The Value of a Sustainable Packaging Program

UNDERSTANDING THE IMPORTANCE OF YOUR BUSINESS PRACTICES

AdeptGroup

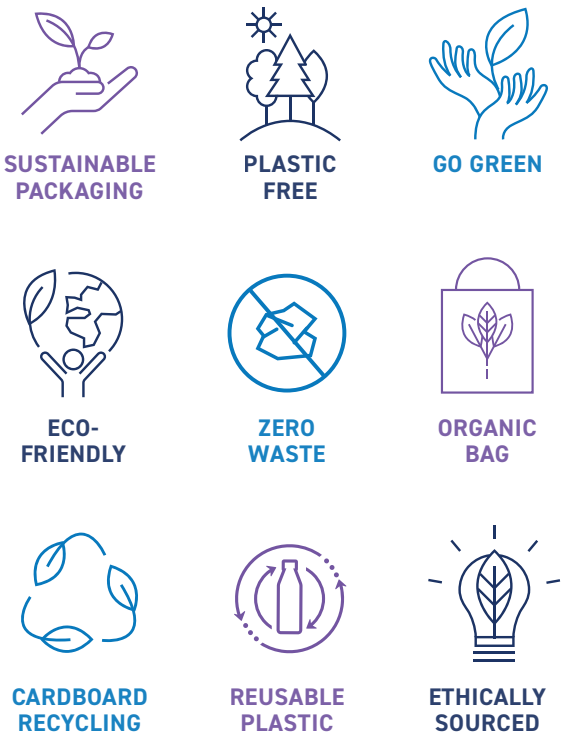
A What is Sustainable Packaging?

Sustainable packaging is more than just using recyclable materials.

It means using packaging materials and processes that are optimized to reduce their impact on our natural resources. It's essential that every level of an organization understands what sustainability is and how it aligns with the brand's goals and objectives.

Truly sustainable packaging takes into consideration the human, social, ecological and environmental impact of a brand in order to help maintain a healthy and safe planet for future generations.

Sustainability requires careful consideration of the environmental impact of the packaging's entire life cycle. A thorough sustainability strategy looks at opportunities to reduce material usage and waste and solutions that make packaging reusable, recyclable, compostable or less energy intensive. The wide variety of opportunities to improve sustainability means almost every organization can find solutions that benefit its packaging.



Why Sustainable Packaging Matters

For sustainable packaging to work, everyone needs to understand why it's important.

Packaging teams must understand where packaging will go when it is discarded and how to best design it for consumers to carry out the lifecycle.

Correct labeling, for example, extends to the consumer–only about 14% of recycled waste makes it into the proper recycling stream. A correctly labeled package increases the chances of that waste making it to where it belongs. You must set brand stakeholders and consumers up for success through an understanding of the importance of sustainable practices such as recycling and composting.

Many organizations have established corporate sustainability goals and are racing toward deadlines for meeting them. Your packaging sustainability goals should feed into supporting your corporate sustainability goals. For example, if your corporate goal is to reduce greenhouse gases, examine how your packaging can have a positive net effect. Other goals might include reducing water usage or eliminating single plastic usage. As supply chains become more challenging, goods may become more difficult to source. The time to act on your goals is now. That's where the sustainability experts at Adept Group can help.

Sustainability has been an impossible topic for brands to avoid in recent years. In C-suites, production lines, packaging departments and beyond, everyone has had to think about ways to decrease the environmental impact of the business. The good news is that by keeping a handful of concepts in mind, brands can build sustainability into almost any project their packaging team tackles.

Why Sustainable Packaging Matters Cont.

The world produces around 300 million tons of plastic waste each year.

Around 60% of the plastic produced since the 1950s either made its way to a landfill or ended up polluting the natural environment, including at least 8 million tons that go into the ocean every year.

