QUICK GUIDE: CLIMATE-SMART PACKAGING

In a recent Climate Collaborative <u>survey</u>, companies overwhelmingly identified packaging as their most challenging commitment area. This guide seeks to help companies understand both 1) climate-smart packaging strategies and tactics that companies can implement, and 2) a sustainable packaging design process that can help companies adapt their packaging to improve its environmental impacts.

BEFORE YOU BEGIN: CONSIDER THE SYSTEMS PERSPECTIVE

✓ Include all packaging (secondary, tertiary/pallets) involved in delivery of product to consumer, not just primary package

✓ Consider overall impact at every phase of the life cycle of package: raw material, converting/production, transportation, and end of life

✓ *Remember:* Final packaging design with a reduced climate impact profile must balance right-sizing of packaging with product protection.

CLIMATE-SMART PACKAGING DESIGN STRATEGIES

The amount of strategies to improve climate signatures of packaging are nearly as plentiful as food products on the market. For a fuller analysis of options, consider reading the Sustainable Packaging Coalition's *Definition of Sustainable Packaging* or the Packaging Covenant's *Sustainable Packaging Guidelines*. In the meantime, here are three key principles—and associated tactics—that can help you get started:

Use Less
- Evaluate packaging to product weight ratios
- Lightweight packages
- Use recycled material (PCR Content): They typically have lower environmental impact than virgin material sources

Source Well
- Know chain of custody, such as certified paper sources (FSC, SFI, etc.)
- Choose abundant materials (bio-based plastics, bamboo sourced fibers, FSC certified papers, etc.)
- Eliminate materials of concern in the supply chain, ex California Prop 65
- Use local materials when possible to reduce transportation impacts

Focus on End of Life
- Avoid using sealants, glues, colorants, or additivies that make packages incompatible with recycling guidelines
- Use mono-materials as opposed to composites/laminates (ex. flex packs)
- Clearly mark materials for recycling (e.g. a How2Recycle label)

THE SUSTAINABLE PACKAGING DESIGN PROCESS

While details of each company's sustainable packaging design process will vary, the approach below represents a good template for getting started! This process generally applies to existing packaging updates, though steps 3-5 can help guide new packaging design.

STEP-BY-STEP: CLIMATE-SMART PACKAGING DESIGN

1. **Establish Sustainability Goals**
   - Initially, you can work toward setting overarching goals or policies. To maximize impacts, focus on highest-volume products and/or related packaging components. Examples:
     - Average 25% Post-Consumer-Recycled content across all packaging
     - Reduce Packaging Waste by 10%
     - Reduce overall Packaging GHG emissions by 15%
     - Reduce fossil fuel consumption by 30%
   - Over time, especially as product packaging traits are benchmarked and opportunities further understood, you can refine your goals by brand or product.
   - Align your efforts with your company's mission and strategic goals, where possible.

2. **Benchmark Current Packaging**
   - Create an inventory of your current packaging components and volumes.
   - Through comparison against goals and climate-smart design strategies, develop an understanding of your current packaging impact and where efforts could be focused (high-volume components; high impact components, etc.).
   - A variety of tools can assist benchmarking, including *Practitioner Tools* (SimaPro, GaBi, open Life-Cycle-Assessment [LCA] software) and *Procurement Tools* (EDF's Paper Calculator, Supplier Scorecards, Environmental Paper Assessment Tool).
   - You can establish your baseline, identify improvement opportunities and compare alternative designs with a quick screening LCA application like EcoImpact-COMPASS. You can also create internal and external reports to document your initiatives.

3. **Define and Design Alternatives**
   - Create a list of design criteria the new packaging must meet, based on your goals and the technical/quality specifications of your product.
   - Identify climate-improved design candidates that meet your established design criteria.
     - *Remember:* Changing from a rigid container to a flex pouch, switching to a bio-based plastic, and light-weighting/right sizing packaging can all reduce impacts.

4. **Quantify Environmental Impact**
   - Compare the climate impacts of your design alternatives using the tools mentioned in Step 2 to assess progress against your goals.
   - It is important to understand all the tradeoffs when implementing a new package design (new supplier costs, damage rates, increased water consumption for bio-based, no recyclability for multi-material flex pouches).
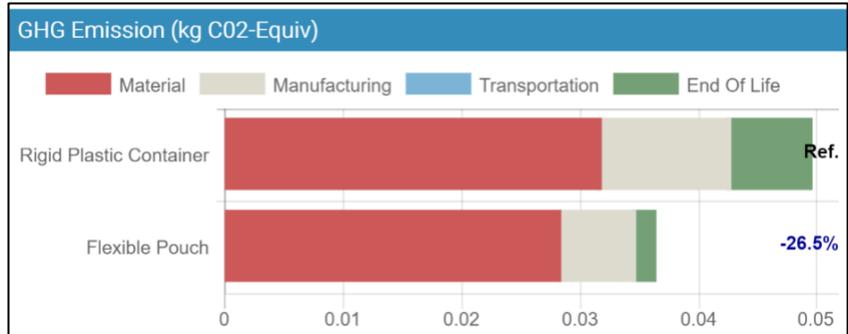
5. **Pick Package Design to Reduce Climate Impact**
   - This iterative process will allow you to implement packaging updates to continuously improve your products and meet your climate goals and product requirements.

WHAT RESULTS CAN THESE STRATEGIES HAVE?

Environmental benefits from using these strategies can be significant. For example, adding 20% recycled PET to a 12 oz bottle can reduce greenhouse gas (GHG) emissions by **10%**.

The chart below illustrates the reduction of (GHG) emissions associated with a product package redesign. By changing from a rigid plastic container to a flexible pouch (using less materials), the company reduced GHG emissions by ~27%!

GHG Emission (kg CO2-Equiv)

| | Material | Manufacturing | Transportation | End Of Life |

Rigid Plastic Container — Ref.

Flexible Pouch — -26.5%

EcoImpact-COMPASS Results

COMPANIES IN ACTION: DANONE NORTH AMERICA'S PACKAGING JOURNEY

In another example, Danone North America, a Climate Collaborative committed company, worked with its So Delicious brand to reduce the environmental impacts of its almond milk product packaging by designing a recyclable bottle made of primarily renewable resources. The bottle is made out of at least 80% plant-based resin derived from sugarcane versus traditional resin made from fossil fuels.

Using the COMPASS tool to calculate impacts of the packaging, the new bio-resin bottle design results in 75% less carbon emissions than virgin HDPE and remains a widely recyclable package!

GHG Emissions Across Packaging Platforms

GHG (kg CO2-equiv)

PCR BOTTLE VIRGIN HDPE BRASKEM