



# Managing Sustainability Burdens in Packaging Manufacturing

Practices for implementing integrated sustainability in  
packaging manufacturing by an industry partner

A QAD Leadership White Paper for the  
Global Manufacturing Industry

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# MANAGING SUSTAINABILITY BURDENS IN PACKAGING MANUFACTURING

## INTRODUCTION

When it comes to sustainability in packaging manufacturing, no one likes to talk about the elephant in the room: the high-cost burden of sustainability. The reality of higher operational costs, low-quality secondary raw materials, and supply chains full of fragmented recycling suppliers can challenge even the best packaging manufacturers when implementing sustainability plans.

Over the last decade, packaging manufacturers have done a good job of embracing two of the 5Rs of sustainability —reducing and reformatting. Packaging is better created with sustainable solutions, which also fulfills a list of regulatory requirements like separability, labelling and coloration. Packaging formulas and end-user solutions are designed more smartly, are lighter in weight and use less materials. Manufacturers are also minimizing production processes and carbon footprints by using less energy and resources.

Despite all that progress, the sustainability scales tip heavily downward with increasing operational costs while maintaining revenue. This drives some packaging manufacturers to reconsider their sustainability goals, even though this focus will lead to business advantages in the long term.

Consumer preference for sustainable solutions will continue to pressure packaging manufacturers to implement more sustainable solutions. Annual consumer surveys by global management firm Kearney<sup>1</sup> find consumers take the environment

into consideration in their purchasing decisions — and the brands supporting the same values — and this consciousness is on the rise

Compliance and regulatory requirements keep sustainability front and center for packaging manufacturers. While government regulations may have relaxed slightly on recycling, waste management and resource efficiency, this is temporary as landfill shortages increase and public pressure for cleaner environments continues. Consumer health and safety concerns are growing and bringing with them more scrutiny and regulations.

To create more impactful sustainability, packaging manufacturers should take a flexible and adaptable approach to implementing integrated sustainability practices that will increase operational efficiency, reduce costs and resources, and build a respected sustainability reputation with their customers and consumers.

## SWITCH UP THE INGREDIENTS

Manufacturing sustainability is not a static problem — things change almost daily — so the ability to be flexible and adaptable for rapid shifts and varying demands is essential for packaging manufacturers.

Staying ahead of the sustainability curve means it is time for packaging manufacturers to change up their manufacturing processes and formulas.

- **Rethink formulas** — To support more of the 5Rs of sustainability, manufacturers should consider the availability and quality of recycled raw materials and introduce these into formulas for new products. Incorporate collaboration tools and workflows to automatically track and trace formula changes to ensure resins and components from reusable sources do not sacrifice quality and performance and satisfy audit and compliance requirements.

### TOOK THE ENVIRONMENT INTO CONSIDERATION



### FELT THE SAME WAY



### FELT THE SAME AND 65% CONSUMERS WOULD SHIFT PURCHASES TO BRANDS BASED ON ENVIRONMENTAL BENEFIT CLAIMS



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- **Retool processes** — Bring in a user-friendly, next generation manufacturing enterprise system to retool the overall process and optimize operational efficiency. Consider implementing an enterprise solution developed specifically for packaging manufacturers that offers agility, adaptability and personalization, instead of a complex system with inflexible customizations and time-consuming constraints, which will inhibit agile responses to change.
- **Enhance traceability** — Implement a next generation enterprise system with industry-specific traceability capabilities to optimize available resources and facilitate the reuse of materials in formulas. End-to-end traceability is key to developing new formulas that could reduce operational costs and improve business growth and profitability.
- **Ramp up plans** — The COVID-19 crisis, for example, is adding additional complexity to packaging manufacturing such as cleaning and wipe-down procedures and hygiene measures with package handling for the health and safety of plant employees, packaging vendors and end users. Ensure these and other procedures are always part of the production scheduling to stay efficient.
- **Create new models** — In a world where change is the only constant, new business models will help production transitions keep up with customization and demand. Long runs of a core product, for example, require mass production and associated processes. End products such as labels, graphics, seasonal promotions, etc., may change but the core products stay the same. Late-configured items, however, need smaller batch planning and synchronization with orders that require lower volume production practices. With new business models in place, customized products can be added into the production process more efficiently, thus reducing overall waste and costs.
- **Consider alliances** — To ensure higher quality recycled components are mixed into

packaging formulas, manufacturers can develop alliances with environmental and recycling associations that are dedicated to promoting global recycling. Through these alliances, the industry can work to decrease the variability of recycled resources and identify recyclers that offer better sorted and cleaner raw materials for manufacturers to integrate into their supply chains.