The bad news is that the need for more sustainable packaging is desperate; the good news is there is a wide margin for sustainable improvement in almost all packaging. For organizations that aren't swayed by the purely altruistic factors, there are plenty of other drivers pushing brands toward more sustainable packaging. Research shows that consumer demand for more sustainable products continues to grow. If a brand hasn't responded to those changing consumer preferences, chances are its competitors have. Many of the biggest consumer brands in the world have publicly committed to aggressive sustainability goals, and dozens have partnered with organizations like the Ellen Macarthur Foundation to help them reach those goals.

State governments in the U.S. are considering **Extended Producer Responsibility (EPR)** laws that shift the costs of handling packaging waste back onto the companies that produce it. Maine became the first U.S. state to pass EPR legislation, and many other states are following suit. Those states are decades behind governments in Europe, where Germany adopted a form of EPR in 1991. These regulations are pushing sustainable packaging from something that's nice to have to something brands can't afford to ignore.

Combined, these drivers are pushing the packaging industry to accelerate sustainability programs, and while it may not be the only priority guiding packaging engineers, there are a handful of considerations that can help them build sustainable improvements into their other projects.

A

Cost Savings

Savings and sustainability can coexist.

With the global economy still wrestling with the impact of the COVID-19 pandemic, priorities have shifted for many businesses around the world.

Loss of revenue has forced businesses to put many innovations, including sustainability initiatives, on the back burner while they focus on keeping costs down. This does not have to be the case. By re-framing cost-savings programs through the lens of sustainability metrics, it's easy to find many areas where savings and sustainability coexist.

While consumer expectations have shifted during the pandemic, it's unlikely that sustainability will be completely de-prioritized, especially with millennials and Generation Z. Time will tell if its dropped down consumers' priority list when purchasing a product, but companies that can highlight sustainability and deliver a safe product will have a decidedly strong market position. The pandemic has temporarily cut carbon emissions globally, but it's not going to change the science of climate change. The packaging value chain will continue to have the environmental impact it's always had.

Packaging sustainability is more important than ever in the consumer goods space because packaging is being purchased and consumed at historical rates, and **residential waste volume has increased by as much as 40% in some areas.** This surge in waste, coupled with the collective belt tightening prompted by the pandemic, means the packaging community needs to think creatively about sustainability and how it can turn these proverbial lemons into lemonade.

A holistic approach to cost savings

Outlining a cost savings approach and defining sustainability metrics independently provides a basis for identifying the steps that benefit both.

It is helpful to take a holistic approach to cost savings by breaking a package down into constituent parts and evaluating direct and indirect costs tied to each component – some refer to this as a total cost of ownership approach.

The broad direct and indirect factors that affect packaging costs can be separated into three categories:

MATERIALS

CONVERSION OF MATERIALS

TRANSPORTATION & STORAGE

Materials

A good first step to evaluating materials for costing purposes is identifying why each material is used. Some are chosen for functional purposes, some for aesthetic considerations and others for regulatory requirements.

Many materials are selected based on a combination of those factors, and understanding the primary driver behind the selection of each material provides an opportunity to challenge any preexisting assumptions or biases driving those decisions and find opportunities to save on costs.

It is also important to consider the composition of each material. If there is color, the source may be pellet, liquid or powder, and each of those color systems have different price implications. In multi-layer packaging, each layer should be assessed to ascertain its necessity. The use of additives, adhesives, laminates and other materials should be reviewed to determine if they're necessary or if they can be used in lesser concentrations. There is a nearly limitless number of ways material can impact cost, and careful consideration by an expert helps to identify the decisions that have the greatest impact on costs.

Conversion of Materials

The second major step to evaluating the cost of your packaging is to consider the conversion process for those materials and ensure that the most efficient conversion process and equipment are being utilized for a particular package.

