertakings may be relatively easy to envisage, significant research and development must be conducted to deliver packaging performance comparable to incumbent designs. In particular, food safety considerations must be navigated (food and drink representing more than 50% of packaging volumes globally) along with hazardous material protocols – EC 1934 2004 and ECMA for example – to ensure that today’s packaging safety standards are not compromised as new material innovations emerge.

What’s more, a number of barriers often exist in packaging businesses that hamper true sustainable organizational development. These can include the ability to develop a realistic sustainability performance baseline that enables effective, measurable key performance indicators of forward momentum.

And, as with any company-wide shift in culture or behavior, leadership support is critical to success. Without top-down management buy-in, ‘greenwashing’ is the likely outcome for the business; only being seen to do the right thing rather than actually ‘walking the talk.’

Over the past years, it has become evident that brands and their consumers are genuinely interested in improving their carbon footprint and sustainability. It is therefore imperative that packaging converters can adapt and respond to satisfy their needs if they are to remain relevant and contributing to the new sustainable and circular economies that are emerging.

It’s now clear that environmental considerations are no longer driven by the goodwill of individuals, but by an imperative from regulators and the general public. The topic has evolved from a ‘nice to do’ to an absolute requirement, without which businesses will no longer survive.





How does Esko support packaging converters to move the dial on sustainability?

With a host of technologies that support customers to drive their sustainability performance through efficiency and waste elimination, Esko, a Danaher company, also seeks to operate sustainably. We are minimizing our own impact as a business too!

- Please [click here](#) for the **2021 Danaher Sustainability Report**
- **Integrity** - Esko is focused on driving employee engagement and satisfaction, making Esko a great place to work and ensuring our colleagues have a clear understanding of our purpose
- **Our core values** - We constantly strive to make things better in a meaningful way - for our company, our customers and the world. Customers challenge us, and we challenge ourselves, to continuously improve and to find opportunities to deliver innovative products, services and solutions that address their most pressing needs
- **Focus on the principles of lean manufacturing** in our work to eliminate all forms of waste in our, and our customers, operations
- Moving to a **new sustainable HQ office** - the new building has a BREEAM certification as proof of a sustainable environmental approach⁶



As a global developer of integrated hardware and software solutions to the packaging and label industries, Esko is acutely aware of the role it plays in providing digitization, automation and connection of packaging development processes to deliver quality and operational efficiency gains for its customers.

By developing technologies that seek to eliminate errors and waste and speed up and connect processes and devices efficiently, Esko is building solutions that enable its customers to minimize their impact on the environment by reducing waste in the production process.

At Esko, we believe it is at the core of our purpose to help our customers drive toward carbon neutral operations. Not only because we are convinced we need to preserve our natural resources and protect the earth for future generations, but also because environmental sustainability and the circular economy will be competitive differentiators in the packaging industry.

Global CPG and healthcare brands have an obligation to drive towards carbon neutrality as soon as possible, and the consumer insists on this promise becoming reality. In turn, packaging and label converters will be asked to produce packages and labels in a carbon neutral way so that they can contribute to the brand owner's goals.

And we do this in 2 different ways:

- ✔ Help our customers with their workflow design and use of the 'Value Stream Mapping' technique to identify where waste is being produced and can be eliminated.
- ✔ Develop technology and solutions that further reduce waste when deployed in a packaging production environment.



Esko enables its brand owner and packaging converter customers to contribute to environment preservation by reducing waste as much as possible throughout the entire ideation-to-shelf workflow.



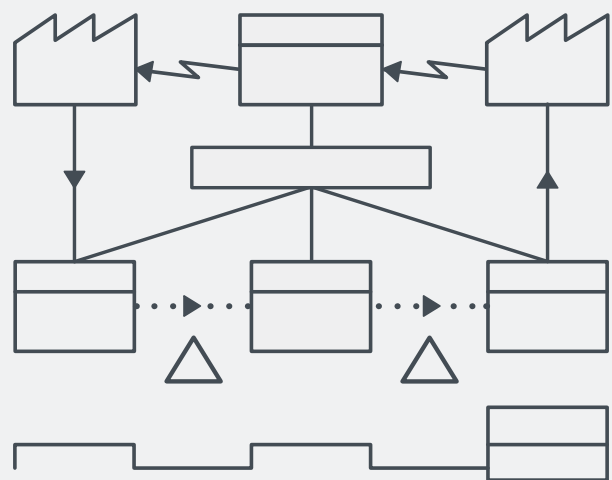
Value Stream Mapping

Esko supports its customers – both prepress and packaging converters – to value stream map their operations to understand sources of waste.

The origins of value stream mapping lie in Lean Manufacturing principles and the Toyota production system that developed in the second half of the 20th century. It enables a business to create a detailed visualization of all steps in the operations workflow process and is a representation of the flow of goods from the supplier to the customer throughout the organization.