Access core data accurately and in real-time with a next generation enterprise system, and create agile processes across the business to rapidly execute effective processes and formulas.

## CONNECT SUSTAINABLE SUPPLY CHAIN DOTS

Packaging manufacturers supply chains are constantly experiencing major disruptions at different times. These disruptions push these businesses to better understand their supply chain vulnerabilities and create contingency plans to mitigate interruptions.

Adding raw recycled components and materials into the supply chain creates another challenge. More and more recycled materials companies are popping up to support packaging manufacturers. Unfortunately, some of these organizations are too new, lean or small to have in place new, sophisticated technologies or robust internal systems to connect with larger, more mature manufacturing enterprise systems. This poses a major obstacle to integrate these companies into mature supply chains.

Enterprise supply chain solutions should offer the flexibility and agility to change with the supply chain stakeholders, including those with less mature setups. Next generation digital solutions offer packaging manufacturers a formalized process to better manage their supply chain. A low-cost, low-tech portal can be linked at one end of the spectrum to a full-blown cloud-managed EDI at the other.

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These systems should also offer connectivity, collaboration and integration, key components of an agile supply chain:

- Connectivity helps manufacturers effectively manage and collaborate with their supply chain partners while real-time communication between manufacturers and their supply chain partners — raw material suppliers to logistics to end customers — makes it faster and easier to plan, manage and control operations.
- Visibility in real-time helps manufacturers rapidly assess the links in the supply chain and identify potentially weak ones. This digital transparency provides better management of the supply chain and helps manufacturers quickly identify alternative suppliers when they need them to mitigate risks.

Packaging manufacturers may want to consider a cloud-deployment solution that can access low or no-code development to ensure the last-mile secret sauce of their business can be accommodated quickly without traditional “lock-in” caused by more complex, customized systems.

## KEEP UP WITH COMPLIANCE

Sustainability breeds the need for vigilant compliance and stringent regulations. Sourcing and using recycled materials may be easier today but ensuring regulatory compliance is still challenging for packaging manufacturers. Recycled products that end up in the hands of consumers have a myriad of regulations and guidelines that can impact compliance, manufacturing operations and the supply chain.

There are some best practices that packaging manufacturers can implement to stay on top of regulations and keep compliant:

- **Seek quality traceability** — This is the secret weapon to keep packaging manufacturers compliant. Real-time traceability is important

evidence of sustainability up and down the supply chain and keeps everyone vigilant throughout the manufacturing process. Part of traceability is serialization, which assigns product identifiers on everything from raw materials to finished products. When integrated with an enterprise system, these identifiers can be cross-referenced with connected systems anywhere in the supply chain to manage rapid change responses, slowdowns in production and logistic issues to customers. Sustainable traceability can boost a manufacturer’s reputation by promoting the work they are doing to ensure products come from sustainable raw materials and highlight product safety for consumers.

- **Automate processes** — Having automated solutions with embedded analytics and quality management will help systemize processes around traceability. It also provides the evidence that all stakeholders are conforming to required regulations.
- **Enhance security** — Security is a vital part of compliance and manufacturing security standards are among the highest. Implementing and maintaining these high levels of security can be more cost-effective when provided by a third-party cloud partner. Because they work with hundreds of customers, manufacturers gain an economy of scale and additional expertise that are otherwise uneconomical for individual businesses to replicate.
- **Disruptive technologies** — Digital enterprise systems with data-centric capabilities offer a wealth of information that inform whether compliance and regulations are followed. Integrate these with technologies like artificial intelligence (AI), the Internet of Things (IoT) and collaborative platforms can take traceability systems to another level, offering detailed data on every aspect of the process from suppliers to end users.

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## REDUCE COSTS WITH DATA AND SECURITY

[Digitized manufacturing](#) generates a huge amount of data that can be harnessed by intelligent manufacturers, not only to record and audit past events but to predict future ones. By taking data from ubiquitous sensors and loading them into Machine Learning (ML) or AI technologies, a manufacturing business can predict when a machine will go out of tolerance or even fail.

