DuPont Sustainable Solutions

Energy Efficiency: A Sustainability Journey

Juan Aguiriano
Worldwide Managing Director – Sustainable Operations

September 7th 2012
Energy Efficiency – A Sustainability Journey

- Sustainability Drivers for Energy Efficiency
- Energy Efficiency and Singapore
- Energy Efficiency is a Business Opportunity
- DuPont Sustainability Journey
- Managing Energy Efficiency
- Market Facing Goals
Energy efficiency is a component of the big sustainability picture...

Environmental concerns linked to energy are an element of sustainability.

Energy consumption in industry can represent up to 60% of GHG emissions.

Local requirements are of increasing importance to multiple industries to manage local stakeholders and ensure a social license to operate.

Energy management and energy efficiency must be part of a corporate sustainability strategy.

Consuming less energy to produce more goods...

Local requirements are of increasing importance to multiple industries to manage local stakeholders and ensure a social license to operate.
Multiple Global Drivers are pressuring companies to improve Energy Efficiency

- **1. Volatility of resource costs**
  - Volatility, magnitude and escalation of energy costs are increasing the urgency to drive improvements in energy efficiency.

- **2. Public policy**
  - Governments and global institutions are introducing new energy management regulations and policies, pressuring companies & societies to re-think energy consumption.

- **3. Access to capital**
  - The Investment community is increasing the weight of a company’s energy efficiency commitments and capabilities when making investment choices.

- **4. Public accountability**
  - Companies are expected to publish energy improvement goals and are being held accountable for delivering results.

- **5. Competition**
  - Energy efficiency is being used as a powerful strategy to lower the cost of goods and attract customers at every level.
Energy Efficiency is Good for Singapore

EE is high on the agenda in Singapore with targets in place, strong government support and abundant opportunities.

Industrial Energy use represents 54% of total consumption in Singapore.

Energy Efficiency is a Business Opportunity

Energy is finite, and yet energy demand is rapidly outpacing supply, driving prices higher as well as the cost to society.

Within the industrial sector – the largest consumer of energy – there is much opportunity to become more energy efficient through improved energy management.

In doing so, companies can not only generate business value, but also societal value.
Moving from discrete energy reduction initiatives to integrated energy management strategies that return significant cash and market advantage.

Risk Mitigation
Cost Reduction
Revenue generation
Competitive advantage

Awareness and Compliance
Operational efficiency (inside out approach prevailing)
Product innovation (outside in approach prevailing)
Influence on Society and the competitive landscape

Energy Security
Energy Consumption
Energy Efficiency Products
Sustainable Energy Mega Trend

Licence to Operate
Operational Excellence
Sustainable Growth

DuPont Sustainable Solutions
Companies are strategically focusing on its efficient use as a way to gain competitive advantage.

Energy has become one of the strategic factors driving business decision-making.

Business and consumers are increasingly considering the energy efficiency of the products and services they buy and use. In an industrial context, companies are searching for the most energy-efficient process design solutions.

(... these development are the results of economic and political facts: the long-term depletion of fossil fuels and public policy decisions to curb greenhouse gas emissions (GHG).

Thus, energy has become a key factor in gaining a competitive edge, and the relevant global markets are growing rapidly.

The DuPont journey from Safety to Sustainable Growth

- **1972**: Compliance
- **1989**: Corporate Environmental Planning
- **1990**: SHE Commitment
- **1994**: Announced 2010 footprint reduction Goals
- **2000**: Sustainable Growth
- **2006**: Announced 2015 Market facing Goals

Sustainable Growth Journey:

- **1972**: Compliance
- **1989**: Corporate Environmental Planning
- **1990**: SHE Commitment
- **1994**: Announced 2010 footprint reduction Goals
- **2000**: Sustainable Growth
- **2006**: Announced 2015 Market facing Goals
DuPont has achieved a significant footprint reduction

Cost savings: $6 Billion (USD)
Industry recognition: “Laggard” to “Leader”
427th consecutive quarter dividend

Sources:
DuPont is on track to deliver 2015 Footprint and Market Facing Goals

Reducing Environmental Footprint

- Greenhouse Gas Emissions > 14.62 MM metric t CO₂-e
- Water Conservation > 32 billion gallons
- Fleet Fuel Efficiency > 100% leading tech vehicles
- Air Carcinogens > 0.9 million pounds
- Independent Verification of Site Programs 100 % site

Serving the Marketplace

- Environmentally Smart Opportunities from R&D > $US 640 M
- Products that Reduce GHG > $US 2 Billion revenue
- Revenues from Non-Depletable Resources > $US 8 Billion
- Products that Protect People > 1,000 products

DuPont Sustainability Progress Report:

Core Value Performance

- We continue to drive towards the Goal of Zero in each of our Core Value areas (Safety, Environment, Ethics, Respect for People)
An Integrated Approach to Develop and Operationalize World-Class Energy Management

**Assess & Envision**
- Bottom-up business review
- Top-down critical issues identification
- Goals development & benchmark
- Stakeholder engagement

**Management System Design and Implementation**
- Detailed targets
- Communicate & Cascade
- Corporate Analysis & Prioritization, KPI
- Leadership Process & Tools Organization Structure
- Business Units Plans
- Guidelines, Standards

