

# **Chapter 17.**

## **Sustainability and the Supply Chain**

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## Learning Objectives

- Understand the importance of sustainability in the supply chain
- Describe key pillars of corporate social responsibility
- Identify opportunities for improved sustainability along various supply chain drivers
- Understand the role of incentives and regulation for improved sustainability



# The Role of Sustainability in a Supply Chain

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The health and survival of every supply chain and every individual depends on the health of the surrounding world.

Expand the goal of a supply chain to others that may be affected by supply chain decision.

Driving factors driving focused on sustainability

- 1. Reducing risk and improving the financial performance of the supply chain
- 2. Community pressures and government incentives/ mandates
- 3. Attracting customers that value sustainability



# The Tragedy of the Commons

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- *The Tragedy of the Commons*: Dilemma arising when the common good does not align perfectly with the good of individual entities
- Getting any agreement on action is difficult because the optimal joint action is not individually optimal
- Need for intervention but considerable disagreement on the required form of intervention

# What Are Some Solutions to This “Tragedy”?

- No solution without taking away some of the freedom that participants
- Need to choose from options that are unlikely to be supported by all of their own free will

# What Are Some Solutions to This “Tragedy”?

*Mutual coercion* – social arrangements or mechanisms coerce all participants to behave in a way that helps the common good.

– Command-and-control approach –  
Market mechanisms

- Cap-and-trade
- Emissions tax or Carbon tax





# Key Pillars of Corporate Social Responsibility

1. Environmental Pillar
2. Social Pillar
3. Governance Pillar

# Key Pillars of Corporate Social Responsibility

*Corporate Social Responsibility* (CSR) in a supply chain can be viewed along three pillars- environmental, social, and governance.

- Challenges of CSR
  - Defining the scope
  - Absolute or relative measures of performance



# Sustainability and Supply Chain Drivers

# Sustainability and Supply Chain Drivers

Opportunities for improving supply chain sustainability can be identified by including the social and environmental pillars.

## Facilities

- Significant consumers of energy and water and emitters of waste and greenhouse gases
- Separate the improvement opportunities into those that generate positive cash flows and those that do not

# Sustainability and Supply Chain Drivers

## Inventory

- Raw materials, work in process, finished goods and inventory sitting in typical landfill
- Life cycle assessment (LCA) can be used to assess a product's environmental impacts

Goal is to reduce harmful inventory and unlock the unused value in products when they are discarded

# Sustainability and Supply Chain Drivers

## Transportation

- Lower transportation costs also tends to reduce emissions and waste
- Product design plays a significant role in reducing transportation cost and emissions

Can be accomplished by reducing packaging and allowing greater density during transportation

# Sustainability and Supply Chain Drivers

## Sourcing

- Majority of energy and water use & waste and emissions occurs in extended supply chain outside the enterprise
- Extended supply chain and work with their suppliers to improve performance
- Verifying and tracking supplier performance on sustainability is a major challenge

# Sustainability and Supply Chain Drivers

## Information

- Good information is a big challenge
- Absence of standards leads to claims of improvement that are not verifiable
- Leads to company-specific standards and an explosion of certifications and certifying agencies
- Use of consistent measures within a supply chain



# Sustainability and Supply Chain Drivers

## Pricing

- Consumption visibility and differential pricing by load or time of day may make a significant difference in the usage of energy
- Change customer's willingness to pay for a product that is produced and distributed in a more sustainable manner but costs more
- Sustainability cannot be improved simply by focusing on reducing costs or the use of incentives



# The Role of Incentives and Regulation for Sustainability

# Recycling and Closed Loop Supply Chains

- Supply chains cause significant harm to the environment when their output ends up in a landfill.
- Improve sustainability by designing products that can be reused and recycled.
- Must be supported by a supply chain that ensures recycling.
- Economic interests of all the parties must be understood and aligned for the activities to be performed.

# The Pricing of Emissions

Approaches used to price emissions

- Carbon Tax
- Cap- and- Trade System

# The Pricing of Emissions

Dimensions which any emissions pricing mechanism should be evaluated

- 1. Cost of administration
- 2. Price volatility
- 3. Emission uncertainty
- 4. New information uncertainty
- 5. Industry competitiveness
- 6. Wealth transfer to energy- exporting countries:
- 7. Revenue neutrality



# **AGEC 632: Agribusiness Logistics**

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