Some conversion processes are better suited for high-volume, highly uniform runs, while others are better for low volumes with greater variation. Packages may be designed in a way that limits them to a specific conversion process, but that process is not always the most efficient. Careful examination of the design may reveal ways to decrease the package size and amount of materials used in the conversion process without sacrificing the package's protective properties. Optimizing the size of a package presents many opportunities to improve the design from both a cost perspective and a sustainability perspective.

Transportation and Storage

When considering transportation of a package's components, their shipping journey, from origin through arrival at the filling location, should be up for review.

Some components may be produced domestically, while others come from overseas via ocean freight. They can be shipped in full truckload quantities or less-than-truckload (LTL) shipping. Other factors impact the cubic efficiency of the unit load as it is received at the filling location. In some circumstances, items need to be shipped to a third party for certain finishing elements, such as labeling or decoration. Every step of this material flow should be examined to determine if it can be accomplished more efficiently or eliminated altogether.

In addition to transportation methods, it's also important to consider how replenishments are made. For lower volume items, understanding how a minimum order quantity (MOQ) stacks up against an economic order quantity (EOQ). The difference between the two may be great enough to justify larger orders that deliver a lower per-unit cost. Weighing the value of an EOQ provides an opportunity to examine ordering costs, shipment costs, and inventory handling and holding costs. Each of these costs should be reviewed carefully, as they add up to create a significant impact on optimizing the cost of your packaging supply chain.

Evaluating Your Sustainability Efforts

The metrics established by the Sustainable Packaging Coalition (SPC) provide an excellent resource for evaluating your sustainability efforts.

The SPC focuses on the power of industry to make packaging more sustainable, and its membership includes brand owners, material converters, government agencies and academic institutions. Its members publish sustainability goals based on the coalition's metrics, which are separated into two buckets – packaging metrics and corporate metrics. Packaging metrics are associated with all items that relate to a package or any packaging material that will find its way onto a bill of materials. Corporate metrics are a broader umbrella that covers not only the package, but also the plants, property and equipment that an organization operates.

Material Efficiency: A Key Packaging Metric

When thinking about packaging metrics, it's helpful to begin by thinking about unfavorable materials such as Polyvinyl Chloride (PVC).

This material has been banned by a number of organizations for many years due to the harmful effects of chlorine and more notable chlorofluorocarbons (CFCs) that harm the earth's ozone layer. Another harmful material is BiSphenol A (BPA), which was once commonly used in metal and aluminum can linings and other plastics. BPA is mildly toxic and if not disposed of properly can be harmful to humans or to the environments where they end up.

Any litter that does not find its way to a proper landfill can harm the micro-environment directly around it. These are just two examples of well-known harmful materials that should be limited, and as end-of-life considerations become more important in packaging, this list is likely to grow.

Material efficiency is another key packaging metric and can be defined as using the correct amount of material in the correct quantities to achieve the intended lifecycle of the package. Material efficiency can sometimes be sacrificed in service of speed to market, as packaging engineers utilize additional barrier materials to decrease the probability of product/package compatibility issues so that products can launch before packaging tests are completed.

PACKAGING SUSTAINABILITY METRICS

- Bio-based / Renewable Materials
- Eliminate Unfavorable Materials
- Material Efficiency
- Design for recovery
- Improving recovery infrastructure
- Recycled content
- Responsible fiber sourcing
- Increases in recycling
- Volumetric Efficiency

Volumetric Efficiency: A Key Packaging Metric

Another packaging metric to track is volumetric efficiency. It is helpful to think of this as the volume of usable product compared to the sellable unit for the end-user.

The end-user in this case could be a retailer that receives pallets of product at a distribution center or the consumer that picks a product off the shelf and takes it home. Cosmetics and skincare brands are notoriously bad at managing volumetric efficiency.

Selling mascara in a thermoform-backed SBS card or putting a small eye cream jar in a grossly oversized carton is standard industry practice, but it is easy to see these are examples of poor volumetric efficiency. These products are placed in packers, which then go into RSCs that are loaded onto pallets.