This allows the intelligent packaging manufacturer to pre-empt the failure — re-set the machine or perform maintenance — and increase quality, reduce rework or scrap, optimize material usage, reduce utility consumption, and thereby increase sustainability, margins and ultimately keep customers happy today, tomorrow and in the future. Without real-time data and the use of AI or ML, manufacturers are simply auditing the past.

Adding a cloud-based component to digitized manufacturing brings added value to packaging manufacturers. Next generation systems and supply chain solutions can be securely scaled, deployed and easily extended to a cloud-based solution without sacrificing dependability.

- **Operating costs and staff requirements** — Enterprise environments deployed on manufacturing premises can incur high costs in maintenance, more IT staff and upgrades. Offering economies of scale, lower costs of entry, consistent updates and deployment, and a knowledgeable team of industry experts, the costs of a cloud-based implementation will likely be lower in the long term.
- **Risk and security** — Manufacturers can reduce risk, increase security and lower the overall cost of on-premise security by moving to a cloud-based solution. On-premise IT teams may double in size compared to cloud-based security teams. There may be little or no automation on premise when communicating

with supply chain vendors and IT must build a new secure communication channel each time a vendor is added to the system. Keeping up with cybercriminal threats and evolving technology updates can also get costly. Cloud-based systems offer automated and enhanced security measures that protect data when at rest and when it moves to and from the host servers. They process critical business information, so manufacturers can keep data secure from outside sources and unauthorized users within their organizations.

Cloud-based enterprise systems are simple to implement, manage and upgrade, allowing manufacturing management to refocus on strategic initiatives and work on their businesses instead of in the businesses.

## IMPLEMENT INTEGRATED SUSTAINABILITY MANUFACTURING

Just as sustainability can be applied to end-products and manufacturing processes, incorporating integrated sustainability measures inside the four-walls of a packaging manufacturing operation will reduce resources and energy consumption, lower waste during production and reduce operational costs.

Managing operational effectiveness is at the heart of asset-rich packaging manufacturers, who work hard to maintain tight margins. The goal is to run at peak performance so manufacturers can produce the same amount of packaging — or more — using less resources, energy and manpower.

Packaging manufacturers will benefit by adopting Lean (including stalwarts like TPS and TPM), Line Balancing, or other such tools in concert with enterprise solutions that compliment and support them. Business metrics and KPIs will improve while simultaneously helping their sustainability efforts.

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Packaging manufacturers can increase energy efficiency, ensure maximum plant utilization and minimize costs by implementing the following:

- Examine the environmental impact of processes, materials components and operations such as energy, greenhouse generation and gas emissions. Introduce digital integration to identify needs and priorities to improve overall plant management and implement an end-to-end closed loop system that ensures an efficient operation that is ultimately more sustainable.
- Bring data analysis, traceability and visibility into the production process for more timely, accurate information to quickly assess the changes needed. Integrated sustainable manufacturing can also decrease costs by reducing waste, penalties and material spend while improving productivity.
- Follow manufacturing metrics on the plant floor to focus on goals relating to performance, quality and availability.
- Implement a cloud-based system to free-up resources so manufacturers can do more value-added tasks while system administration and updates are performed by expert third-party service providers.
- Share data and common maintenance, repair and operations inventory across multi-site, global businesses to better manage substantial working capital for large capital-intensive manufacturers and improve cash efficiency.

By introducing these sustainable practices, packaging manufacturers create leaner operations that drive down costs and make them more competitive.

## TIME FOR SUSTAINABLE ACTION

Even though regulations, expenses and consumer demands are always changing, the need for sustainable packaging manufacturing is not disappearing any time soon. The demand for high-sustainability packaging will mount with more consumer demands and compliance pressures.

Smart packaging manufacturers should not abandon efforts to improve their impact on the environment and they must stay focused on long-term sustainability success. They can take steps to expand manufacturing operations with integrated sustainability practices and more agile, adaptable processes to continue to be compliant, cost-effective and sustainable.

Packaging manufacturers can seize opportunities today to redesign their businesses and processes for a safe and sustainable future for everyone.

## Interested in QAD solutions?

Learn more by going to <https://www.qad.com/industries/packaging-erp>

## SOURCE

<sup>1</sup>Kearny Earth Day Consumer Sentiments Survey, March and April 2020



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