**Sustain**
- Organizational Processes
  - Division & Site Structure
  - Roles & Accountability
  - Performance Management
- Cultural Transformation
  - Leadership
  - Alignment
  - Planning & Initiatives
  - Execution
  - Influence Model
- Capability Building
  - Competence
  - Best Practice
  - Talent Management

DuPont Sustainable Solutions

7-Sep-12

DuPont Sustainability Journey

7-Sep-12

Copyright ©2012 E. I. du Pont de Nemours and Company. All rights reserved. The DuPont Oval Logo, DuPont™, and The miracles of science™ are registered trademarks or trademarks of DuPont or its affiliates.
An integrated management system that fully develops people and organizational capability for effectiveness and creativity in utilizing assets and eliminating all waste, e.g. energy waste.
How to Get Started on Energy Efficiency? The Key Success Factors

1. Elevate Energy and its Cost as a Strategic Business Issue
2. Identify and Execute the Right Opportunities to Drive Maximum Gains
3. Implement a Vertically Integrated Management Approach to Drive Results
4. Connect Diverse and Complex Components of Energy Management and Efficiency
5. Develop Skills and Capabilities of People to Support Cultural Change
Elevate Energy and its Cost as a Strategic Business Issue

- Understanding business implications of energy consumption and escalating costs
- Analyzing implications of energy cost variability on portfolio profitability
- Benchmarking and quantifying the total opportunity value.

What are strategies for developing attractive, “non-cap” opportunities?

Universe of Attractive Business Improvement Opportunities

Universe of Energy Improvement Opportunities

Capital Improvements
Identify & Execute the Right Opportunities to Drive Maximum Gain

Institute Monthly Program Reviews with Plant Manager

Assess Plant Energy Use (1st or 2nd Party)

Implement Changes

Repeat Assessment Process Every 3 Years

Six Sigma Projects

Capital Projects

Set Breakout Target [Beginning of each year]

First Savings Achieved

Typical Savings Run Rate

Opt in

Month

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Appoint Plant Energy Team

Identify Project Opportunities

Quantify Stake for Savings

Determine Feasibility

Prioritize Improvements

Plant Manager Appoints Plant Energy Champion

Institute Monthly Program Reviews with Plant Manager

Assess Plant Energy Use (1st or 2nd Party)

Implement Changes

Repeat Assessment Process Every 3 Years

Six Sigma Projects

Capital Projects

Set Breakout Target [Beginning of each year]

First Savings Achieved

Typical Savings Run Rate

Opt in

Month

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Appoint Plant Energy Team

Identify Project Opportunities

Quantify Stake for Savings

Determine Feasibility

Prioritize Improvements

Plant Manager Appoints Plant Energy Champion
Implement a Vertically Integrated Management Approach to Drive Results

A range of methodologies should be used to select and fund projects ranging from simple cost-effectiveness to the most detailed triple-bottom line ROI sensitivity analyses across the whole company portfolio.

Energy Projects Priority Matrix

Marginal Abatement Cost Curve (Selected Projects by Saving)

Cumulative GJ Reduction Impact of Selected Energy Reduction Projects

Energy Projects Cost Effectiveness

Energy Projects Pareto Curve
4 Connect Diverse and Complex Components of Energy Management and Efficiency

Recognize the Energy Challenge

Develop Energy Plan

Identify & Prioritize Opportunity

Energy Mapping

40% Opportunities with low capital investment

60% Opportunities but substantial capital investment

Low cost/Non-capital Investment Projects

Cross-functional Facilitated Improvement Projects

Prioritize & Quantify Capital Projects

Integrate in to Capital Planning Process

Execute Capital Projects

Input

- Methodology
- Subject Matter Expertise
- Resources

Management of Change (MOC)

Operational Excellence

60% Opportunities but substantial capital investment

40% Opportunities with low capital investment
Energy Management – How To Drive the Culture?

Strong Leadership
- Engaged & Committed Leadership
- Challenging Goals, Policies, & Principles
- Metrics and Data-Driven Decisions

Appropriate Organizational Structure
- Integrated Energy Efficiency Organization
- Responsible Line Organization
- Timely Recognition of Success

Focused Processes and Actions
- Consistent & Targeted Business Planning Process
- Commitment to Training & Development
- Effective Communication System
- Standard Improvement Methodology

These elements, and the system for realizing them, form the best practice reference model against which cultural change is implemented.
The miracles of science™
Industrial Energy Efficiency

> Govt Support Schemes
Backup Slide Energy Efficiency – A Sustainability Journey

Singapore’s Sustainability Targets

National Climate Change Targets

- Up to 16% emissions reduction below BAU levels by 2020 if there is global agreement
- If there is no agreement, 7-11% emissions reduction

Sustainable Singapore Blueprint

- 35% improvement in energy efficiency from 2005 levels
- 80% of all buildings green by 2030
- 70% recycling rate by 2030
Backup Slide - Why Industrial Energy Efficiency?

The graph shows the energy consumption breakdown across different sectors:
- **Industry**: 54% (Overall)
- **Transport**: 16% (Electricity), 19% (Fuel)
- **Buildings**: 16% (Overall)
- **Households**: 9% (Overall)

The graph indicates the significant contribution of industrial sector towards energy consumption.