These pallets can consist of as much as **50% air**. Cutting down on excess packaging and concentrating usable products is a key step to enhancing sustainability, with the added bonus of reducing costs for materials.

Energy Consumption Requirements

Energy consumption is one important way to measure corporate sustainability, and material choice plays a significant role.

Glass, for example, has best-in-class barrier properties and is widely recycled, but it is notoriously energy-intensive. Shutting down and restarting glass furnaces can take hundreds of hours, resulting in lost time and significant financial losses, so they must run 24 hours a day at more than 1,500 degrees Celsius, consuming substantial amounts of energy. In contrast, producing plastic is much more energy-efficient, as production equipment can be turned on and off relatively quickly. In addition, melting temperatures for plastics are significantly lower than glass, and most of the melting temperature is generated through sheering force in the barrel. On average, glass takes about twice as much energy to produce as plastic, so it's important to understand the energy consumption requirements for different materials to plan a sustainable package solution.

CORPORATE SUSTAINABILITY METRICS

- Energy Consumption
- Greenhouse Gas emissions
- Manufacturing Operational Waste
- Renewable Energy / Alternate
- Energy
- Water Consumption

It is no secret that greenhouse gas emissions, most notably carbon dioxide, are strongly correlated with global temperatures. As the concentration of Co2 in the atmosphere increases, so do global temperatures. The number of miles a package must travel between its conversion location and its filling location, along with the mode of transportation and type of fuel used, plays a significant role in determining packaging's carbon footprint. The choice between partial truckloads and full truck loads also plays a key role. Researching and comparing multiple options for these factors can uncover optimal solutions for cutting down on carbon emissions from packaging, and often those solutions are also the most cost effective.

Identifying Commonalities

Where Savings and Sustainability Overlap

Once potential approaches to both cost savings and sustainability are clearly defined, the areas where the two overlap become easier to identify.

A few areas of overlap jump out in examples discussed in the sections on Cost Savings and Sustainability, but the multi-layer film example provides an opportunity to highlight several areas of overlap.

