

PepsiCo/Frito-Lay Sustainability

Energy in Food Manufacture

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pepsico
green

PepsiCo Sustainability Overview

SUSTAINABILITY OVERVIEW

HELPING TO BUILD A MORE SUSTAINABLE FOOD SYSTEM

Over the years, the global food system has brought nutrition, economic opportunity, convenience, and enjoyment. Today, however, the global impacts of climate change, soil erosion, water scarcity, and population growth bring challenges that threaten its ability to meet our needs. The food system is in urgent need of transformation.

70%

of the world's fresh water use is in agriculture alone

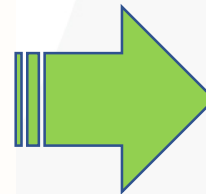
Only

14%

of plastic packaging is recycled for future use

1/3

of greenhouse gas emissions originate in the food system



Improving water and energy efficiency and finding cleaner sources of energy are critical to meeting our sustainability goals!

OUR OPPORTUNITY TO LEAD POSITIVE CHANGE



Energy, Water, & Waste Sustainability in Food Manufacturing



Energy Efficiency

Alternative sources – biomass, thermal vs electric, solar/renewables

GHG & Efficiency Profile of various energy sources (e.g. compressed air vs electric)

Base cost to operate

Resiliency – grid outages



Water use efficiency

Plant operation
Processing and Packaging

Stewardship & Advocacy

Adoption of AWS Standard

Replenishment of water used



Reduced waste = reduced energy & water

Zero Landfill

Recyclable materials

Reduce packaging

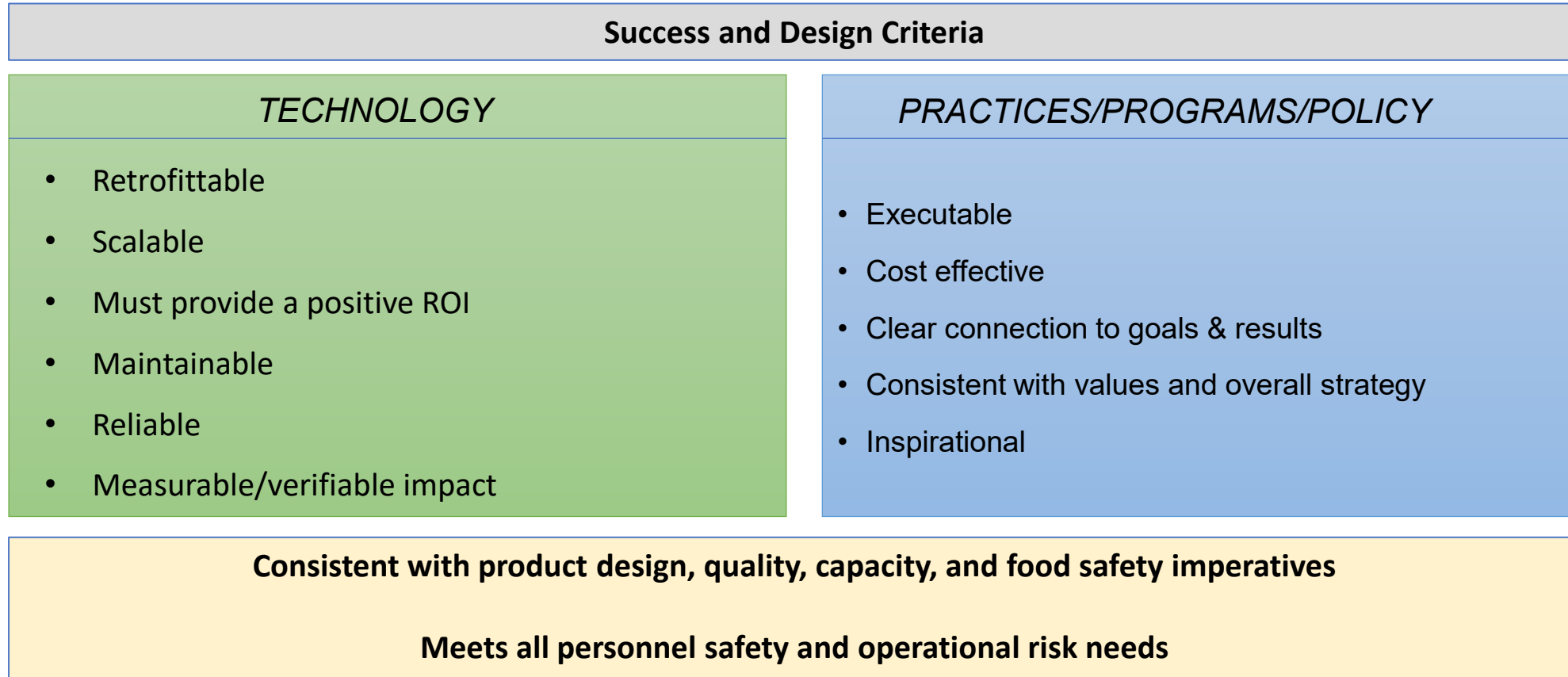
Base business practice



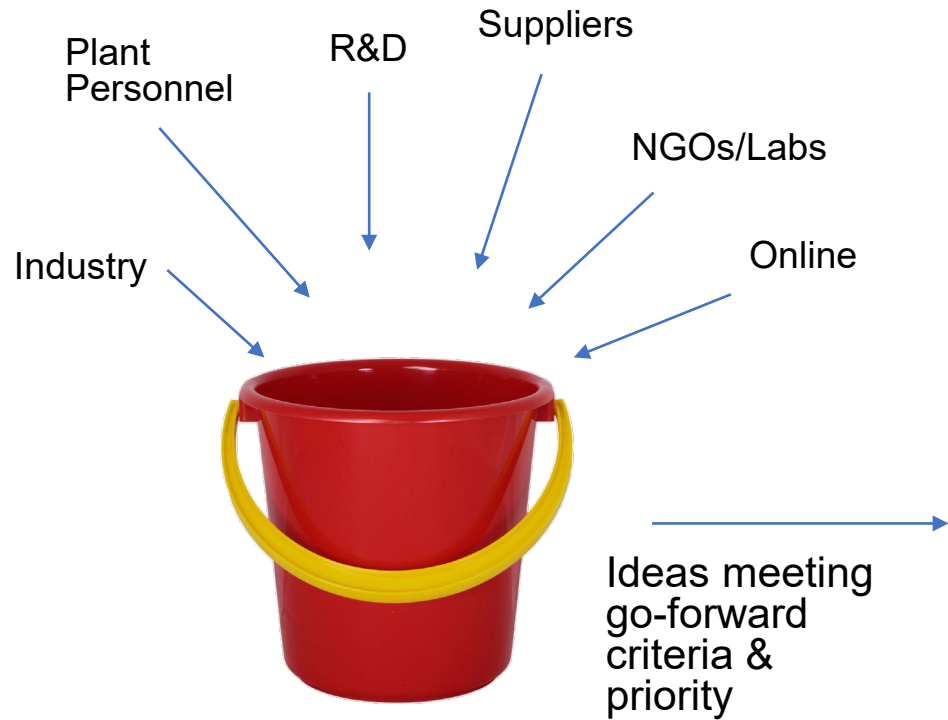
Success and Design Criteria of Solutions

Our Energy Priorities:
Cost to Operate
Energy Efficiency
Climate Impact
Resiliency/ Reliability

Snacks Scale:
~40 Plants in US+Canada
~200 production lines



Technology Development Process



Pilot test

Usually Full Scale,
single site

Evaluate/confirm