A value stream map displays all the important steps of the work process necessary to deliver value from start to finish and allows businesses to visualize every task that the team works on to provide a single glance status report about each assignment's progress.

Most importantly, having a value stream map enables the business to identify where value added work is taking place and where waste in its many forms (overproduction, inventory, motion, defects, over-processing, waiting, and transport) is emerging, in order that the business can improve its processes. By eliminating waste, a business can move to a carbon neutral operations environment.



Once value stream mapping has identified the key areas of waste, Esko offers a range of hardware and software solutions to drive efficiency and support waste elimination:

Solutions to reduce waste in flexo platemaking



CDI Crystal

Flexographic plate imaging technology that optimizes production and secures material savings



XPS Crystal

Flexographic plate exposure technology that requires less energy consumption using LED exposure technology



CrystalCleanConnect

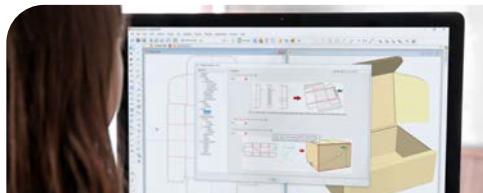
The fully integrated Asahi Esko plate making line utilizes water-washable plates avoiding harmful solvents and emissions in the wash out process

Software to design for light weighting and logistics efficiency



ArtiosCAD

Structural packaging design software enabling packaging rightsizing, down-sizing and design for recyclability



ArtiosCAD Preflight

Preflighting enables issues to be identified earlier in the design process avoiding reprinting and waste



Cape Pack

Palletizing software that optimizes logistics efficiency so customers can ship less air. Cape Pack boosts shelf usage to reduce waste and enables all parties in the supply chain to work together to integrate best practice shipping and palletization into the packaging lifecycle.

Tools for waste reduction in the packaging production process



Equinox

An expanded gamut printing system that secures ink and set up waste savings



AVT Print Inspection

Online print inspection avoids costly mistakes, minimizing waste and reruns



WebCenter

Online collaboration and approvals in the packaging development process avoid an unnecessary travel carbon footprint for meetings and trials



Automation Engine

Packaging and label prepress workflow standardization drives error reductions avoiding downstream material waste



Sustainability – Now is the time to act!

With today's packaging manufacturers and suppliers facing an ever-growing demand for increased quality, consistency and efficiency, sustainability has often been paid lip service by many as they focus on meeting more immediate customer needs. But with consumers, government legislation and consequently their own customers now all placing increased importance on packaging sustainability, the time for packaging manufacturers to act has arrived.

With digitization and automation of prepress processes, improved connectivity enabling increased collaboration from all stakeholders and a joint commitment to working together as an industry to deliver valuable change, the goal of achieving packaging industry sustainability is now not only imperative, but it is also achievable. And together, we will succeed.

References

1. <https://en.wikipedia.org/wiki/Sustainability>
2. Trivium Packaging & Boston Consulting Group 2020 Report. <https://www.circularonline.co.uk/news/three-fourths-of-consumers-willing-to-pay-more-for-sustainable-packaging/>
3. McKinsey report 2020 - The drive toward sustainable packaging
4. EU Commission Green Deal Overview https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
5. McKinsey Sustainability In Packaging Report: Consumer Views in Asia <https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/sustainability-in-packaging-consumer-views-in-emerging-asia>
6. <https://www.banimmo.be/projects/networks-gent-one-two>

About Esko

Esko is a global provider of integrated software and hardware solutions that accelerate the go-to-market process of packaged goods.

For each stakeholder in the process, Esko solutions enable them to work efficiently and deliver right-first-time packaging and marketing content on time, every time.

Our goal is to make it easier for CPG and pharma businesses to manage their packaging, labeling, regulatory and marketing content. With our packaging management platform, brand marketing and packaging teams can increase their productivity, reduce costs, and save time.

For packaging and label trade shops, premedia service providers and printer converters, we digitize, automate, and connect the entire print production process with software and hardware solutions for CAD design, prepress processes, flexo platemaking and print inspection.

For further information, please visit www.esko.com

Belgium	Raymonde de Larochelaan 13, 9051 Gent Tel. +32 9 216 92 11 info.eur@esko.com
USA	8535 Gander Creek Drive, Miamisburg, OH 45342 Tel. +1 937 454 1721 info.usa@esko.com
Brasil	Rua Professor Aprígio Gonzaga, 78 - 10º andar - São Judas - 04303-000 - São Paulo - SP Tel. +55 11 3550-1311 info.la@esko.com
Singapore	1 Kaki Bukit View #04-15/17 - Techview, Singapore 415941 Tel. +65 6420 0399 info.asp@esko.com
Japan	Telecom Center Building, West Wing 6F, 2-5-10, Aomi, Koto-ku, Tokyo, 135-0064 Tel. +81 (3) 5979 6086
China	Floor 6, Building 1, 518 Fuquan North Road, Shanghai, 200335 Tel. +86 21 3279 6555 info.china@esko.com