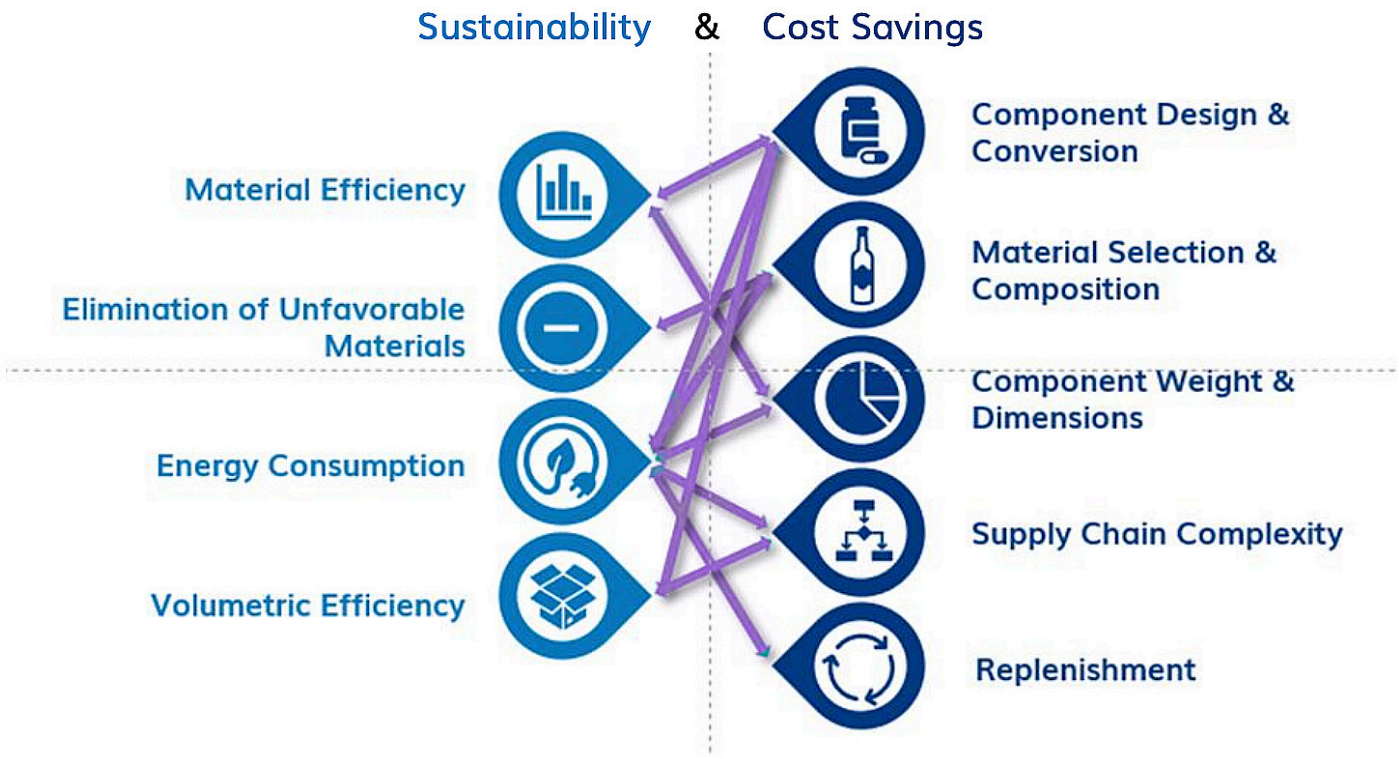
Removing a barrier layer is a way to provide material efficiency for sustainability, but it also has cost advantages, and any procurement team should use the removal of this layer as leverage to negotiate a better cost. A procurement buyer can also increase order quantities for a package, which provides an opportunity to reduce shipments from the converter from a monthly basis to quarterly. Suppliers will be able to fully cube or weigh out outbound shipments, reducing road miles for incoming packaging and reduced carbon emissions.

On the converter's end, this could cut down on raw material inputs, which means fewer carbon emissions from their supplier, and so on. Working in parallel, this approach can have cost advantages through optimized economies of scale from the buyer, as set-up costs and overhead are stretched out over larger volumes.

Creating Environmentally Friendly Packaging

As another example, choosing cheaper materials with lower carbon footprints, such as choosing plastics instead of glass and producing them with minimal additives, can be a win for both cost and sustainability.

By limiting color percentages, mold release agents, UV inhibitors for clear packages, or the use of oxygen scavengers, these pieces can deliver a more environmentally friendly package that may have an increased likelihood of being recycled, all at a reduced cost for the buyer.

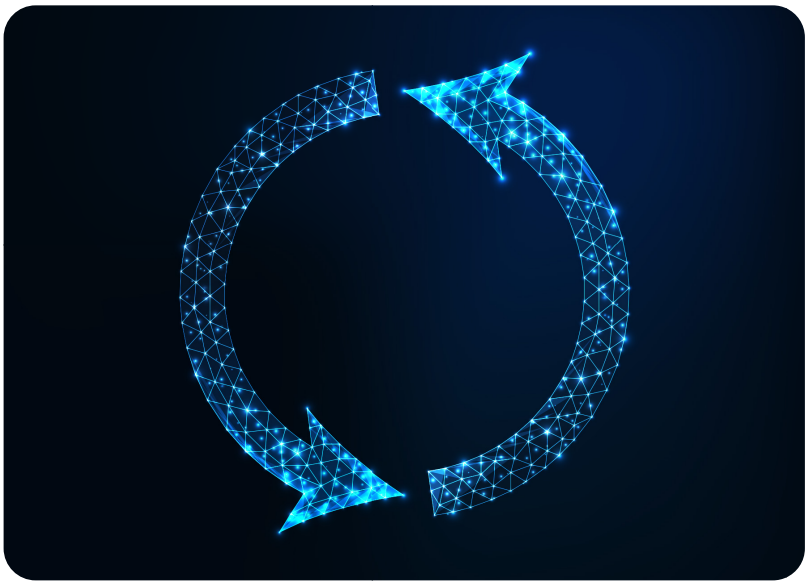


A

Life Cycle Analysis

Design with the End in Mind

Any package design project should include a life cycle analysis that carefully considers the impact of a package at each stage of its life, including:



RESOURCE EXTRACTION

MANUFACTURING

DISTRIBUTION

USE

END OF LIFE

Each of these stages offers opportunities to improve sustainability, including reducing the thickness of corrugate and other materials to make manufacturing less wasteful and decrease fuel consumption during distribution and creating packaging that can be reused instead of thrown away after a single-use.

End of life may be the stage where opportunities are easiest to identify, as recyclable and compostable materials remove packaging from the waste stream entirely. Thinking about the consumer's experience with municipal recycling systems may lead to designing packaging from a single, recyclable material or a small number of recyclable materials that separate easily, both of which make responsible disposal an easy task for the end-user.

An Adept Group Case Study

Developing Compostable Primary Packaging

A plant-based meal delivery service lacked in-house packaging support and needed help developing compostable primary packaging options that fit its delivery model. The project also included supplier evaluation and project management through the commercialization stage.

REQUIREMENTS

- The entire project had to be completed within a 12-month window
- The service's delivery model meant that costs needed to be tightly controlled to maintain their margins

ADEPT GROUP ACTIONS

- Worked closely with the client's management team to complete ideation sessions
- Evaluated material options for compostability, feasibility, cost and material/technology availability
- Leveraged Adept's network and pricing knowledge to help the client's management team select the best options for suppliers

RESULTS

- Launched compostable packaging across client's entire product line
- Kept costs within accept range for all new packaging SKUs
- Completed the entire project, from ideation through commercialization, in a 12-month window