performance, savings,
reliability, etc.

1mo – 2 yrs



Scale-up/replication

sites depends on
economics and
impact on goals

Timing dependent on
resourcing and
priority



Operations Supply Chain Climate/Energy Approach

Base Efficiency

- Thermal Insulation
- Heat Recovery
- Practices: Optimized Operation, Best Practice Replication, Ownership
- Conventional Automation
- LED Lighting
- Waste Reduction
- Fleet: lightweighting, aerodynamics, driver training

~90% penetration

Technology

- Renewable Generation (solar)
- Biomass Boilers
- Advanced Lighting Controls
- Advanced Combustion Tech.
- Dashboarding and Analytics
- Fleet: Electric and CNG alternative fuels

~25-50% penetration

Emerging/Evolving Opportunities

- Predictive Performance Mgmt - AI/Machine Learning
- Industrial IoT
- Microgrids/Energy Resiliency
- Electrification of thermal loads
- “Campus” strategy vs individual tactics
- Further Renewable Fuels

~5-10% penetration

Obstacle/Need: Finding &/or developing technology that can help us on our climate journey while providing an acceptable return on investment. (Scope 1&2 GHG)

Main Opportunity on snacks is in thermal processing and waste heat capture.



Climate & Energy - Results

PEPSICO IS EMBRACING RENEWABLE ELECTRICITY AROUND THE WORLD:



Transitioning to **100% renewable electricity** in U.S. direct operations in 2020.



Currently using **100% renewable electricity** in 9 European countries.



Sourced 65% of electricity needs from **wind energy** at PepsiCo Foods Mexico in 2019.

In early 2020, we signed the UN's

Business Ambition for 1.5°C pledge,

underscoring our commitment to science-based target setting.

Over the life of our Frito-Lay electric vehicle fleet, we will have

driven 12 million all-electric miles

PepsiCo **reduced absolute GHG emissions by 6%**

across our value chain in 2019, progress toward our goal of 20% by 2030.