A

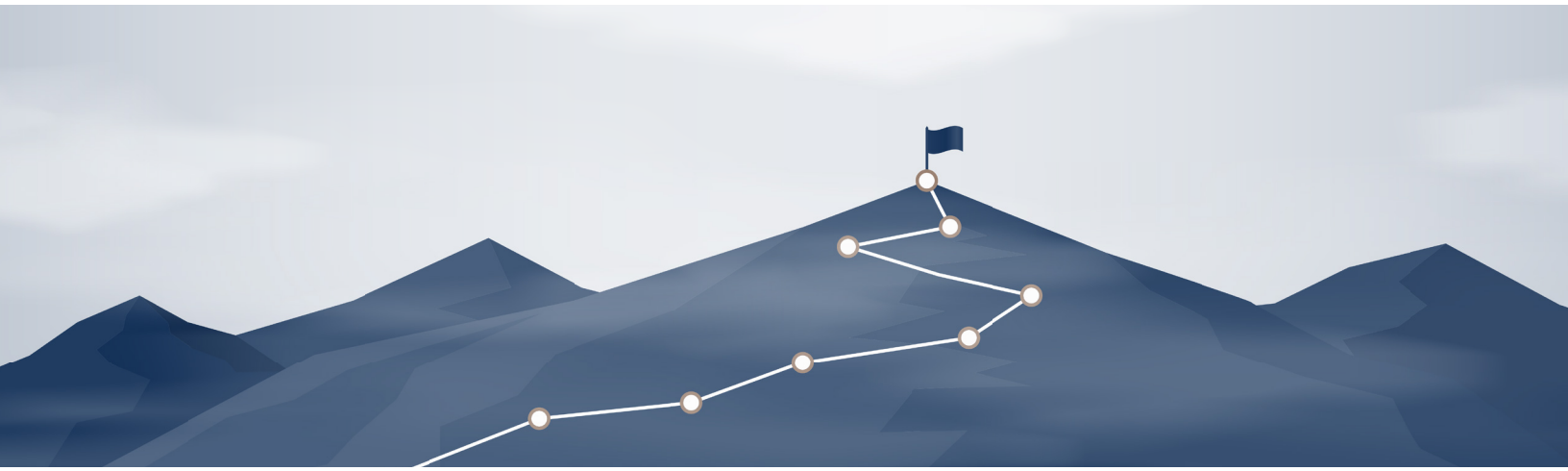
The Value of a Sustainability Audit

Create a Defined Path to Reach Goals

Measuring progress toward goals like designing for recovery, eliminating unfavorable materials and increasing recycling can be complex.

Many companies have used sustainability influencers like the Sustainable Packaging Coalition and the Ellen McArthur Foundation to determine what areas they wanted to focus on to improve their sustainable operations. They also can have multiple divisions, several packaging lines, and thousands of different SKUs that require unique packaging. Many companies that have goals set, have vague targets and an undefined path to achieve those goals. Not to mention, determining how sustainable each type of packaging and component is and what actions need to be taken to make those sustainable is a big job. To accomplish this, companies can leverage a sustainability audit.

A sustainability audit is a tool that allows companies to evaluate their sustainability goals and objectives, stage-gate progress toward those goals and objectives, and determine what actions will result in significant progress toward those goals.



Steps to Sustainability Success

These are the steps we take to help our clients get to an informed place to make decisions about what project comes next:

GOAL & OBJECTIVE EVALUATION

- Understand the big picture
- Determine milestones and deadlines
- Evaluate the phases of your goals
- Evaluate priorities

IDENTIFICATION OF TARGETS

- Use goal and objective evaluation to identify general targets
- Break general targets down into individual attributes
- Use guidelines set by sustainability influencers

CHECKLIST BUILDING

- Sustainability roadmap
- Milestones and Deadlines
- Target certifications
- Targets and their attributes
- Identification of current packaging components for remediation
- Identify reporting and measurement
- Avoid greenwashing
- Improve circularity
- Avoid Landfilling

IDENTIFICATION OF ATTRIBUTES

- Evaluate Material health attributes of targets
- Determine sourcing of targets
- Identify the rate and ability for resource recovery of targets
- Evaluate if targets meet certification requirements

DECISION-MAKING

- Share knowledge about your sustainability status
- Align to make decisions moving forward
- Utilize the knowledge from the checklist to make decisions about sustainability actions

Putting Plans into Action

Taking the time to think about how cost savings programs can overlap with sustainability metrics is a straightforward thought exercise once clear metrics are established, but getting buy-in from leadership and putting a plan into action may be more difficult.

Putting Plans into Action

A few simple steps can go a long way to getting the entire team on board:

Establish and communicate clear, quantifiable baseline metrics across all packaging within scope.

Starting with an objective number eliminates subjectivity from the decision-making process and makes it easier to prioritize projects that can benefit the most from cost/sustainability optimization.

Employ a life cycle analysis (LCA) process where applicable.

This is a great way to quantify corporate sustainability metrics, and many companies already have LCA capabilities in place.

Build a scorecard that aligns with the organization's priorities.

Different companies require a different balance between sustainability and cost savings; developing a scorecard that reflects the company's values is the most effective way to present quantified, objective criteria for the program's success.

Leverage resources both within and outside the packaging department.

Packaging engineers frequently work with departments ranging from product development and operations to marketing and quality assurance, but don't be afraid to liaise outside this group. Seek out the technical staff that support the sales reps to find out how energy efficient their process is. Find the people who know the shipping logistics of incoming packaging and ask about how materials are received and where they come from. Departments that aren't directly involved in packaging can be valuable sources for information that can improve sustainability and cost savings efforts.

Sustainability Tips

How to Demystify Advances in Packaging

USE RECYCLED MATERIALS

As the regulatory landscape that affects packaging waste continues to evolve, many brands will be forced to use recycled materials for their packaging. In the meantime, there are still plenty of environmental advantages to using recycled materials for packaging when compared to using virgin materials. From a consumer messaging perspective, manufacturing recycled plastics produces 65-70% less greenhouse gases than manufacturing virgin plastic.

Production of one ton of recycled plastic saves 5,774-kilowatt hours of energy, 16.3 barrels of oil, 98 million BTUs of energy, and 30 cubic yards of landfill space when compared to virgin plastic. Purchasing recycled materials drives more demand for those materials, which makes them more profitable and incentives producers of recycled materials to scale up their operations, a long-term benefit for all brands.

AVOID COMMON PITFALLS

Suppliers are always going to leverage messaging that highlights the best attributes of the materials they sell, but it's important to understand what they're selling and what their claims really mean. Messaging around "biodegradable" materials, for example, can confuse both brands and consumers. Over a long enough period, just about all materials can be considered biodegradable; cynically, one can say plastic is biodegradable if you look at it over the course of hundreds of years.

"Compostable" is a much more meaningful designation, as it signifies that the material biodegrades in a specific amount of time and under well-defined conditions. Doing the research upfront allows brands to have more meaningful conversations with their suppliers about sustainable materials.

Degradable additives are another easy trap packaging for packaging departments to fall into. Suppliers will tell you these additives help materials biodegrade, but this process breaks plastics down into micro-plastics that can remain in the environment longer. The EU has already banned some of these additives, and other regulatory bodies are likely to follow suit.

Sustainability Tips Cont.

How to Demystify Advances in Packaging

USE LESS PLASTIC

Packaging is a growing driver of plastic production when compared to other uses for plastic, but it's one of the easier areas in which we can decrease use. Despite the industry's growing efforts, only 9% of plastic ever produced has been recycled. Benefits to reducing plastic packaging waste include lower greenhouse gas emissions, decreased use of non-renewable resources and less trash going to incinerators, landfills and the natural environment.

There are many ways to decrease the amount of plastic used in packaging, including decreasing the thickness of plastic packaging, designing plastic packaging to be reusable and using more sustainable alternatives.

CONSULT A SUSTAINABILITY EXPERT

Knowledge about technologies, materials, tools and regulations around sustainability is constantly evolving and it can be difficult to keep up with the latest information. An expert who focuses on sustainability can help demystify advances in the field. They're also likely to have insight into what competitors and brands in other industries are doing to make progress against their sustainability goals and know what's working and what isn't.

A true sustainability expert can provide a strategy tailored to meet a brand's unique packaging needs and a set of clear, actionable steps to meet sustainability goals. Adept Group's sustainability experts can help your brand **conduct an audit** and identify projects that will make the most meaningful impact toward your sustainability goals.

Contact Us

We Love a Challenge

Get in touch with our team today for assistance with your sustainable packaging needs.

(484) 373-2504

inquiry@adeptpackaging.com

adeptpackaging.com

Adept Group has assembled the top experts in the packaging industry to help companies increase sustainability, reduce waste, optimize efficiency and enable the circular economy. True sustainability improvements require knowing the total impact a package has on the environment, economy and communities throughout its lifecycle. Our sustainable packaging experts support initiatives from materials and technology research to strategy development and competitive benchmarking.

With a specialized sustainability team, we work with the most iconic brands in the Food, Beverage, CPG, Industrial and Life Sciences industries. Our team has the resources, tools and expertise to guide companies through any stage of their sustainability journey. From taking the first step to becoming a recognized industry leader, Adept has you covered.

- Sustainable Strategy Development
- Sustainable Consulting and Project Management
- Life Cycle Analysis Audit
- Sustainability Audit
- Feasibility Assessments
- Innovation and Ideation
- Digital Packaging Enhancements
- Regulatory Compliance
- Package Validation and Qualification
- Pilot and Prototype Development